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# Antimicrobial Study of Karpoora Mezuku

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<td>1</td>
<td><em>Escherichia coli</em></td>
<td>Resistant</td>
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<tr>
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<td><em>Staphylococcus aureus</em></td>
<td>Sensitive</td>
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<td>Resistant</td>
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<tr>
<td>6</td>
<td><em>Enterobacter sps.</em></td>
<td>Resistant</td>
</tr>
</tbody>
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Dear Doctor,

Thank you for your reference. If the result is not correlating with the clinical impression, please inform us to repeat the test with a fresh sample.
AIM AND OBJECTIVES

Yugi has done a lot of contribution to Siddha system. He has classified Vadha diseases into 80 types.

As “Sinusitis is the most common type of infection encountered in the human medical practice, the author has selected “Pitha thalai Nokkadu” for her dissertation study.

It affects both adults & Children of either sex. Further it is influenced by social, economical, sesonal and geographical factors. The spectrum of symptoms in this disease requires the use of several diagnostic and investigative procedures.

The prime aim of the study is to select the “Pitha thalai Nokkadu” patients and administer them the trial medicines and bring out the efficacy of the Medicine.

NAME OF THE MEDICINES:

Karpoora Mezhuku - Internal

Peenisa Naasa Ganapathy Thylum - 30ml

External (For bath)

In pitha thalai nokkadu, sneezing and severe head ache becomes the most irritating and horrible symptom of the patient’s daily routine. The author tries to contribute a better remedy for this disease.

The author tries to denote the advances in diagnosis and treatment basis in Siddha system, in order to enlighten the ancient medicine with scientific approach.
This is only a preliminary endeavour by the author to help the sufferers of this disease.

The other aims are,

To study the clinical course of the disease “Pitha thalai Nokkadu” with deep observation on the

- Aetiology
- Classification
- Pathology
- Diagnosis
- Differential Diagnosis
- Prognosis
- Complications
- Treatment by Siddha aspects.
- To expose the efficacy of Siddhars diagnostic principles, to know how this disease deranges the normal Mukkutram, Poripulangal, Udarkattukal and Envagai Thervugal.
- The etiology and clinical features of “Pitha thalai Nokkadu” revealed in Siddha literature are compared with that of modern aspects.
- To have an idea about the incidence of disease with age, Sex, occupation, economic status, habits, family history and climatic conditions.
- To use laboratory and radiological parameters to confirm and follow the progress of the disease.
To have a clinical trial on Pitha thalai Nokkadu with, Karpoora Mezuku
- as internal peenisa Naasa Ganapathy Thylum - as External
  (For bath)
To evaluate bio chemical and Pharmacological effects of the trial medicines.
To evaluate microbiological study of the trial medicine.
ABSTRACT

Since PITHA THALAI NOKKADU is the most common disease in the society and the number of sufferers are increasing day by day, the author has chosen the disease for her dissertation work. It’s increased incidence in recent times is due to sedentary life styles, Pollution and abnormal dietary habits.

20 patients of both sex as inpatients and another 20 as out patients were selected for clinical studies. They were administered with the trial medicines, Karpoora Mezuku - 500mg twice a day during the whole period and Peenisa Naasa Ganapathy thylum was given for bath (twice a week)

The trial medicines were subjected to bio chemical pharmacological micro biological analysis.

At the end of the trial study the majority of the cases showed good results.
REVIEW OF LITERATURES

SIDDHA ASPECT

Definition about Vadha:

The biological function of the body is governed by three humours known as Vadha, Pitha and Kaba. In a healthy man these three humours are held in the ratio of 1 : ½ : ¼. When this equilibrium is altered it leads to disease. When vadha is altered by diet, environmental factors, habits etc., the other two are also altered leading to vadha disease.

Formation:

The basic energy which is responsible for a man to be alive is known as “Thathu”. This one energy is divided into three factors vadha, pitha and kaba. These are life force in three ways creates, protects and fates in the body.

The human body is compared of 72,000 nerves. Among this, ten are big nerves (Thasa Nadies)

“திரும்பு திரு பிரம்மாசா கௌரலவ ரைமா

நிமிலம காஞ்சாரி மங்கந்த திரு திராவாமா

பிரமா அமர் புதுமாவந் தீர்த்த விளங்கும்

முகம மாண்டியம் அமர் அம்மாந்

திருமலின் பஞ்சக் காஞ்சா பாரசு

- பூங்கா வகுக்கிய கிருதாவனி

“Yugimani” describes the above ten nerves as “Thasa Naadies”.
According to this, the three nerves edakalai, pinkalai and suzhumunai are basic nerves called as Mooladhara Naadies.

Among ten Vayus, five are more important. They are Piranan, Abanan, Viyanan, Udhanan and Samanan.

When the three nerves edakalai, Pinkalai and Suzhumunai are in conjugation with Abanan, Piranan, and Samanan respectively, the three humours Vadha, Pitha and Kaba are formed.

“காத்துக்காதும் துளை திதம் அம்மடம்

 வாழ்வு பிள்ளாக புகழ்க பிற்கம்பம்

 பாது நுற்றால் குற்பிற்கும் குழந்த

 வார்த்தை மாடு அக்காக கிருத்திய”
Thirumoolar expresses the formation of Vadha, Pitha, Kaba in the same way by the above poem.

Location:

“உட்குரி பாலின் ஆரியையுடி சின்ன”

- சென்னார் சமுதாய

Theraiyar says that Vadha lives below the umbilicus.

“தலைமால் மகசம் அதுதெம் புறை
முகாருமுலகாம்பு சாகத்தையில் சின்ன சின்ன
தலைமால் சுற்று பல்லகத்து காவல்
சாகாய்ப்புண்டும் புறை பொன்று தனக்குட்மு பரி.”

- சமுதாய சாகாய

According to above Versa, Vadha lives in Abanan, Edakalai, Stools, Anus, Bones, Nerves, Hair follicles, Muscles etc.

“கல்லாயின் அர்த்தத்தை சின்னையுடை சின்ன
மூடிக சின்னயுடை நீவு பாறை.”

- முக்தி செண்ணை சின்னையை
Yugimuni also denotes that vadha lives below the umbilicus.

“...”

Digestive system, bone, ear, thigh, hip, skin are the six sites where vadha lives, explains the above versa

“...”

According to Thanvanthiri Nadi, the anal region is the site of Vadha,

**Natural Qualities of Vadha:**

“...”
According to this, Vadha in its natural state is responsible for,

Alertness

Inspiration and Expiration

Mental and Physical activities

Execution of fourteen reflexes

Unique with seven Udarkattukal

Strength of five sensory organs

**Agonist qualities of Vadha:**

Vadha has six agonist properties. Bad and unwanted things in our food and water strengthen Vadha’s own qualities.

They are

- Rough
- Dry
- Light
- Cold
- Unstable
- Subtle

**Antagonist:**

These qualities eliminate the agonist qualities of vadha by giving the food supplements with the following properties.
They are

- Soft
- Unctuous
- Heavy
- Hot
- Stable
- Solid

Relation with tastes:

“செருக்கை ஒளிக்கியதல்லாம் திரும்பிய கரிசை வெளியுள்ள

குதிரை கோல் பிளை சுபூர்பில் பிளற்றலது

பார்த்தி புறப்பாக பிளை முக்கியம் அரசாத்து

செருக்கை தள்ளலில் பிளறு நில அரசாத்து.”

- ஆகர்லிணா தாய்

“சாத்தரும் புகழ்பூச்சியம் வலிக்கும் கரும் தலைமுறை

தூத்திக் கல்லார் முன் சுருக்கில் திரும்பிய தலைமுறை

சூழ்பிற்கு வெளிக்கு தான் மின்னிட்டு கொள்ளத்தேது

கதராம் தள்ளலே கரும் முன்னிட்டு கொள்ள காட்டேல்”

- சின்சன குமார் தாய்

Sour taste indicates increased vadha by the above poem. “Astringent” taste is mixed with sour taste in diseased condition.
Aggravating Tastes:

“புரிகும் அதிகக்கூடி பயன்படுத்தி தம் தந்து
நீதிக்கும் காலப்பிள்ளி பின்னர் விளங்கும் நீதியானது
நீதிப்பு அதிகத்து காலும் நீதிகு
சிருப்து பயன்படும் இந்தப் பாடல்

- காண்ணுச்சிறையம்

Above poem says that foods with sour and astringent taste will aggravate vadha.

Neutralising tastes:

“ஆரம் செலுத்தி லலனை சடங்குப்பந்தாஆ

- காண்ணுச்சிறையம்

According to “Kannusamiyam” sweet, sour and salt tastes neutralise the increasing vadha.

Relation with Elements : (Pancha Pootham)

Vadham – Vali & Ahayam

Pitham - Neruppu

Kabam - Mann & Neer

Among five elements, vadha has the qualities of air and sky. This is explained as follows,
Relation with tastes and Elements:

- Sweet - Earth + Water  
  Vadha - Air + Sky

- Sour - Earth + Fire  
  Pitha - Fire

- Salt - Water + Fire  
  Kabha - Water + Earth

- Bitter - Air + Sky

- Pungent - Air + Fire

- Astringent - Earth + Air

The element air present in bitter, pungent and astringent tastes aggravate Vadha.

Alterations in Vadha:

Alterations in 3 – thathus and seven Udarkattukal indicate how the body is being diseased.
Types of Alterations:

1. Normal sign: (Thannilai)

   It is defined as that the 3 humours are in the state of in its own normal character

   Duration: Vadha is normal in koothirkalam (Iyppasi + Karthigai)


2. Aggravation Sign: (Thannilai Valarchi)

   When the 3 humours are provoked in their own location it is called as aggravation sign.

   Limitation: Hatefulness to things which cause aggravation and attraction to things having opposite qualities.

   Duration: Vadha is aggravated in Mudhuvenil Kalam. (Aani + Adi)


Displacement of Aggravation: (Vetrunilai Valarchi)

   Provoked humours displaced from their own locations and aggravated in Vetrunilai Valarchi.

   Limitation:

   Determined by the signs and symptoms of 3 humours and features of body being ill.

   Duration:

   Vadha attains displacement of aggravation in Kaar Kalam. (Avani + Puratasi)
Factors which alter Vadha:

“அப்பொழுது தன்மையும் வளைந்தும்
அப்பொழுது விளக்கன்று வெள் எல்லைந்து
அப்பொழுது முன்னிலை தாது வெப்புமின்
அப்பொழுது எல்லையும் வெள் எல்லைத்
அப்பொழுது அவெற்றி நெட்டுபோக்கக்கால்
அப்பொழுது அவெற்றி வெப்புமின்
அப்பொழுது பிள்ளிகுழு முன்னிலையின்
அப்பொழுது முன்னிலையின் கண்டுபிடிப்பு.”
- முலைகண்டு குறிப்பங்கள்

Above text explains as follows,

⇒ When hot things are mixed with vadha, Vadha’s locations get diseased. (Thannilai Valarchi)

⇒ When cold is mixed with vadha it gets provoked in its own and other locations. (Vetrunilai Valarchi)

⇒ When, hot, oily things are mixed with vadha, it gets neutralized. (Thannilai)

Functions of Vadha:-

According to Siddha Maruthuvanga Surukkam,

- Body Pain
- Numbness
- Tremors
- Dryness
- Emaciation
- Movements
- Rigidity
- Black discolouration of skin
- Paralysis
- Paresis
- Constipation
- Oliguria
- Excessive thirst
- Horiplivation
- Astringent taste in mouth
- Dislocation of joints

**Signs of Hyper vadha :-**

According to Thirumoolar Karukkidai Vaithiyam 600,

“பாதா முடிக்கும் பாதமும் கலந்தமுகள்

கொலைதா மார்ககும் மார்கும் பாதாகும்

ாண்டா மார்கு குறித்து காட்டிகிறது

பாதா குறிக்கும் பாதமும் யானை.”

Vadha produces pain over intestine, constipation spasm of anal sphincter, chillness of body etc.
According to Thanvanthiri Vaitiyam:

“Vadha produces flatulence, joint pain, spermaturia, oliguria, constipation etc. According to Agasthiyar Rathna Kirikidam:

Above versa says that vadha produces flatulence, pain over limbs, joints, burning urination, oliguria etc.

According to Agasthiyar Rathna Kirikidam:

“Vadha produces flatulence, joint pain, spermaturia, oliguria, constipation etc. According to Agasthiyar Rathna Kirikidam:

Above versa says that vadha produces flatulence, pain over limbs, joints, burning urination, oliguria etc.
Agasthiyar denotes that vadha produces knee joint pain, occipital pain, pyuria, dryness of tongue, polydipsia, stomach ache etc.

According to Theraiyar Vahadam:

“குச்சு மன்னி சித்திகக் காற்று முளைக்கு கௌகைத்தொண்டு
மிகு யுடன் சித்திகக் கௌய்யம் தொடர்ச்சியில்
நீங்கக் குறும் கூரை - பற்றியும் சித்திகக் கௌய்யம்
மிகு செய்து சித்திகைப் போக்குமான் தொச்சித்தொண்டு காத்தே.”
- சிற்றநரம் வாகனம்

Hypervadha produces joint pain, head ache, yawning, constipation, nerve paralysis, chillness over body, tremer, emaciation etc.

According to Kaviya Naddi:

“காசவாமர துறைத்திய காற்று குச்சு மன்னி சித்திகக் கௌய்யம்
புதல்பா கோலபடு சித்திகக் கௌய்யம் குயில்
காசவாமர துறைத்திய காற்று பற்றி போக்கினான் கௌய்யம்
காசவாமர துறைத்திய காற்று மன்னியும் கௌய்யம் காத்தே.”
- காவாமர வாகனம்

Hypervadha produces limbs and joint pain, abdominal pain, constipation, Urinary obstruction, fever with rigor, body pain, anal stricture, sweating etc.
According to Agasthiyar Naadi:

“அகாத்மா சாதமும் புத்தியாகாண்டு
சிச்சாலாய்தும் சமானிக்காண்டு
சமநில இலக்கவும் காணியாயாளகம்

வெட்டுதலாக முறுமையாகுமாற்று திகழ்ந்தாகம்.

சாமுசமாயும் வாக்கும் பாதுகாக்கும்

அகாத்மாயும் திகழந்தது காணியாயாளகம்

காணியார் வல்லமுறு குறித்து.”

- அகாத்மா தாண்

Agasthiyar says that hypervadha produces fatigue, malaise, paralysis of body, stomach pain, loss of appetite, spermaturia, diarrhoea, sour taste in the tongue etc.

According to Agasthiyar 2000:

“அகாத்மாய் சாதமும் சிச்சாலாய்தும் புத்தியாகாண்டும் சமநில இலக்கற்றாயும்

பாதுகாக்குமாற்று திகழ்ந்தாகம் காணியாயாளகம்

சாமுசமாயும் வாக்குமாற்று திகழந்தது

என்று சாதமான் சாதமும் பாதுகாக்கும் பாதுகாக்கும்

திகழந்தோம்.”

- அகாத்மா 2000

Vadha produces fainting, chillness over soles, body pain, facial pain, stomach pain, polydipsia etc.
According to Jeeverakshamirtham:

Hypervadha produces emaciation, blackish discoloration of body, tremor, Malaise, Fatigue, flatulence, constipation loss of strength of five sensory organs, insomnia, depression, schizophrenia etc.

Signs of Hypovadha:

According to Siddha Maruthuvanga Surukkam,

Hypovadha produces,

Vague pain all over the body.

Low pitched voice

Difficulty in movements

Reduction in intelligence

Syncope

Symptoms of hyperkaba etc.

FATE OF VADHA:

“அதிதிகீர்மிய குருற்றப் பாதுகாக்க மற்றையில்
பிரிகுறியில் பிக்கும் வேதாதாயினினால்
மருததிகுவம் வாங்கும் விக்கீதம்
நயப் போக்கு ஒரு கொப்பாலால் விளையாட்டு.”

- கட்சிமு ஸடுர்நிலரின்
Above versa denotes that the three humors are eliminated through following ways.

Vadha - Faeces
Pitha - Urine
Kaba - Semen

Different forms of Vadha:

In Siddha classical texts general principles of vadha are divided into ten subsidiary forms which differ from one another in their locations and physiological functions. This is quoted as follows,

“பெய்மண்டு பெய்மண்டு பெய்மண்டு பெய்மண்டு பெய்மண்டு
நெருந்து நெருந்து நெருந்து நெருந்து நெருந்து
நெருந்து நெருந்து நெருந்து நெருந்து நெருந்து
நெருந்து நெருந்து நெருந்து நெருந்து நெருந்து

- புரி கல்லிரி துணைவனை

Piranam
Abanan
Viyanan
Samanan
Udhanan
Nagan
Koomran
Kirukaran
Devathathan
Dhananjeyan
1. **Piranan:** (Heart Centre)

“He who is engaged in devotional activities”

- *Puvi Amman* viiippaaññii

Yugi explains that piranan regulates the respiratory system and digestive system.

2. **Abanan:** (Mooladar Centre)

“Who is engaged in devotional activities”

- *Puvi Amman* viiippaaññii

Yugi denotes that abanan corresponds to the pelvic plexus and is the seat of kundalini energy. It controls executions such as sweating, stools evacuation, maturation, ejaculation of sperms, menstruation and parturition.

3. **Udhanan:** (Throat Centre)

“Who is engaged in devotional activities”

- *Puvi Amman* viiippaaññii

Yugi denotes that udhanan corresponds to the throat and is the seat of kundalini energy.
Above versa says that Udhanan corresponds to pharyngeal plexus in the throat and controls breathing and speech. It is also responsible for the reflex actions like vomiting, hiccough, cough etc.

4. Viyanan: (Forehead Centre)

This corresponds to the naso-ciliary plexus at the root of the nose and base of the skull and controls ‘will’. According to Yugi, it helps in the circulation of energy through the entire nervous systems and helps in the movements of various parts of the body. It is quoted as follows,

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“குண்படுக தருமருதை தனித்திருப்ப

தாயில் எத்தனைப் போனைப் பிரிந்துப்பு

அறுப்பான வலிச்சியா துருத்து கொண்டுநால்

ஆன்காவிக் தில்லியம்பிக்காம் தொடையுட்சிகை”

- புத்த காவளியின் சிற்றகாலம்
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5. Samanan: (Naval Centre)

It corresponds to the solar plexus in the naval region and controls digestion.

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“கால்நிபுந்த காண்புக் காலியா பாறை

மல்லக்கி சங்கிலியா பாறை பலித்தும்

தரநில்த இராமகூர்சயா தத்தவ புதியம்

முன்னு வியாந்த க௎க்கேமங்கா தமன் பகுதியம்”

- புத்த காவளியின் சிற்றகாலம்
Yugi says that by balancing other vayus, six tastes, water and food also being balanced by samanana and get absorbed.

6. Nagan:

“நான் தான் திறனாளன் திறனாளன் திறனாளன்
நீர்த்தான் தன்னிலையாளன் தன்னிலையாளன்
நான் தான் திறனாளன் திறனாளன் திறனாளன்

- புத்த லலிதம் சிங்காராயினி

Nagan is responsible for intelligence of an individual. It helps one to learn all acts. It is responsible for blinking, opening of eyes and raising eye-brows.

7. Koorman:

“கோமரன் கோமரன் கோமரன் கோமரன் கோமரன்
சூழ்புக் கோமரன் கோமரன் கோமரன்
கோமரன் கோமரன் கோமரன் கோமரன்

- புத்த லலிதம் சிங்காராயினி

According to Yugi, Koorman is responsible for blinking, Yawning, closing of mouth and also gives strength. It also helps in closing and opening of eyes, shedding of tears and helps in vision.
8. Kirukaran:

“கோருக்குருவுக் கோருக்குருவுக் கோருக்குருவுக்
கோருக்குருவுக் கோருக்குருவுக்
கோருக்குருவுக் கோருக்குருவுக்
கோருக்குருவுக் கோருக்குருவுக்.

- புத்தி கல்குருவு சிபட்பாளோ

Yugi denotes that Kirukaran is responsible for salivation, nasal secretion and good appetite. It also produces cough and sneeze.

9. Devathathan:

It produces laziness and lassitude while walking. It is responsible for eyeball movements, anger, argument, quarrel etc. Yugi explains as follows,

“குருவுக்குருவுக் குருவுக்குருவுக்
குருவுக்குருவுக் குருவுக்கு
குருவுக்குருவுக் குருவுக்கு
குருவுக்குருவுக்

- புத்தி கல்குருவு சிபட்பாளோ
10. Dhananjayan:

It is responsible for the swelling all over the body. It produces tinnitus in the ears. It leaves the body by blowing up the cranium on the third day after death. It is quoted as,

“தினசரியாக நோய்வாய்ப்பாற்றி வெளியிட்டு காலம்
 சாதாரணமாக நோய்வாய்ப்பாற்றிவைக்க காலம்
 நோய்வாய்ப்பாற்றிவைக்க மேலும் சாதாரணமாக
 நோய்வாய்ப்பாற்றிவைக்க”
- புந்தி கலாயியின் லிட்டிரையல்

Characteristics of Vadha Thegi:

According to pathinenn Siddhar Naadi Sasthiram

“கண்டமலை மாற்றாக சிற்று வேகமான
 காலத்தை முடித்து காலமான விளைவாக
 கண்டமலை காலத்தை விளைவாக பார்வை
 காலமலை விளைவாக சிற்று வேகமான விளைவாக
 கண்டமலை மாற்றாக சிற்று வேகமான விளைவாக”
- புந்தி கலாயியின் லிட்டிரையல்

Vadha thegi has black or red complexion, rough and thickened skin, increased sexual desire, spermaturia, body pain, loss of appetite, flatulence etc.
According to Agasthiyar 2000:

“அக்காஷியர் காந்திக்குறை வங்குகயுறையும் வருந்து

தீனஸ்வா காந்திக்குறை முன்பன் தீனஸ்வா

மறுகயுறை பரப்பும் பற்றும் விஷ்குறையுத்துறை

காந்திக்கு மேல் வாத்து காந்திகு நேரான

சுத்தகயுறை குற்றிக்குறை கூடு புணை

விஷ்குறைச் சுனல் விளங்கும்

சுத்தகயுறை குற்றிக்குறை கூடு புணை

முக்குள்ள மறு விஷ்குறை வாத்திய வழக்கமை.”

- அக்காஷியர் 2000

Vadha thegi has obese structure and has a character of lazy activities, excellent speech, talking lie as like as true, extreme dreams, depression, preferring hot things etc.

According to Tanvanthri Naadi:

“வட்டா விளை குறுகுறைக்குறை மூத் மூத் குறுகுறை குறுகியைக்குறை

முக்குள்ள முக்கியம் பற்றும் முக்கியம் மூழ்கியைக்குறை

தாண் குறுகுறை குறுகியைக்குறை குறுகியைக்குறை

முக்கியம் முக்கியம் முக்கியம் முக்கியம் முக்கியம் முக்கியம்”

- தாண்டாணி தாண

Vadha thegi has an obese body with chillness and tolerates appetite, oligospermia, body pain, anxiety, eager to pungent taste etc, are the characteristics of vadha thegi.
According to Siddha Maruthuvanga Surukkam, Vadha thegi has an appearance of

- Thin tall built
- Large thighs
- Thickened eye lids.
- Round, small, white mixed eyes.
- Cool sight
- Black and white coloured skin complexion
- Black, splitting hairs
- Clear speech sometimes slurring, digressing speech etc.

Vadha thegi has the characteristics of,

- Preference of sweet, sour, salt and hot foods.
- Over eating
- Less strength
- Hatefulness of cold foods.
- Less sexual desire
- Oligospermia
- Unstable stamina, mood, intelligence
- Prefer games, music, exercise, laugh, massage, hunting etc
- Unqualification of everything
- Fighting with others
- Theft
- Loss of fame
• Short interrupted sleep
• Dreams like walking through sky, forest, mountains etc.
• Efficient in poetry etc.

Recognition of Vadha:

One best method of recognising Vadha humour in the human body is “Pulse reading”.

Criteria for Normal pulse:

When vadha, pitha and kaba are in the ratio of 1: ½ : ¼ in the body, it indicates that the man is physiologically normal in health. It is explained as follows.

“அப்பொழுது அருவம் மகர்தீர் விளக்கங்களில்
அப்பொழுது பிள்ளைக் குருதில் அருவி
அப்பொழுது கம்பு தானியக்கிறி காதல்கள்
பிள்ளைக் கம்பத்திற்கு பிள்ளைக்கு மிகவும்”

- துணைக்குரு குரு

Method of Pulse Reading:

According to Thirumoolar Naadi:

“துணைக்குரு அம்கையும் கத்திக் காட்டிலும்
துணைக் காட்டிலும் கத்திக் பானிலும்
பிள்ளைக் காட்டிலும் பிள்ளைக்கு அருவிலும்
துணைக்குரு காட்டிலும் கத்திக் பிள்ளை.”
The above verse says that the physician holds the patient’s hand in Semiprone position. Then relax the hand and palpate the pulse in radial aspect of forearm, one inch below the wrist with the physician’s index, middle and ring fingers.

The pulses felt by the index finger, middle finger and ring finger are vadha, pitha and kaba respectively.

According to Agasthiyar Naadi:

“The verse above says that the physician holds the patient’s hand in Semiprone position. Then relax the hand and palpate the pulse in radial aspect of forearm, one inch below the wrist with the physician’s index, middle and ring fingers. The pulses felt by the index finger, middle finger and ring finger are vadha, pitha and kaba respectively.”

- Agasthiyar Naadi
Location of Pulses:

According to Thirumoolar Naadi

There are ten important parts to read the pulse. They are 1) Ankle joint (dorsalis pedis, posterior tibial). 2) Kamiyam (Femoral Artery). 3) Abdomen (Epigastric Pulse). 4) Chest(apical impulse). 5) Ear. 6) Nose. 7) Neck(carotid). 8) Arm (Radial, brachial). 9) Eye brows. 10) Vertex etc. This is explained as follows.

“காலறைவில் கருத்துக்கள் குறிப்பிட்டு எழுதி
குத்ரை கண்டிப் பிள்ளை நீரில்
கனுகள் நீரில் கண்டிப் பிள்ளை
சாய்த்து பாறை குறிப்பிட்டு பாதிக்கிறே”
- கிருஷ்ணவாதீ

According to Brahmamuni:

Radial pulse is among the best site for pulse reading. This can be quoted as,

“செந்தம் கோடக்குரு குறிபிட்டு
சாய்த்து பாழும் மூடிக்கு
- கிருஷ்ணவாதீ

According to Kannusamiyam:

“அழிபுர்வு அள்ளை பிள்ளை குறிப்பிட்டு
அழிபு விலங்கு நீண்டு - கிருஷ்ணவாதீ
சாய்த்து பாறை விளை தொட்டுத்தொட்டு
சாய்த்து காய் புழுவியும்
- கிருஷ்ணவாதீ
Kannusamiyam also denotes that the radial pulse is the best among others. Because the radial artery is superficial than other vessels.

Selection of Hand:

The pulse should be noted on the right hand for males and left hand for females. This is explained as follows,

“அமாமல் மூடியாக்கத்து வளங்கக் காணு
மனையக்குக் குறுமக்கு வசதக் காணு.”

- பார் குறும்பு மூடியாக்கு

According to Kannusamiyam:

“நிற்பங்கால் மககுகுறுக் கிளழாக்கச் செய்தால்
அமாமல் மூடியாக்கத்து குறும் - தம்பாத்து”

- கம்பூத்தாக்கும்

According to Paripoorna Naadi:

“பாத்திமே பெண்களக்கு அனைக்கும்
பிள்ளையம் பாத்திமேம் குறு கேட்கு”

- பார்புமா குறு

According to Thanvanthiri Naadi:

“இம்மாமல் புத்தக்கு வளங்கக் காணும் பல்லங்கு
அமாமலை பைல்லாக்கத்து வசதக் காணும்.”

- கவன்குறும் குறு
According to Agasthiyar Ayurvedham 2000:

“அம்மா எம்மாக்காடு அவிசயம்பட்டியில் காடு”

According to Gunavahada Naadi:

“மார்கலநந்தோறாக 
அவிசயம்பட்டியில்
“ணங்க்காடு கருநாற்காலூர்
அவிசயம்பட்டியில்”
- காண்கால் ராம்

Pulse determination in either sex depends upon the position of the naadi koormam. It is upwards in females and downwards in males.

Character of Pulse:

According to Yugi Vathiya chinthamani

“வென்றியில் வரிசையுடன் காண்டது 
பிரித்தொன்றானால் காடும் விளக்கம்
அவிசயம்பட்டியில் விளக்கம் எடுத்து காண்டு
சேர்த்து குறுக்குருவால் தேவாரம் விளக்கம்
ஆகியே கருநாற்காலூர் விளக்கம்
முன்னிறந்து பயிரில்வினை 
அவிசயம்பட்டியில் விளக்கம்
அவிசயம் விளக்கம் காடுக்கு காண்டு”
- புது காண்கால் சிற்றுண்டிய
Vadha naadi resembles the cradle of a baby, movement of a frog, snake, tortoise, bird etc.

**According to Siddha Maruthuva Noi-Nadal Noimudhalnadal I**

“அசைளி அல்லது விடுமரி மகிழ்ச்சியான சக்கரம் அக்கம்”

“அசைளி அல்லது விடுமரி மகிழ்ச்சியான சக்கரம் அக்கம்”

- கிரா மகாத்மா விஷால் பந்தம்
- விஷால் பந்தமல் கிரா கிரா கிரா - I

Vadha naadi resembles the walk of swan, hen, peacock, cuckoo etc.

**According to Thirumoolar Karukkidai Vaithiyam-600**

“இத்தையம் அக்கம் சார்ந்ததன் நடுவில்லம்”

- கிரா கிரா கிரா கிரா கிரா - 600

According to Agasthiyar Ayurvedham 1200

“அசைளி விடுமரியான மகிழ்ச்சியான சக்கரம் அக்கம்”

- அக்கமல் அக்கமல் அக்கமல் 1200
According to Paripoorna Naadi:

For males, vadha naadi resembles like a walk of swan, hen, peacock, cuckoo etc, and for females resembles like a crawling snake. It is quoted as,

“காலாறன புற்றிக்க வாக்காக
காலாறன பெரியாடையும் அட்டன் மையாசு
தங்களை சேருந்தால் காது கோசாண்டான்”

“பார்காலிய பெரியாடையும் குடுக்கு
பழங்கால் பார்காலியையும் குறுக்கு
காலாறன் மாது சாப்பும் பெரங்கால்”

- பார்காலிய

According to Thanvanthiri Naadi:

“காலாறனை பறியாம் மாதும் குறுக்க பெரியாடையும் என்னை பார்காலியை
காலாறன் மாது சாப்பும் பெரங்கால் துளுக்கை”

- காலாறன்

Vadha naadi resembles the walk of swan, hen and peacock.

According to Agasthiyar Mani 4000

“இயார் காலாறன் பார்காலியா குதுக்குக்கை
நுழை நுழைவாய் ஆடீபரம்” (9)

- அகஸ்தி மணி 4000
Above verse explains that vadha naadi feels like the movement of a frog, snake, leech and a cradle of a baby.

Influence of Vadha in a day, week and month

**According to Yugi Vaithiya Chinthamani**

"நூற்றுணி காலவருள் கடவு பற்றும்
 குருவையாக மகரசோன் கும் பற்றும்
--------------------------- கேது விளக்கு
 முதலில் கான்நாய் யாரு பற்றும்."

- புரே வேதீயம் சித்தாசாக்கி

Vadha is specialized in a day from 6AM to 10AM and 6PM to 10PM

According to Vaithiya Sarasangiraham:

"காலவப்பு வாழ்கு கழகவின் பற்றும்."

- வேதீயம் சாத்வாசேனம்

**According to Siddha Maruthuva Noinadal Noimudalnadai I**

"கீழேகால் பாத் ஏர்கள் என்று
 பிரகாசம் பாத் ஏர்கள் என்று
 தோன்றும் பாத்திரங்கள் முன்னே பற்றும்
 கூடும் எள்ளல்லாம் முதல் பிள்ளை"

- நிறை வெள்ளைக் காலகாலங்கூர் கும் பற்று சாக்கி - I
According to Thirumoolar:

“காவலன் காவலன் காவலனே புது
நடுவின் முதல் நிலையில் அம்மலது அலுவல் நடுவின் முதல் பிள்ளையே
அக்காலம் நிலைப்படுத்துக்கோள் முறை.”

- சீமானியம்

Thirumoolar explains that vadha is specialized in edakalai, ie; Monday, Wednesday, and Friday. Vadha is also specialized in Thursday during growing moon day. The following also explains this as,

“சான்றால் காவலனே முதற்
ஹாருண்முகக் கூடியம்”

“சான்றால் காவலனே புது
காவலன் பக்தி குழுக்கு 
சான்றால் காவலனே முதற் கூடியம்”

- சீமானியம் சித்தம் சீமானியம்
According to Siddha Maruthuva Noinadal Noi Mudhalnadal I

Vadha gets specialized during four months from Aadi to Iyppasi. This is explained as follows,

“அந்தமாள் மாமு துவாரம் நூற்றாண்டு அரிய மார்டிகா குறிப்பிட்டு
என்று வாக்கும் மருந்துகள்”

- இதற்குச் செய்யப்பட்டு வெளியே வந்து வெளிப்படுத்தப்பட்டு - I

Recognition of Vadha in other ways:

“உடலின் செந்தல்யான நெருகுள் வீச்சில் வெள்ளமலைகத் கூறுவேறுபடுத்தி
நிலையில் வெள்ளானது வெள்ளானது வெள்ளானது
நிலையில் வெள்ளானது வெள்ளானது வெள்ளானது
அம்மாம் பதிலாக வெள்ளானது அம்மாம் பதிலாக வெள்ளானது”

- அகதூரின் அம்மார் 1200

Above text says that vadha is recognized when a patient is asked to eat cucumber, his body becomes chill. That time, the pulse reading should be vadha naadi.

Characteristics of Vadha diseases:

“வெள்ளம் வெள்ளானது வெள்ளானது வெள்ளானது
வெள்ளம் வெள்ளானது வெள்ளானது
வெள்ளம் வெள்ளானது வெள்ளானது
உடலின் செந்தல்யான நெருகுள் வீச்சில்
நிலையில் வெள்ளானது வெள்ளானது
நிலையில் வெள்ளானது வெள்ளானது
அம்மா பதிலாக வெள்ளானது
அம்மா பதிலாக வெள்ளானது”

- பம்பியன் செய்யாள முழு கணினியம்
According to above verse, vadha diseases have the features of tremors, headache, anemia, sleep, giddiness, pain and numbness over limbs, dryness of the body etc.

Classification of Vadha diseases:

1. According to Yugi Vaithiya Chinthamani

“ஏழையம் மாற்றும் நாய்ச்சகனை
நாய்ச்சகனை குறுக்கிய வைரலைக்கு விளங்கும்”

- புகி வாய்ச்சு விசாக்கம்

“கன்னர் காண்மை வைரலைக்கு”

- புகி வாய்ச்சு விசாக்கம்

Vadha diseases are classified into 80 types.

“ாம்பா காண்மையாள் பக்தி வந்து”

- புகி வாய்ச்சு விசாக்கம்

But Yugi describes vadha diseases into 84 in number while concluding the section of vadha diseases.

2. According to Agasthiar 2000

“கன்னர் காண்மையாள் விசாக்கம் பக்தி வந்து”

- அக்கஸ்டியர் 2000

Vadha diseases are classified into 80 in number.
3. According to pararasasakaram – Vadha roganithanam

“Vadaha diseases are classified into 80 types according to the region of distribution.

4. According to Agasthiyar Ayurvedam 1200.

“Vadha diseases are classified into 80 types.

5. According to Theraiyar Naadi:

“Vadha diseases are classified into 84 types.

6. According to Agasthiyar Ratina Kirikidam

“Vadha diseases are classified into 84 types.

7. According to Sekarasasekara Vaithiyam

“Vadha diseases are classified into 85 types.
8. According to Rathina Surukka Naadi

“பாதுந்தை தமிழ்முறை செய்முறை கையர்”

- பாதுந்தை தமிழ்முறை கையர்

Vadha diseases are 84 types.

9. According to following tests

Asthanga Sangiraham

Noi Nadal Noi Mudhanadal – II

Jeeva Rakshamirtham

Thanvanthiri Vaithiyam

Roha Nirnaya Saram.

Describes vadha diseases into 80 types.

10. Texts

Written by Krishnar, Bharathrajoy, Boja, Athireyar also classify vadha diseases into 80 types.

11. Texts

Such as – Anubhava Vaithiya Deva Rahasiyam, Chinthamani are classified vadha diseases into 84 types.
PITHA THALAI NOKKADU

Pitha thalai nokkadu is one of the Vadha diseases described in Yugi Vaithiya Chinthamani.

DEFINITION:

It is a type of vadha disorder mostly affecting nasal mucous membrane and Para nasal sinuses which produces severe pain in frontal and maxillary region, sneezing and otalgia.

SYNONYMS:

1. Neerkovai
2. Mookku noi
3. Mookku neer Paichal
4. Mookkadaippu
5. Peenisam

AETIOLOGY:

1. According To Yugi Vaithiya Chinthamani,

"vd;dnthj;jhbdz;gjhFk;
 ,fj;jpnjkdjpjh;Fsf; bfa;a[khW
gpd;dnthgjdjida nrhue; bra;J
 bghpnahhs; fs; gpukziu Jhtl zpj;Jk;
td;dnjtw;brhj;jpr; nrhue; bra;J
 khjgpjhfUit kwe;j ngh;f;Fk;
 fd;dnjntjj;jiepe;i jbra;hjy;
 fhajjpww; fye;jpLnthje; jhnd
 -afpitj;jpaprpe;jhkpzp."
In Yugi Vaithiya Chinthamani as there is no specific etiology for pitha thalai nokkadu, causes for all types of Vadha diseases are suitable to this disease and are described. People who have behaviours like theft, unrespect to elders, ignorance of vedhas, will be affected by Vadha diseases.

"jhbdd;w frg; nghL Jth; g; g[ iwg; g[
    rhjfkha; be"; RfpDe; rikj; j td; dk;
Mbdd; w thwpdJ bghrpj; j thYk;
Mfhaj; njwyJ Foj; j thYk;
ghndd; w gfYf; f kpuhtp Hpg; g[ 
gl; odpna kpf[Wjy; ghu bka; jy;
njbdd; w bkhHpahh; nkw; rpe; ij ahjy;
rPf; fpukha; thjkJ brdpf; Fj; jhnd
    - a{fp itj; jpa rpe; jhkzp

Intake of food with bitter, astringent, pungent tastes, drinks, day sleep, insomnia, starvation, sexual desire etc., will readily cause Vadha diseases.

2. According to Sabapathy’s Kaiyedu,

“tspbU fha; fpH'; F tiutpyh japyy; nfhiH
    Kdpjaph; nghd; kpfF; F Kiwapyh t[z;o nfhly;
Fsp; jU tspapd; nwf'; Fdp; g[w tpyty; bgz; oh;
    fsbpjU Kaf; fk; bgw; nwhh; fobray; fUtpakhky;”
    -rghgjp ifnaL

Diet which provoke Vadha curd, inappropriate diet, cold exposure, increased sexual desire cause Vadha diseases.
3. Deeds as a Cause:

One man is said to be diseased in relation with his deeds, which means the bad activities done in his previous and present births.

"ngU kpsik apd;gk; gpzp \g;g[ rhf;fhL MW'; fUtpaikg;g"]
-rpj;j kUj;Jt neha; ehly; neha; Kjdhly;-

So the genetic imprints are probably the results of deeds of the individual and result in genetic and hereditary diseases. According to Agasthiyar Kanma Kandam 300

"E}byd;w thjk; te;j tifjhndJ
Jdikaha; fd;k;jpd; tifiaf; nfS
fhypny njhd;wpaJ fLg;g njJ
if fhupy; Klf;fpaJ tPf;fnkJ
nfhypny gLf;fpd;w tpUl;rkhd
FHe;ij kue;jid btl;ly;nky; njhy;rPty;
ehtpny rPtbre;J fhy; Kwpj;jy;
ey;y bfhk;g[jiH Kwpj;jy; eypj;jy;fhnz" (56)
-mfj;jpah; fd;k fhz;lk; - 300

Vadha diseases are precipitated by deeds such as cutting or denuding of green young living trees, breaking the legs of living beings etc.,
4. According to Pararasa Sekaram - Vadha roga nithanam:

“bjHpy; bgW ifg;g[f;fhh;j; jy;Jth;j;yy; tp";RfpD"; nrhWk;
giHa jhk; tuF kw;iwg; ige;jpid aUe;jp dhYk;
vHpy; bgwg; gfY w';fp ,utdp Yw';fh jhYk;
kiHePfh; FHyp dhns thj';nhf gpf;F'; fhnd"
“fhznt kpf[z; lhY'; fUJgl; odptpl; lhYk;
khid ahh;fz; nkhf kwf;fpD kpFe;jpl; lhYk;
Mzt ky'';f lk;ik a'';nd tplhj jhYk;
thDjd; kley; yhns thj';nhf gpf;F'; fhnz"

-guuhr

Vadha diseases are caused by intake of bitter, astringent, pungent taste foods, previous day rice, ragi, daytime sleep, insomnia, over eating, starvation, excessive sexual desire, anger, anxiety etc.,

“ghhpdpw; gag;gl; lhYk; gyUld; nhgjp; jhYk;
fhbudf; fUfp nahof; fGkuj; Jujjp dhYk;
Vh;bgW jdJ be";rp; kpfj;Jf;f kile;jpl; lhYk;
ghhpa fhw;wp dhSk; glhpDk; thj'; fhkq;"

-guuhr

Vadha diseases are caused by intake of bitter, astringent, pungent taste foods, previous day rice, ragi, daytime sleep, insomnia, over eating, starvation, excessive sexual desire, anger, anxiety etc.,

Fear, anger, depression, excess, physical activities, weather change, abnormal diet, excessive water intake, relax in evening and excessive intake of old ghee, cause Vadha diseases.

5. According to Mannurukkiyam:
“Fsphr;rp[a;k; beha;k;ika[k; Kilad t[z;zy;
g[zh;r;rp kpF;jy; cwf;fk; ePf;fy;
khRk; ePU; MR gLjy;
jh';fh Kaw;rpfs; jifawr; bra;jy;
FUjp Fiwjy; epidt[ kpFjy;
Jah; rpdk; Kjypa kpFg;gly;
toa Kjy bkype;J nghjy;
fLk; gpzpaWjy; mfl bkypjy;
cs;SWg;gpw; rpy eP';fy; tPH;jy;
fUtarpw; g[z;gly; cly; EW';fpLjy;
caph;epiy jhf;fy; cz;zh jpuj;jy;
clk;gpy; ghy;fs; kpff; Fiwe;jpLjy;
czh;r;rp epiyfs; cwj; jhf;fpLjy;
vd;g[ rpijjy; e";R kUe;Jzy;
vd;gt[k; gpwt[k; tspa neha;fl;
fog;gilahf mw pjy; eynk“
- khd; KUf;fpak;

Intake of cold, oily foods, excessive sexual intercourse, loss of sleep, unhygienic water, Excess work, blood loss, anger, depression, loss of weight, prolonged illness, disease of internal organs, ulcer cervix, Trauma to genitalia, starvation, deficiency of hormones, trauma to nerve plexus, bone degeneration, toxic medicines, etc., cause Vadha diseases.

6. According to Jeeva Rakshamirtham:

Vadha diseases are caused by intake of bitter, astringent, pungent taste foods, hot foods, intake of diet in untime, loss of sleep, excessive exercise, loud speech, excessive vomiting, loose stools, fear, depression, over thinking, increased sexual desire etc.,
7. According to Theraiyar Vahadam:

“btapppy; elfif ahYk; kpfj;z;ZPh; Fof;if ahYk;
bta;apiH kfsp dhisr; nrh;ejD gtpf;if ahYk;
igant cz;if ahYk; ghfw;fha; jpd;if ahYk;
ijany thjnuhfe; rdpf;F bkd; wwpe;J bfhs;ns”(16)

Walking during noon, excess intake of water, increased sexual intercourse, late time intake of food, eating bitter gourd etc., cause Vadha diseases.


Due to various food and misbehaviour, the alteration in five forms of Vadha (ie Vayu) produces Vadha diseases.

9. Exaggeration of Vadha humour as a cause According to Thirukkural:

“kpFD’; FiwapDk; neha;bra;a[k; E]nyhh;
tsp Kjyh btz;zpa \d;W”

....jpUf;Fws;.

The three humours which increase (or) decrease causes diseases Vadha diseases are produced by hypervadha, due to any of the above etiology.

According to Kannusamiyam:

“kw;W ey;thjK khwhj gpj;jfgk;
The alteration in three humours produce diseases. According to Theraiyar Naadi, “cgj;jpu bkhd;Wkpy;iy clypiy tpahjpapy;iy etkjha; thjkp";rpy; elf;fpLk; tpahjpa[z;L” ......njiuah; eho.

Exaggerated Vadha humour causes Vadha diseases.

10.Daniel of 14 urges:

Reflexes are essential for the normal functions of the body if there is any disturbance or suppression, it leads to pathological State.

Thummal: Sneezing.

If this reflex is suppressed the following clinical features would occur “Jk;kiy jiljhd; bra;jhy; bjhFj;jpLk; jiyneh a[z;lhk; ,k;ikape; jphpa bky;yhk; ,ay;g[l; bjhjp;jyhFk; brk;ikapy; Kfk; typj;jy; jPunt aiuth j’;fs; btk;ikahk; tha[ bfhz;lhy; tpise;jpLk; Fz’;fshnk”

Head ache, Pain over the sensory and motor organs, facial palsy, hip pain etc.,

Nithirai: Sleeping.
If the nithirai is suppressed by any cause it will lead to the following signs and symptoms.

"epj;jpiu al';fpg; nghf
   epfH;e;jpL fUk'; nfsha;
   epj;jKe; jijf; fdg;g[
   epd;wfz; nzhj yhfpr;
   rpj;jj;jpw; brtpLz; lhfpj;
   bjspthW ngr;R Kz;lhk;
   cw;wnjh Ywf;fj; jd;dp
   Yz;lnkhh; tha;tpd; Tnj"

Heaviness of head, red eye, deafness, blabbering and Vadha related diseases.

**Vizhineer - Tears**

If we control the tears it will produce some signs and symptoms as follows.

“tpHpadpy; ePu lf;fpy;
   tpjkhd ,Uj;J nuhfk;
   tHpgL gPep r';fs;
   te;jpL nej;u nuhfk;
   mGfpLk; rpurpy; nuhfk;
   mjDld; thj'; Toy;
   gGJly; gz;zpF; Fd;kk;
   gw;wpL'; FzK Kz;nl"

Cardiac diseases, Sinusitis, eye disease, necrotic ulcers over the scalp and peptic ulcer.

11.**According to Noi Nadal Noi Mudhalnadai Part - II,**

a) kpf Fsph;e;j ePlug; gUFjy;.

b) gdp my;yJ Fsph;e;j fhw;wpYPLgly;.
c) g\(\text{if my;}\) yJ g\(\text{Gjp goe;}\) Js\(;s\) fhw;iwr; Rthrpj;jy;/vjph; fhw;wpY; bry;yy;.

d) Jk;iya[z;L gz;qk; bghUs;fis Kfh;jy;.

e) cly; btg;gkile;jpUf;Fk; nghJ laj;ijg; bgUf;ff; Toa Fsphe;j ePhpy; jiY KGfy;.

f) Fsphe;r;rpahd bghUl;fis cl;bfhs;sy;.

g) jd; njrky;yhJ/ ntW ehLfSf;Fr; brd;W m;F rpyrkak; mRj;jkhd ePiu cgnahfpg;gjYk;/

h) fz;ZPh; tojy;/ the;jp Mfpatw;iw jLg;gjpdhYk;.

i) mjpfk; cuj;Jg; ngRtjhYk;.

j) mst[f;F kpFe;jhtJ Fiwj;jhtJ epj;jiPu bfhs;syhYk;.

k) md;wpa[k; neha;f;F Jiz aha; ,e;neha; cz;lhFk;.

l) nahf epiyatYs;s nghJ fPH; tha;f;fdy; kpFjpaheFp jiy \(\text{is tiuapw;}\) brd;W m;F bgt;gj;ija[z;lhFp \f;filg;g[ nehia cz;lhFk;.

**Reading lines between Yugi’s Poem:**

```
“tz;ikaha; epw;fpd;w \f;F jhDk;
  toe;Jnk ePh;g;gha;e;J jiy fdj;J”
btz;ikaha; tha;ePh;jjhd; kpf\(\text{iwp}
  kPwpna cz;zhf;ifg; gw;wp behe;J
jpz;ikaha; brtpjdpny Fw;wYz;Iha;
  rpuRjhd; ghukha kpf; fdf;Fk;;
fz;ikaha; fz;nzhL g[Utk; Fw;Wk;
  fdkhd gpj;ji;jpd; wiY nehf;fnI”
  ....a\{fp itj;jpa rpe;jhkzp.
```

According to Yugi’s Poem, the clinical features of Pitha thalai Nokkadu are,

1) Rhinitis
2) Heaviness of the head
3) Exessive salivation
4) Throat Pain
5) Pharyngitis
6) Otalgia
7) Pain in Para nasal Sinuses
8) Pain in eyes and eye brows.

Mukkutra Verupadugal pathology:

Excessive intake of Vadha promoting diet and habit which induces the pitha kutram. This type of pitham produces more heat goes to head resulting in running nose, pain in frontal and maxillary region, pain in eys and eyebrows sneezing and sore throat.

So the changes of diet and habit which increases Vadha (or) Kaba produces the clinical symptoms of Pitha thalai Nokkadu.

DIAGNOSIS:

To deal one disease and confirm what is what, diagnososis is made out. It is very helpful to take over. Correct line of treatment and assess the progress of the disease. In Siddha medicine, the diagnosis is based upon, the following methods.

Poriyal aridhal (Inspection)
Pulanal aridhal (Palpation).
Vinadhal (Interrogation).
Envagai thervugal.

This also comprises some other parameters to confirm the diagnosis. They are,

Thinai (Land and Place)
Kaalam (Seasons)
Udal Vannai (Body Strength)
Mukkutrangal (Three life principles).
Udal Kattukal (Seven body structures)
PORIYAL ARIDHAL:

Examination of patient five organs of perception by physician’s sensory organs. They are,

Mei - Skin
Vai - Tongue
Kan - Eys
Mooku - Nose
Sevi - Ear

In Pitha thalai nokkadu, Mei is not affected. The affected other Gnanthiriyam produces, Reddish and lacrimation from kan Running nose from mokku and otalgia in sevi.

PULANAL ARIDHAL:

Examination of a patient’s five sensations by a physician. They are,

Ooru - Touch
Osai - Sound
Suvai - Taste
Oli - Vision
Natram - Smell

In Pitha thalai Nokkadu, ooru is not affected. But there is diminished sensation of sound, taste and smell.

KANMENTHIARIYANGAL: (MOTOR ORGENS)

Examination of a patient’s motor organs. They are

Kai - Upper limbs
Kal - Lower limbs
Vai - Mouth
Eruvai- Rectum
Karuvai- Uterus

IN PTN Vai is affected and produces low pitched voice.

**VINADHAL:**

The physician interrogates the patient’s name, Age, Occupational, history, residence, family history, socio-economic status, habits, complaints of the illness, past history of illness, treatment history etc.,

**THINAI (LAND AND PLACE):**

Geographically, land is divided into five regions. They are,

- **Kurunji** - Mountain and its surroundings
- **Mullai** - Forest and its adjacent area.
- **Marutham** - Fertile fields and its surroundings.
- **Neithal** - Sea and its surroundings.
- **Palai** - Desert and its surroundings.

Each region has its own characters, which influence the physical, mental, economic, occupational and cultural activities.

“Fwp”;rp epynk thjkjh’; TWk; ghiy gpj;jkh”;
brwpe;j kUj”; rpnyjkkjh”; rpnyj;k thj Ky;iyajhk;
epiwe;j bea;jy; thjgpj;jk; epy’;f sjid kaf;fhap
Yiwe;j tpahjp fye;jpUf;F Kgha kwpe;J bra;tpnu”

.....jd;te;jphp eho.

Above verse says that Vadha provokes in Kurunji, Mullai and Neithal regions are causes Vadha diseases.
“Ky;iy epyj;jank \hepiu nktpDkt;
bty;iy epiyj;gpj;j bk';FW';ffhz; - ty;iybadpd;
thjkhHp ahjhtz; kd;W kittHpneha;g;
ngj bkhHp ahjiwag; gpd;gl”

.....gjhh;j; Fz rpe;jhkp

Above verse says Mullai region is a land for Vadha disease.

bea;jdpy nkYg;ig eP';fh JwpDkJ
bta;jdpy nkj';F tPlhFk; - bea;ij;
kU”;Fliy kpff;fhF;Fk; ty;YWg;ig tPUf;Fk;
fU”;Fliyf; fPHpwF;F”; fhz;

- gjhh;j; Fzrpe;jhkp

Above poem explains that Vadha disease are occurred in neiithal region.

According to Parthartha Gunachinthamani:

ghi;epyk; nghw; gliu gpwg;gpF;
nkiyepy kpahJ tphpj;jw;F - ntiyepy
Kg;gpzpf;F kpy;yk; Kiwna atw;wfhk;
vg;gpzpf;F kpy;yk; bjd;.

Above verse says that Palai region is a place for Vadha, Pitha and Kaba.

According to Thearan Karisal:

“cyk; kPdp kd;cjh ke;jphp
cjshhplk; cwnt ck;guhdplk; brhd\th;
c";Fyh bthz;zhnj cikaplkh kij
c”; brhzhJ.”

.....njud; fhpry;

Theraiyar explains that Neithal and palai regions are the places for Vadha diseases.
So, Pitha thalai Nokkadu occurs in Kurunji, Mullai and palai regions. Palai indicates the altered other four regions also.

**KALAM: {SEASONS}**

According to Tamil civilization, the year is divided into six seasons, each comprises two months.

```
"kUtpa fhnu Tjph; Kd;gpdpw; gdpf nshL
tputpa ,isa ntdpy; tpiue;jpL Kjph;e;j ntdpy;
kUt[kh tzpna ahjp kw;wpuz; ouz;L khjk;"

.....Nlhkzp epfz;L.
```

Above text quote that the six seasons are,

- **Karkaalam** - Avani, Puratasi
- **Koothir Kaalam** - Iypasi, Karthigai
- **Munpani Kaalam** - Marhazhi and Thai
- **Pinpani Kaalam** - Masi and Panguni
- **Elavenil Kaalam** - Chithirai and Vaihasi
- **Mudhuvenil Kaalam** - Aani and Aadi.

According to Thanvanthiri Naadi.

```
"khh;fHpKjy; ehd;F khjkKk; thjkhkFk;
nghkhp Kjy; ehd;F khjkKk; gpj;khkFk;
nrudpKjy; ehd;F khjkKk; rpnyj;kkhFk;
ghhkpir awpe;J bra;a Ma[s;E}y; XJthnu"

......jd;t;ejphp eho.
```

Thanvanthiri Naadi quotes that Vadha diseases occur in Marhazhi, thai, Masi and Panguni

According to Yugi Vaithiya Chinthamani,
Yugi says that vadha diseases occur in Iypasi and Karthigai due to chill weather.

**Madhuvenil Kaalam:**

\[
gJkj;iig; g\{f;fitf;Fk; ghDkpff; fha[k; \\
KJntdp ypw;g\{tpePh; Kw;Wk; - fJbkd \\
tw;Wk; fgk@Fk; tha[kpFk; thH; khe;jh;f; \\
Fw;weypf; nfjpbd; nwhJ
\]

Above poem explains that Vadha diseases occur in Mudhuvenil Seasons (ie. Aani and Aadi)

**Karkaalam:**

\[
btspr;NHy; jl;gj;ij tp";RKl; Nl;il \\
mspj;JhpF;F neh;bra[khy; ahf;iff; - fspbrhp \\
td;dp@Fk; fhuzj;hjy; thjhjp Kj;njhlk; \\
ed;dpiyapy; epy;yh etpy;.
\]

This poem states that Vadha diseases occur in Kaarkaalam., due to chill air penetrating the body.

Mudhuvenil and Kaarkaalam alter the climatic conditions and change the land, water,plants, animals and human beings which modify the physiology and pitha thalai Nokkadu.
**UDAL VANMAI:** [Body Strength].

The Stamina, Strength, Vitality of the body is classified into three types.

Eyarkai Vanmai

Kaala Vanmai

Seyarkai Vanmai.

1. **EYARKAI VANMAI:**

It occurs naturally due to three characters named as sathuva, rajo and thamo which is implant in a man by birth. It refers to inherited immunity by birth.

2. **KAALA VANMAI:**

It refers to the body’s Vigor present in different ages.

3. **SEYARKAI VANMAI:**

The body’s vigor formed naturally by the three characters Sathuva, rajo and thamo is maintained by the diet, Physical activities, Medicines and Yoga practices. It refers to the stability of the body’s strength induced by above things.

In diseased condition, the natural body strength gets affected, there by, seyarkai vanmai is induced by Medicines, diet and yoga practice.

**MUKKUTRANGAL:**

According to Yugi Vaithiya Chinthamani.

"eof;fpd;w thjgpj;j nrl;g \d;W
eykh tpjpd;gphpd g[l;lf; nfsha;

tof;fpd;w thjkJ tha[epiy fy';fp

kj;jpakh kf;fpdpa[ khh;f;f knhk
khf;fkhk; gpj;je;jh df;fp dphia

krf;fp itj;J kha;ifa[ld; tUe;jp itf;Fk;

J)f;fe;jhd; nrl;gkJ rykpF ahf;fpj;

Jthu';f nghWkpiI tplhkdpw;Fk;:"

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Vadha, Pitha and Kaba are the three life principles. They have multiple significance in a body.

**VADHA:**

Vadha represents Vayu, mind, dryness, pain, flatulence, sensitiveness, lightness and also air. Vadha is classified into ten forms. Vadha comprises the function of motor and sensory nervous system. The changes of Vadha in Pitha thalai nokkadu are,

- Pranan - Affected
- Abanan - Not affected
- Viganan - Affected
- Udhanan - Affected
- Samanan - Affected
- Nagan - Not Affected
- Koorman - Affected
- Kirukaran - Affected
- Devethathan - Not Affected
- Dhananjeyan - Not Affected

Affected pranan produces nasal congestion and difficulty in breathing.

Affected Viyanan produces head ache, heaviness of the head, Pain (or)

Tenderness over the maxillary region.

Affected Udhanan produces sneezing and cough with expectoration

Affected samanan produces loss of appetite.
Affected Koorman produces itching and watering of the eyes.

Affected Kirukaran produces sneezing, profuse watery nasal discharge.

**PITHA:**

Pitha represents gastric juice, bile, energy, heat, inflammation, anger and irritation. Pitha signifies the function of thermogenesis, metabolism, digestion, formation of various secretions and excretions and also gives colour to skin and blood. Five types of pitha and their findings in Pitha thalai Nokkadu are,

Anarptham - affected.
Ranjagam - Affected.
Alosagam - Not Affected.
Prasagam - Not Affected.
Sathagam - Affected.

Anarpitham in Pitha thalai Nokkadu is affected which produces loss of appetite.

Ranjaga pitham may or may not be affected according to the patient’s haemoglobin level.

Sathagam is affected and there by produces difficulty in performing usual works.

**KABA:**

Kaba represents feelings of cold, heaviness, mucous discharge and saliva.

Five forms of Kaba and their findings in Pitha thalai nookadu are,

Avalambagam - Affected
Kilethagam - Not affected
Pothagam - Not Affected
Tharpagam - Affected.
Santhigam - Not Affected

Affected avalambagam produces cough with expectoration.

Affected tharpagam produces irritation and watering of the eyes.

**UDARKATTUGAL:**

They are the basic body structures, which constitute the entire body. They are seven in numbers. Affected body structures in Pitha thalai Nokkadu are,

Saram - Affected
Senneer - Affected
Oon - Not Affected
Kozhuppu - Not Affected
Enbu - Not Affected
Moolai - Not Affected
Sukkilam/
Suronitham - Not Affected.

Affected Sacram produces tiredness of body.

Affected Senneer produces Eosinophilia and raised ESR.

Oon and Kozhuppu may or may not be affected according to the patient’s nutrition and general built.

**ENVAGAI THERVUGAL:**

The unique diagnostic principle in Siddha system of Medicine is Envagai Thervugal. Siddhars describe in many of their literatures that envagai thervugal is an instrument for a Siddha Physician to examine and diagnose a patient. The following paremeters are adopted to diagnose a patient.

Naadi (Pulse)
Sparisam (Palpation)
Naa (Tongue)
Niram (Colour)
Mozhi (Speech)
Vizhi (Eyes)
Malam (Faeces)
Moothiram (Urine).

This has been explained as follows,

“eho !;ghprk; eh epwk; bkhHp tpHp
kyk; \j;jpukpit kUe;J tuha\jk;”
“bka;f;FHep epwe;bjhdp tpHphehtpeykyk; iff;Fwp”

....njiuah;.

According to Agasthiyar Mani 4000,

“.;mfj;JW nehiaf; fuj;jhk yfk; nghy;
gFj;jwtph; ehog;ghprk; bjhFj;j epwk;
fl;L tifr; brhy; bkhHpzf; fz;lky \j;jpuk;eh
vl;Ltif ahYkwp tPh;”(6)

....mfj;jpah; kzp 4000.

1. PULSE:

Among envyagai thervugal the chief parameters for diagnosis is pulse reading. The Siddha physician’s fingers resemble a binanueal Stethoscope.

Pulse can be felt at one inch below the wrist on the radial artery by palpating it with physician’s tip of index, middle and ring fingers corresponding Vadha, pitha and Kaba respectively.

The normal ratio (1 : ¼ : ¼ ) of vadha, Pitha and Kaba is altered in various diseases. In Pitha thalai Nokkadu, the following pulse may be seen,

Hazards

Pitha Vadha Naadi
**PITHA VADHA NAADI:**

“rpwg;ghd gpj;jj;jpy; thjeho
    nrhpYW - jhJ el;IkJu gPil
ciwg;ghfr; brhpahikf;Fd; k”;Niy
    a[w;w Ru';fpuzp tapw;wpiur;ry; ke;jk;
miwg;ghd X';fhu “g[wePh;f;nfhit"
    Mahrkpuf;f bkhL kaf;f \h;r;ir
Kiwf;fha;t[ tp# tPf;fk; \lytha;t[
    Kulhd neha;gyt[ KLFk; gz;ng.”

.....rfj eho.

**PITHA KABA NAADI”**

“gz;ghd gpj;jj;jpy; nrj;Jk eho
ghprpj;jhyj;jpRukpisg;g[ <is
fz; fhJ ead kyk; ePUk”;rs;
    fdtapW bghUky; k”;rs; neha; fz;nzht[
cz;nghJ kWj;jy; uijj tpg;g[Ujp jhDk;/
    ciskhe;ij ‘gPdrKk;’ uijj tPf;fk;
ez;ghd fhkhiy nrhil btg;g[
    eqfp te;j gy gpzpa[k; ez;q;jhnd”

.....rfj eho.

**KABA VADHA NAADI:**

“fz;lhnhah rpnyw;gdj;jpy; thjeho
    fye;jpLfpy; tapW bghUky ;fdj;j tPf;fk;
cz;lhnyh X’;fhu rj;jp tpf;fy;
    cWjpu;l ir tha;t[ typ rd;dpnjhlk;
tpz;lhny;isg;gpUky; nrhil ghz;L
tplghfk; tplNiy gf;fthjk;
PALPATION:

By touching the skin and various parts of the body, the physician can rule out various abnormalities.

In Pitha thalai Nokkadu the innate warmth of the body is increased.

In Pitha thalai Nokkadu, the tenderness present in frontal and maxillary region is elicited. Yugi quotes as follows,

“bfhs;snt thjj;jpd; nufe; jhDk;
FspH;e;Jnk rpWjplj;nj a[#;z khfpj;
bdj;nt JoJo;jnj apUf;Fk; ........”

.....a{fp itj;jpa rpe;jhkpzp.

According to Agasthiyar Mani 4000

“btk;ik Fiwe;jhY kpFe;jhYk; thjgpj;jk;
jk;ik epiuepiuaha;r; rhw;Wth;”

.....mfj;jpah; kp 4000.

TONGUE:

Colour, coating, dehydration, Ulcer, fissure, deviation, movements, Variations in taste and the conditions of gum and teeth can be noted by examining the tongue.

According to Agasthiyar Mani 4000,

“Ks;sha; btoj;Jf; fWj;jhd;Kd; gpd;btSj;Jj;
js;sheP............................”

.....mfj;jpah; kp 4000.

Tongue is in black colour, thorn like and fissure over tongue is present.
In Pitha thalai Nokkadu, Excessive salivation and Tasteless of tongue is present.

**COLOUR:**

Pallor, Cyanosis, Yellowish and other discolouration of the skin should be noted. The type of the body is confirmed by the skin colour whether in black (Vadha), red (or) Yellow (Pitha). White (Kaba) and mixed colours (Mixed humours)

Yogi explains as follows:

“njff;jp dpwe;jhDe; brg;gf; nfsPh;
    rpWikaha; thje;jhd; fWj;jp Uf;Fk;
    nghfj;jpd; gpj;jepw k";r shFk;
    bghU"; nrl;g nuhfpf;F btspg;g[ khFk;
    ghhf;jpd; bjhe;jnuh fpf;F jhDk;
    gygytz; zKkhfpg; goe;J epw;Fk;"

....a{fp itj;jpa rpe;jhkzp.

In Pitha thalai Nokkadu, the skin colour depends upon the patient’s body condition.

**SPEECH:**

In examination of speech, the high (or) low pitched voice, slurred speech, aphasia, Dysarthria, nasal speech, hoarseness of voice can be noted.
In Pitha thalai Nakkadu, speech may be low pitched (or) nasal speech due to nasal congestion.

According to Agasthiyar Mani 4000,

“gynuhfp thh;j;ijg; gytpjkhhk; thjj;
    jiynuhfp thh;j;ijr; rkkhFk; - epiyfle;j
gpj;jnuh fpf;F cah;e;j ngr;Rz;lhk; rpnyl;Lke;jhd;
rj;jk;< dr;Rukhk; jhd;.”

......mf;jjpah; kzp 4000.

Agasthiyar Mani says - that high Pitched voice in pitha, low pitched voice in Kaba and normal voice in Vadha patients.

**EYES:**

Discolouration of eyes, sunking, swelling, lacrimation, ulceration, eye lids swelling and ulceration, falling of eye lashes, vision, condition of cornea, conjunctiva and pupils can be examined. Both motor and sensory disturbances of eyes are noted.

According to Yugi Vaithiya Chinthamani,

“tphpj;jpl;l thjbkd;w nuhfpf; Fj;jhd;
kPwpna fz;fWj;Jj; jz;zPh; gha[k;
ghpj;jpl;l gapj;jpa nhu fpf;Ff; fhd;
gr;brd;W rpte;jpUf;F”; nrl;g nuhf

......thjnuh fppf;F gRk”;r shnk"
Above verse states that eyes are in black colour with tears in vadha, red
colour in pitha, white colour in Kaba patients. In delirium, mixed colours and in
jaundice yellow colour are present.

In Pitha thalai Nokkadu, eyes are reddish in colour and lacrimation of eyes
may be present.

**FAECES:**

Quantity, odour, constipation, diarrhoea, presence of blood, mucus, pus,
undigested matter, tenesmus etc., can be noted.

In Pitha thalai nokkadu, the faces is black (or) normal in colour and
constipation is present. Tenesmus is also present Yugi denotes it as follows,

“k”;rbsd;w thjnuhfpf;F kye; jhDk;
kyge;j khfpna fWj;jp Uf;Fk;”

.....afp it;jjpa rpe;jhkpzp.

According to Pulipani

“kykJ fl;o Kl;o ahapLk; thjj;jpw;F”

.....g[yg;ghzp.

According to Thanvanthiri Vaiathiyam

“nkt[ thj Kilath; bka;k;kyk;
rPtp jhff; fWj;jpU”; brk;ikaha;”

....jte;jphp it;jjpak;.

According to Agasthiyar Mani - 4000

“fWj;jky ge;jky’; fhyhFk;”

.....mf;jjpah; kzp 4000.

**URINE:**
The Urine analysis is done in Siddha system according to five parameters.

“te;jePh;f; fhpail kzk;Eiu v”;rbyd;
iwe;jpa Ystit aiwFJ Kiwna"

.....njiuah;   ePh;f;Fwp

bea;f;FwpE}y;.

Niram - It indicates the colours of urine
Manam - It indicates the smell of Urine
Edai - It indicates specific gravity of urine
Nurai - It indicates froth of Urine
Enjal - It indicates quantity of urine.

In addition frequency, Urgency, hesitancy of micturition, painful burning urination, any sedimentation and any associated discharge can be analysed.

NORMAL URINE:

“kpfj; jog; g[k;kpfj; njwYk; ,d;bwdpy;
Rfj;ijj; jUk; bka;r; RghtePh; ed;nw”

.....njiuah;   ePh;f;Fwp

bea;f;FwpE}y;.

The normal urine should be in medium weight and moderate clearance.

NIRAM:

According to Yugi Vaithiya Chinthamani,

“gz;ghd thjnuh fpf;F \j;uk;
ghhpj;Jj; bjspe;jpUf;Fk; btz;ikahFk;
gz;ghd gpj;j nuh fpf;F \j;uk;
khk;fkha; k";rspj;Jg; grj;jp Uf;Fk;
.....a{fp itj;jpa rpe;jhkpz .
Yugi describes that Vadha Urine may be white, clear coloured and pitha urine may be yellow coloured.

In Pitha thalai nokkadu, the humours Vadha & Pitha are chiefly aggravated and the colour of urine resembles vadha urine (or) Pitha urine.

The same has been quoted as follows,

“thjnuh fk;bjspe;jhd; k";rspj;jhd; kw;iwaJ"

..mfj;jpah; kzp

2000.

“\j;jpuf; Fwpfs; nfsha; bkhHpe;jpLk; thjk; btz;ik fhj;jpu \j;j gpj;j"; rptg;bghL rpWFk; ePUk;”

..mfj;jpah; 2000.

**MANAM:**

It indicates the smell of urine such as pleasant, foul smelling, honey smell, fruity smell and flex smell etc.,

“g\[yhy; kz'; fkHpw; g{jpap girf;nf lyhjpiy ae;epuf; Fzkpd; bwdpy; mila[e;jjp bad;wijaj; jhd;kpff; bfLjp badt['; fpsf;Fe; RUjpna”

**EDAI:**

It indicates the frothy nature of urine.

“mw;gKk; fdkw; wjpbdjp t[Wbkdpd; tw;g{W rPjsk; kd;dpf; fdj;Jf; fgj;ij ,sf;fyhy; fz;l ePh; ,@nj”

....njiuh; ePh;f;Fwp bea;f;Fwp

E\}y;
Above verse explains that high specific gravity indicates the affected vadha, pitha and kaba.

**ENJAL:**

It indicates the inorganic and organic deposits like salts, crystals etc., and amount of urine extracted.

```
"X'\text{;}\text{fp}a\text{;}\text{thjj;}\text{njjh;}\text{;}f;F\text{;}\text{ePh;}\text{;}\text{tpG'}\text{;}\text{FzKiuf;}\text{;}\text{fpw;}
g\{}\text{;}\text{bfho}\text{;}\text{fLj;}\text{;}\text{J behe;}\text{;}J\text{;}\text{rpWj;}\text{;}\text{Jld};\text{}\text{bghUkptpGk;}
gh'\text{;}\text{Fld};\text{gpj;ijj;}\text{;}\text{njjh;}\text{;}f;Fg;\text{bghrpaedPh;}\text{;}\text{rpte;}\text{;}Jfh;\text{;}o
na'\text{;}\text{fnt RWf;}\text{;}\text{fjhf baho;}\text{;}\text{Jld;}\text{;}\text{fLj;}\text{;}\text{J tpGk;"}
...	ext{jd;te;jphp itj;jpak;}."
```

**NEIKURI:**

```
"mUe;\text{;}Jkh wpujKk;\text{;}\text{mtpnuh jkjha;}
m@\text{;}fy;\text{myh;}\text{;}jy;\text{;}\text{mfhyt;}\text{z;}\text{;}\text{jtph;}\text{;}e;\text{jHe;}
Fw;ws \text{;}tUe;}\text{;}jp\text{;}cw';\text{fp}\text{;}\text{itfiw}
Mof;\text{;}fyrj;\text{;}\text{jhtpa}a\text{;}\text{hJ bga;}
bjhU\text{;}\text{KTh;}\text{;}j;\text{;}jf;\text{;}\text{fiy;}\text{;}Ff;\text{;}\text{gL ePhpd;}
epwf;\text{Fwp bea;}\text{;}\text{Fwp epUkpj;}\text{;}\text{jjy; flnd"}
...	ext{njiuah;}\text{;}\text{ePhf;}\text{;}\text{Fwp bea;}\text{;}f;\text{;}\text{FwpE}y;\text{;}
```

A drop of gingelly oil is dropped into wide vessel containing the urine, to be tested and keep it under the sunlight. The variations of three humours in disease can be diagnosed by the behaviour of gingelly oil on the surface of urine.

```
"mubtd ePz;ood;\text{;}m@nj thjk;"
```

The drop of oil lengthening like a snake indicates vadham.
“MHp nghw; gutpd; m@nj gpj;jk;.”

If the drop of oil spreads like a ring it indicates pitham.

“Kj;bjhj;J epw;fpd; bkhHptjd; fgnkh”

The drop of oil remains floating as a pearl indicates kabam.

In thontha state, the oil spreads in mixed form.

By careful examination of the urine with gingelly oil, the physicians can know whether the disease is curable or not. For this purpose siddhars have explained various spreading natures of oil on urine surfaces.

DIFFERENTIAL DIAGNOSIS

VADHA THALAI NOKKADU:

“rhj;jpakhk; thjj;jpd; jiy nehf;fhL
  jz;ikahk; gplhp gw;wpj jiy neha[z;lh’;
fhj;jpukha;f; fhjpusz;Le;jhd; typj;Jf;
fJg;goa[k; Fwl;nlhL \f;F cr;rp
nej;jpa[kha; bew;wpnahL neht[khfp
  beUf;fkhd tha;goj;jhw; nghny Fj;Jk;
khj;jpakhy;  kdf;fpnyrg; gLj;Jk;
  thjj;jpd;jiyneht[ tz;ikjhnd”

....a{fp itj;jpa rpe;jhkzp.

Increased Vadha affect occipital region and produced Pain. It causes throbbing pain in the jaw, Nose, temporal and fore head, lassitude also occus.
In Pitha thalai Nokkadu there is no throbbing pain in the jaw, but sneezing, running nose, excessive salivation, pain in eyes and eye brows occur.

**SETHUMA THALAI NOKKADU:**

“nehf;fhl;oy; kpf;jz;zPh; Fof;ifahYk;  
Efh;e;jgpd; g[ythkw; gLf;ifahYe;  
jPf;fhl;oy; kpf;jpuz;L rpnjy;Jkj;Js;spr;  
rpubk`;Fk; nehthfpy; gplhpnahL  
ntf; fhl;ow;nwf bky;yhk; kpf btSj;J  
nkdpa[nkh kpfj[yh;e;J RuKz;Ihe;  
rhf;fhl;ow; grpaw;W Urpapy;yhjhy;  
rz;lhsr; rpnyl;Lkj;jpd; wiy nehf;fhnl”

....a{fp itj;jpa rpe;jhkzp.

Excessive intake of water during sickness, immediately going to bed after taking food, causes increased pitha - Increased pitha mixed with Kaba and produce pain in the head and occipital region. It also produces pallor, dryness, fever and anorexia.

In Pitha thalai nokkadu, there is no pallor, dryness, fever, anorexia and occipital pain.

**SURYA VARTHAM:**

“fe;jkhk; tyg;gf;fkplg; gf;fkhjy;  
fz;zhoa[ \f;foa[k; gUt; gw;wp  
g[e;jkhk; gUtj;py; CrpFj;jy;  
nghy; typF;F; fz;jhD’; RU’;fpf; fhqk;  
ge;jkh Klk; bg’;Fk; ghukhFk;  
gfw; nghJ jhH;e;jt[l; neht[kl;lhe;  
Je;j khe;Je; Jkpnghy; typa[z;lhFe;  
Nhpah th;j;je; jd;dpd; R+gkhnk”
In suryavaitham pain occurs either on left side (or) right side. Pricking pain occurs in the eye, nose and eyebrows; malaise also occurs. Pain decreases during evening Pain starts at sunrise and subside at sunset.

In Pitha thalai nokkadu, the pain occurs in both side of head and will not decrease during evening.

**SANTHRA VARTHAM:**

“Ragkhaa[lk; bg';Fk; typakhfpj;
    Jk;kpnah \f;filgjj;Jr; Rfe;jkw;W
g[Utnk kpf typj;J bew;wpnahL
g[z;nghyf; File;jpl;Lg; g[sfkhfp
m+gukhae;jpapd; nghJ njhd;wp
    mh;jj uhj;jphp kl;Lkiyr;ryhfp
r+gkha; tpofpw neuj;jpw;whDe;
rha;Fnk khre;jpu th;ijjikhnk”

Pain occurs throughout the body, Sneezing, Nasal congestion, anosmia, pain in the eyebrow starts at sunset and increases till midnight and subsides at sunrise.

In Pitha thalai Nakkadu there is no pain throughout the body. There is no pain in the eyebrow which starts at sunset and increases till midnight and subsides at sunrise.
**TREATMENT:**

Siddha system comprises treatment in three ways.

- Kappu (Prevention)
- Neekam (Treatment)
- Niraivu (Restoration)

1. **TREATMENT:**

To neutralize exaggerated vadha in pitha thalai nokkadu, laxative is given initially before the treatment. For this, Nilavagai chooranam 10gm with hot water at bedtime is given.

Then the next day, the trial medicines, Karpoora Mezhugu-500mg BD and Peenisa Naasa Ganapathy thy-30ml for external use are given.

**DIET:**

```
"gj;jpaj;jh Yz;lhFk; gz;oju;Fg; nhu;ik
gj;jpaj;jh Yz;lhFk; ghz;gL;fs;,-gj;jpaj;ij
tpl;lhw; gpzpiftfs; tpj;jhp;Fk; tpl;oliy
tpl;lhw; gwf;Fk; tis."
```

-njiuah; btz;gh.

Above text explains that the treatment may be very effective by following proper diet regimen. If neglect this, it aggravate the disease.

According to Theraiyar Venba,

```
".ytzk; g[zpflbtz; zhY Kjyhf
bthbthU Fzkh bahHptha; -etpyiwr;rp
TH;g;ghz;l kr;rk;bgz; nhj;jpu`;bfhs; gpukgj;hp
jPH;g;ghF bkj;jtpJ rP."
```

-njiuah; btz;gh
Theraiyar Venba explains that salt, tamarind, mustard, gingelly oil plant seed, pumpkin, horsegram, ragi, tobacco, fish, meat and sexual intercourse should be avoided during treatment.

“cgij ypFr';fl; Lg;gpye;ij rhfe;
jtrpfwp nghrdF nlhhp-apitfs; gR
bea;ghy; nkhh; Rf;nfy bew;bghhpPh; rpy;ypth';f
bka;apitf S";nrU bka;.”

-njiuah; btz;gh

Lemon, fried salt, spices, jujuba pepper, drumstick, cumin seeds, cow-milk, ghee, buttermilk, dried ginger, cardamom seeds, rice, ribbed luffa, brinjal, asofoetida are taken along with medicines.

2. According to Pathartha Guna Chinthamani

“br';fG ePh;nhile; njd;kpsF ey;byz;bza;
j';F bgU"; fhae; jGjhiH - v';bf';Fk;
Tl;LrpW Kj;Jbea; nfhjpy; cGe;jpitfs;
thl;Lkzp ye;ij kjp”

...gjhh;j;;j Fz rpe;jhkzp.

Water lilly root tuber, costus root, pepper, gingelly oil, asofoetida, clerodendran phlonoides, caster oil and black gram relieves vadha diseases.

“bfhk;kl;o thiHg; gd;d’;
bfhSj;jpa fhpapndhnl
tpk;kpa jz;zPh; tpl;lhd;
ntbuD'; fpH';F rhe;j”;
brk;iknrh; bey;yp Ks;sp
nrUkpk; kUe;bjy; yhnk
fk;kpa gpj;jj; jpw;Ff;
fhbddd; nwhJ thnu.”
Pitha diseases are cured earlier by taking watermelon, burnt ash of dried plantain trees, asparagus root tuber, sandal, dried gooseberry etc. during treatment.

"gj;jpa'; nfhHp Kl;il gRk;ghy;
Kj;jbea; KU';ifapiy
kw;Wk; epfhpy; fj;jhpf; Ti;Lk;
gj;Jnk Jtiu jhDk; gz;ghd gPdprk; nghnk"

Cool drinks, Ice cream, curd, lemon juice should be avoided.
Milagu, Manathakali, Thoothuvalai, Kaeisalai, Kandankathari, Avarai should be added.

**MEDICAL ADVICE:**

1. Advised not to be in polluted place and exposure to cold atmospheric conditions.

2. Advised to avoid inhalation of dust, fumes and aromatic substances, which induces sneezing.

3. Advised to drink and bath in warm water.
4. Advised to take head bath using medicated oil once in four days. At the time of head bath itself two drops of medicated oil dropped into or applied into nostrils and ears.

5. If steam inhalation with turmeric powder and leaves of notchi is also beneficial.

6. The hair should be dried well after taking bath otherwise it will aggravate the headache and heaviness of head.

7. Sleep during day time is avoided especially after taking oil bath in the morning.

**SPECIAL MEDICINES IN SIDDHA SYSTEM.**

They are,

1. Yoga.
2. Pranayana.

Regarding Pitha thalai nokkadu the following asanas can be advised to the patients.

1. Sarvasana.
2. Viparitakarani.
3. Yogamuthra.
4. Halesana
5. Usartasana.
6. Vajjurasana.
7. Mahamuthra.

Yoga and Pranayana are considered as supportive therapy in Pitha thalai nokkadu.

If Pranayana is practiced the respiratory passage will be cleared off all its discharges.
ANATOMY OF NOSE

THE- NOSE:
The nose is externally pyramidal shaped.

BOUNDARIES:
It has a roof, floor, medial wall and lateral wall

ROOF:
1. It is a narrow area. The anterior part of the roof is formed by the frontal bones.
2. The middle roof is formed by Cribriform plate of the ethmoid bone.
3. The posterior part of the roof is formed by the body of the sphenoid bone.

FLOOR:
1. Palatine process of the maxilla.
2. Horizontal process of the palatine bones.

THE MEDIAL WALL OF THE NOSE:
(Septum of the nose)
The septum divides the nasal cavity into right and left cavities. The septum may (or) may not be situated in the midline. The septum is formed by bones and cartilages and covered by the mucoperiosteum and skin.

COMPONENTS OF THE SEPTUM:
- Posterio Superiorly by the perpendicular plate of the ethmoid bone.
- Posterio inferiorly by the Vomer bone.
- Anterio inferiorly by septal cartilage.

ACCESSORY COMPONENTS:
1. Rostrum of the sphenoid bone.
2. Frontal bone.

4. Anterior nasal spine of the Maxillae.

5. Palatine bone.

6. The medial cartilage of the greater alar cartilage.

**THE NASAL SEPTUM MAY BE DIVIDED INTO FOLLOWING PARTS:**

1. Cuticular part is situated anterio inferiorly.

2. Cartilagenous part is situated in the middle.

3. Bony part is situated posterio superiorly.

**BORDERS:**

It has 4 borders namely,

1. Anterior border.

2. Posterior border.

3. Inferior border.

4. Superior border.

**SURFACES:**

It has 2 surfaces namely,

a. Right surface.

b. Left surface.

The surfaces of the septum may show bony spaces. Along the anterior inferior part of the septum, there may be an opening for the vomero nasal organ of Jacobson may be situated.

**BLOOD SUPPLY:**

1. Long sphenopalatine artery.

2. Greater palatine artery.

3. Superior labial branch of the facial artery.
4. Anterior ethmoidal artery.

In the anterio inferior quadrant of the nasal septum these arteries communicate freely to form the kiesal bach’s area (little area). Injury to this area causes epistaxis.

**VENOUS DRAINAGE:**

1. Facial Vein.
2. Pterygoid Venous plexus.

**LYMPHATIC DRAINAGE:**

1. Submandibular lymphnodes.
2. Retero pharyngeal lymphnodes.
3. Anterior Superior group of deep cervical nodes.

**NERVE SUPPLY:**

1. Olfactory nerves carry the sense of smell from the upper part of the septum.
2. Naso palatine nerve.
3. Anterior Ethmoidal nerve.
4. Anterior Superior alveolar nerve.

**AUTONOMIC NERVE SUPPLY:**

Vidians nerve through the sphenopalatine ganglion.

**THE LATERAL WALL OF THE NOSE.**

This is an irregular space bounded by the nasal surface of the many bones. The bone forming the lateral wall of the nose are arranged into 3 zones.

The anterior zone is formed by,

1. Maxilla.
2. Nasal bone.
The middle zone is formed by,

1. Ethmoid bone.
2. Maxilla.
3. Conchae bone.

The posterior zone is formed by

1. Perpendicular plate of the palatine bone.
2. Medial pterygoid bone.

The lateral wall is irregular because it has three bony elevations called conchae. The space between the adjacent conchae is known as the meatus.

The lateral wall is lined by mucous membrane called Mucoperiosteum.

The superior and middle conchae are formed by the labyrinthine part of the ethmoid bone.

The inferior conchae is formed by the conchae bone or turbinate bone. The inferior conchae articulates anteriorly with the maxilla and posteriorly with the perpendicular plate of the palatine bone. The lateral wall is divided into three areas.

1. Vestibule.
2. Atrium of the middle meatus.
3. Area of conchae and meatuses.

**THE VESTIBULE:**

This area is lined by the skin. So it is provided with hairs called Vibrisae.

The vibrisae arising from the anterior wall of the vestibule are directed backwards and vibrisae from the posterior wall are directed forwards. These vibrisae forming a sieve at the nasal entry. The vestibule is limited above by the limen nasi.
ATRIUM OF THE MIDDLE MEATUS:

This depression is situated above the vestibule but in front of the middle meatus. It is limited superiorly by a ridge known as agger nasi. The agger nasi is developed in lower mammals.

AREA OF CONCHAE AND MEATUSES:

There are 3 conchae and 4 meatuses. The conchae are,

1. Superior conchae.
2. Middle conchae.
3. Inferior conchae.

The meatuses are,

1. Spheno ethmoidal recess.
2. Superior meatus.
3. Middle meatus.
4. Inferior meatus.

The spheno ethmoidal recess is situated between the superior conchae and body of the sphenoid bone. In to this space the sphenoid air sinus is opening.

Sometimes within the spheno ethmoidal recess the highest conchae may be present. This conchae divides the recess into superior meatus and spheno ethmoidal recess.

THE SUPERIOR MEATUS:

The superior meatus is the narrowest among the meatuses. It is situated between the superior and middle conchae. The posterior ethmoidal air cells opens into space.
THE MIDDLE MEATUS:

This is the space between the middle conchae and inferior conchae. Anteriorly the middle meatus opens into the atrium of the middle meatus. The bulle ethmoidalis is an elevation caused by the middle ethmoidal air cells found in the meatus.

Below the bulle ethmoidalis there is a semilunar shaped gutter called hiatus semilunaris is situated.

The hiatus semilunaris is bounded below by the uncinate process of ethmoid bone. Into the anterior part of the hiatus, ethmoidal infundibulum opens. This opening is a common passage for the frontal air sinus and anterior ethmoidal air cells.

On the surface of the bulle ethmoidalis the middle ethmoidal air cells are opening.

The posterior part of the hiatus semilunaris receives the openings of the maxillary air sinus. There may be more than one opening for the maxillary air sinus.

In the anterior part of the inferior meatus, the naso lacrimal duct opens. This opening is guarded by the Hasner's valve. This valve does not permit entry of air into the naso lacrimal duct.

BLOOD SUPPLY TO THE LATERAL WALL OF THE NOSE:

The lateral wall of the nose is divided into 4 quadrants. Each quadrant has separate blood supply.

ANTERIO SUPERIOR QUADRANT:

Anterior ethmoidal artery.
Posterior ethmoidal artery.
Facial artery.

**POSTERIO SUPERIOR QUADRANT:**

- Spheno palatine artery (Maxillary artery).

**ANTERIO INFERIOR QUADRANT:**

- Facial Artery.
- Perforating branches of greater palatine artery.

**POSTERIO INFERIOR QUADRANT:**

- Greater palatine artery and its branches.

**VENOUS DRAINAGE:**

- Anterior part drains into exterior facial vein.
- Middle part drains into pterygoid venous plexus.
- Posterior part drains into pharyngeal Venous plexus.

**LYMPHATIC DRAINAGE:**

- Anterior part drains into sub mandibular lymph nodes.
- Posterior part drains into retro pharyngeal lymph nodes.

**NERVE SUPPLY:**

- The sense of smell from the lateral wall is carried by the olfactory nerves.

**PARASYMPATHETIC SUPPLY:**

- Vidiens nerve (Nerve of the pterygoid canal).

**SENSORY SUPPLY:**

**ANTERO SUPERIOR QUADRANT:**

- Anterior ethmoidal nerve.

**POSTERO SUPERIOR QUADRANT:**

- Spheno palatine branches of sphenopalatine ganglion.
ANTERIOR INFERIOR QUADRANT:

Anterior Superior alveolar nerve.

POSTERIOR INFERIOR QUADRANT:

Greater palatine nerve (Spheno palatine ganglion).

HISTOLOGY OF THE NASAL CAVITY:

The mucous membrane covering the respiratory portion of nasal cavity as a ciliated columnar epithelium with interpersed Goblet's cells. The underlying lamina propria is rich in mucous glands and blood vessels.

The para nasal sinuses are lined by ciliated columnar epithelium, but they lack vascular plexus. They drain through small ostia into the nasal cavity. This ostia can be obstructed by only moderate mucosal swelling (e.g., Oedema caused by inflammation) tumour (or) foreign body. The anatomic relationship favour certain roots of spread of disease and therefore play an important role in the development of complication.

ANATOMY OF PARA NASAL SINUSES

PARA NASAL SINUSES:

The para nasal sinuses are air containing bony spaces around the nasal cavity and lined by the mucous membrane of ciliated columnar epithelium. They develop as mucous diverticula of the nasal cavity and invade the neighbouring bones at the expense of the diploic tissue. The sinuses are arranged in pairs and are names as follows,

- Frontal
- Ethmoidal
- Sphenoidal
- Maxillary.
They are divided into two groups. Anterior group comprises frontal air sinus, the maxillary air sinus and the anterior ethmoidal air cells.
The posterior group comprises the posterior ethmoidal air cells and the sphenoidal sinus.

The anterior group of sinuses drains into the middle meatus and the posterior group drains into the superior meatus and the spheno ethmoidal recess.
The sinuses are present in rudimentary form at birth, except the frontal sinuses which start development two (or) three years after birth. They enlarge rapidly during the ages of 7-8 yrs.(time of eruption of permanent teeth) and then after puberty.

**FUNCTIONS OF PARA NASAL SINUSES:**

The exact function is not known Probably they may have following functions.

1. Warming and moistering of inspired air may be partly done by the large mucosal surfaces of these adjacent sinuses.

2. The air filled sinus cavities probably add resonance for the production of sounds.

3. The temperature buffers. It is regarded that these chambers probably protect contents of orbits and cranial fossae from the internasal temperature variations.

4. Probably sinus formation in the cranial bones helps in reducing the weight of the cranial bones.

5. The sinus mucosa may act as a donor site for reconstructive procedures Eg. for Subglottic stenosis and implantation of maxillary sinus mucose into the nasal cavity in atrophic rhinitis.

6. Protection of the orbit by acting as a shock buffers.
7. Facial growth occurs rapidly after the formation of the sinuses.

**FRONTAL SINUSES:**

They are two in number and are contained within the tables of the squamous part of the frontal bone, deep to the medial end supraciliary arches. It extends upwards above the medial end of eye brow and backwards into the medial part of the root of the orbit. Each sinus is triangular in shape. Absent at birth, fairly developed at 7th to 8th year reach full size only after puberty

**Capacity:**

Each sinus has a capacity of about 7cc.

**MEASUREMENTS:**

- Depth - 2.5cm
- Height - 3cm
- Breadth - 2.5cm

**COMMUNICATIONS:**

It opens into the middle meatus of Nose at the anterior end of the hiatus semilunari's either through the infundibulum (or) through the fronto nasal duct. The right and left sinuses are usually unequal in size separated by a thin plate of bone. The sinuses are better developed in males than in females. The frontal sinus is lined with columnar epithelium.

- Blood Supply - Supra Orbital Artery
- Lymphatic drainage - Sub.mandibular nodes
- Nerve Supply - Supra orbital nerve
- Venous drainage - into the anastomotic vein between the supra orbital and superior opthalmic veins in the supra orbital notch
MAXILLARY SINUSES:

It lies in the body of maxilla and is the largest of all the para nasal sinuses. It is pyramidal in shape with its a base directed medially towards the lateral wall of the nose and the apex directed laterally in the Zygomatic process of maxille.

Average measurements of each sinus are as follows,

- Vertical (opposite 1st mode teeth) - 3.75cm
- Transverse - 2.5cm
- Antero - Posterior - 3.25cm
- Capacity - About 9.5 to 20cc

The fully developed maxillary air sinus should extend from the first premolar to the third molars teeth. The sinus reaches upto the floor of the orbit and thus occupies practically the whole body of the maxillary bone.

BOUNDARIES:

Each sinus is roughly pyramidal in shape and presents the following boundaries.

APEX:

Zygomatic process of maxilla

BASE:

By the nasal surface of the body of maxilla, in which lies in the recent state the opening of the maxillary sinus close to its roof. In the disarticulated skull the base presents a large opening, the maxillary hictus which is reduced in size by the following bones.

- Unciate process of ethmoid bone from above
- Ethmoidal process of inferior nasal conchae.
- Descending process of lacrimal bone from the front
Perpendicular plate of palatine bone from behind

The macerated skull two openings are present. One above on the other below the uncinate process in recent state usually the lower opening is closed by a plug of mucous membrane.

**ROOF:**

It is formed by the floor of orbit and is transversed by the infra orbital vessels and nerve in a body canal.

**FLOOR:**

It is formed by the alveolar process of maxilla. The floor is marked by several conical elevations produced by the roots of the upper molar and premolar teeth. The roots may even penetrate the bony floor to lie beneath the mucous linking, so that the infection of maxillary air sinus in apical tooth abscess becomes obvious. Extraction of poorly covered tooth can result in an abnormal communication between mouth and antrum known as Oro-antral fistula.

**ANTERIOR WALL:**

Related to the infra orbital plexus of vessels and nerves and the orgins of muscles of upper lip. Within the wall anterior superior alveoler vessels and nerves traverse in a bony canal, the canalis sinuses.

**POSTERIOR WALL:**

It is pierced by posterior superior alveolar vessels and nerves and forms the anterior boundary of infra temporal and pterygo palotine fasses.
**COMMUNICATIONS:**

It opens into the middle meatus of the nose in the lower part of the hiatus semilunaris and the opening lies just below the bulla ethmoidalis. The openings are near the roof that the floor of the sinus. So the opening is located much higher from the floor of the sinus in disadvantageous position for natural drainage.

The maxillary air sinus is lined by ciliated columnar epithelium. It is richly provided with glands which are situated chiefly around the osteum.

**BLOOD SUPPLY:**

From the anterior middle and posterior Superior alveolar vessels of maxillary.

**LYMPHATIC DRAINAGE:**

Sub. mandibular nodes

**NERVE SUPPLY:**

From the anterior middle and posterior superior alveolar nerves, branches of maxillary and infra orbital nerves.

**VENOUS DRAINAGE:**

Facial vein and pterygoid plexus of veins.

**ETHMOIDAL SINUS**

There are numerous small inter communicating spaces which lie within the labyrinth of the ethmoidal bone. They are completed by the frontal, Maxillary, lacrimal, Sphenoidel and palatine bones. They lie between the upper part of the nasal cavity and the orbits and are separated from the orbits by extremely their orbital plates of ethmoids. The sinuses are divided into anterior, middle and posterior groups.
**ANTERIOR SINUSES:**

The anterior ethmoidal sinus is made up of upto 11 air cells. It opens into the anterior part of the hiatus semilunaris of the nose.

**MIDDLE SINUSES:**

The middle group generally comprises three cavities which opens into middle meatus by one of more orifices on (or) above the ethmoidal bulla.

**POSTERIOR SINUSES:**

The posterior group varies from one to seven in number and usually opens by one orifice into superior meatus of the nose.

**BLOOD SUPPLY:**

Anterior and posterior ethmoidal branches of Ophthalmic Artery.

**LYMPHATIC DRAINAGE:**

Anterior and middle groups of sinuses drained into submandibular lymphnodes.

Posterior group drains into tretrophayngeal lymph rodes.

**SPHENOIDAL SINUSES:**

These paired sinuses are located within the body of sphenoid bone above and behind the nasal cavity. Each sinus is some what asymmetrical and presents the following average measurements.

- Vertical: 2.2cm
- Transverse breath: 2cm
- Depth: 2.2cm.
EXTENDS:

Posteriorly it may extend upto the anterior margin of foramen magnum. Anteriorly it may encroach the roof of the orbit laterally extends upto pterygoid canal.

RELATIONS:

ABOVE:  Optic chiasma and Lypophysis cerebri.

BELOW:-  Roof of the nasopharynx.

On each side cavernous sinus and internal carotid artery.

Behind pons and medulla oblongata seperated by the basilar venous plexus, in front of the spheno ethmoidal recess.

COMMUNICATIONS:

Each sinus opens into the spheno ethmoidal recess and hence into the superior meatus of nose.

BLOOD SUPPLY:

Posterior ethmoidal vessels.

NERVE SUPPLY:

Posterior ethmoidal nerve and orbital branches of pterygo palatine garglion.

LYMPHATIC DRAINAGE:

Retropharyngeal nodes.

PHYSIOLOGY OF THE NOSE AND PARA NASAL SINUSES:

The nose forms the gateway of the respiratory system and serves the following important functions.
1. RESPIRATORY PASSAGE:

The inspired air passes upwards in a narrow stream medial to the middle turbinate and then downwards and backwards in the form of an arc and thus respiratory air currents are restricted to the central part of the nasal chambers.

2. FILTRATION:

The nose serves as an effective filter for the inspired air.

a) Vibrisaeae (Nasal hair) in the nasal vestibule arrests large dust particles of inspired air.

b) The fine particulate matter and bacteria are deposited on the mucous blanket which overs the nasal mucosa. The mucous contains various enzymes like lysozymes having anti bacterial properties.

c) The mucous with the particulate matter is carried by the ciliary movements posteriorly to the oropharyax to be swallowed.

3. AIR CONDITIONING AND HUMIDIFICATION:

The highly vascular mucosa of the nose maintains constancy of temperature of air and thus prevents the delicates mucosa of the respiratory tract from any damage due to temperature variations. The humidified air is necessary for proper functioning and integrity of the ciliated epithelium.

4. VOCAL RESONANCE:

The nose and para nasal sinuses serve as vocal resonators and nasal passages are concerned with production of nasal consonants like M and N. Thus obstructions of nasopharynx and nose alter the tone of voice.
5. **NASAL REFLEX FUNCTION:**

The respective fields of various reflexes lie in the nose. Those include sneezing and naso-pulmonary, naso - bronchia and olfactory reflexus. These protect the mucosa and regulate the vaso motor for tone of the blood vessels.

6. The nasal cavity serves as an outlet for loricral and sinus secretions.

7. **AERATION:**

Air in the nasal cavity helps in aeration of the para nasal sinuses and the middle ear through eustachian tube.

8. **OLFAC TORY:**

This function is less developed in human beings. This sensation plays the most important role in behaviours and reflex responses of lower animals.

**SENSE OF SMELL**

**OLFAC TORY NERVE:**

These are the sensory nerves of smell. They have their origins in special chemoreceptor nerve cells in the mucous membrane of the roof of the nose above the superior nasal conchae. On each side of the nasal septum nerve fibres from the cell bodies pass through the cribriform plate of the ethmoid bone to the olfactory bulb where inter connections and synapses occur. From the bulle, bundles of nerve fibres from the olfactory tracts which passes backwards to the olfactory area in the temporal lobe of the cerebral cortex in each hemisphere where the impulses are interpreted and Odour perceived.

**PHYSIOLOGY OF SMELL:**

The sense of smell in human beings is generally less acute than in other animals. All odorous materials give off chemical particles which are carried into
the nose with the inhaled air and stimulate the nerve cells of the olfactory region when dissolved in mucous.

The air entering the nose is heated and convection currents can eddies of inspired air from the main stream to the roof of the nose. “Sniffing” concentrates more particles, more quickly in the roof of the nose.

This increases the number of olfactory receptor cells, stimulated and thus the perception of the smell. The sense of smell may affect the appetite. If the odours are pleasant, the appetite may improve and vise versa. The sense of smell may create long lasting memories, especially to distinctive odours.

Adaptation—when an individual is continuously exposed to an odour, perception of the odour quickly decides and eventually ceases. This loss of perception only affect that specific odour and adaptation. Probably occurs both in the cerebrum and in the nerve endings in the nose.

**SINUSITIS:**

**DEFINITION:**

Sinusitis is an inflammation of the mucosal lining of sinus cavity. Inflammation may be suppurative or non-suppurative.

**CLASSIFICATION:**

![Sinusitis Diagram]

**ACUTE SINUSITIS:**

**DEFINITION:**

It is an acute inflammation of the mucosa of paranasal sinuses. If inflammatory process occurs in more than one sinus, it is called multi sinusitis. If all para nasal sinuses are involved it is called Pan Sinusitis.
AETIOLOGY OF SINUSITIS:

1. DENTAL SEPSIS:

   Eg. Periapical abscess, peridontal abscess etc. (or) dental extraction particularly in connection with maxillary sinus, where roots of teeth project into the sinus.

2. TRAUMATIC:

   In fracture of sinus, infection may spread directly (or) by infected blood clots.

3. SWIMMING AND DIVING:

   Directly spread through the ostium.

4. Secondary bacterial infection from acute rhinitis may spread to sinuses through ostium or sub-mucosal lymphatics.

5. INFECTIONS:

   a. Bacterial infection:

      Streptococci
      Staphylococci
      Pneumococci
      Hemophilus influenzae
      Escheriehia coli
      Micrococcus Cataerhalis.
      Bacillus pteiffer and B.

   b. Viral infection:

      Rhinovirus
      Para influenza I and II
      Echo 28
Coxsacki A 21
Respiratory Syncytial Virus.

c. Fungal infections:

Para coccidioidomycosis
Mucormycosis
Rinosporidiosis
Rhinophycomycosis
Aspergillosis
Actinomycosis.

6. PREDISPOSING FACTORS:

a. Local:

Foreign body
Nasal Allergy
Enlarged adenoids
Deviation of nasal septum etc.

b. General:

Low general health
Chilling
Environmental pollution
Prolonged Exposure to cold
Associated chest infection

PATHOLOGY OF SINUSITIS:

The mucosa of sinus shows chronic inflammatory changes. The cilia get
damaged by the infection with resultant inadequate drainage of the sinus cavity,
particulary the maxillary sinus where the ostium is situated high up in the medial
wall. The retained secretions thereby lead to reinfection. Periphlebitis and perilymphangitis, may occur, leading to oedema and polyp formation, so called hypertrophic (or) Polypoidal sinusitis.

Sometimes there occurs metaplasia of the ciliated columnar epithelium to startified squamous type with interspread Papillary hyperplastic epithelial and inflammatory cells producing a picture of papillary hypertropic sinusitis. Occasionally the chronic inflammatory process may induce atrophic changes in the sinus mucosa with increase in sub mucosal fibrous tissue. (Atropic Sinusitis).

**CLINICAL FEATURES:**

Patient usually gives history of cold. After 3 to 4 days when symptoms should have diminished, there is exacerbation of symptoms.

1. Nasal obstruction becomes worse, watery rhinorrhoea is changed to thick muco-purulent secretion. Occasionally there may be epistaxis or blood stained nasal discharge.

2. Head ache and sense of heaviness present over the head.

3. Pain over infected sinus-stabbing (or) aching in character. This is made worse by bending (or) coughing.

4. Rise temperature, malaise and depression.

5. Unpleasant taste with post-nasal discharge is often present.

6. Tenderness over the frontal or the maxillary sinus and overlying soft tissue may be oedematous at times.

**INFECTION OF INDIVIDUAL SINUSES:**

**FRONTAL SINUSITIS:**

1. Pain occurring in frontal Sinusitis is usually in the frontal region. There may be periorbital pain, pain is usually located to forehead.
2. Frontal headache, in early stage is called “vacuum frontal head ache” due to blockage of the frontonasal duct and absorption of air.

3. The headache usually severe and periodic, present on walking and increases until mid day and then subsides gradually. Use of eyes may be painful.

4. There may be tenderness on the floor of frontal sinus. In some cases there may be oedema and puffiness of the upper lid.

ETHMOIDAL SINUSITIS:

1. Head ache: It is usually located between and behind the eye regions (or) radiates to the temporal eye.

2. Nasal obstruction is frequent with loss of sense of smell.

3. There may be oedema over the nasal bones.

4. The middle turbinate shows oedematous inflammed mucous membrane.

SPHENOIDAL SINUSITIS:

1. Head ache: Usually located in the occipital area of the head. The pain may be referred from the occipital region of the mastoid area.

2. The purulent post nasal discharge is a prominent feature of acute sphenoiditis.

3. Vertigo may be present.

MAXILLARY SINUSITIS:

It is the commonest of all sinus infection. Ostium of the maxillary sinus is situated high up in the medial wall which is not advantageous for self drainage and easily blocks, and predisposes to infections. Infection is usually from the nose (or) dental sepsis of upper jaw. The roots of molar teeth lie close to the floor of the maxillary antrum.
CLINICAL FEATURES OF MAXILLARY SINUSITIS:

**1. Pain:**

The symptoms are variable and may be general (or) localized to the ear, nose and throat. The pain is variable mild to severe. It may be present over the sinus (or) along the upper molar and premolar (or) referred to frontal area, temple (or) above the ear. Pain is mainly due to oedema of the ostium producing blockage of the sinus and pressure.

**2. Nasal discharge:**

The patient frequently complains of excess nasal discharge which could be mucoid, mucopurulent (or) purulent. Nasal discharge is very foul smelling in cases of sinusitis of dental origin. Pus may also be found an hawking.

**3. Post nasal Drip:**

Excessive production of post nasal discharge is a common symptom which causes irritation and compels the patient to clear his throat frequently.

**4. There is tenderness over the cheek.** Swelling of the alveolar margin and the lower part of cheek may be seen in cases of dental sepsis. Oedema over infra orbital region is present in some cases.

**5. Nasal obstruction:**

It may be the result of an underlying obstructive pathology of the nose like a deviated septum. Polyposis (or) hyper trophied turbinates (or) because of chronic turgescence of the nasal mucosa.
6. Sore throat:

Inflammation of air ways due to inflammatory mediators like brady kinin cause smooth muscle contraction resulting in throat pain, hoarseness of voice, excessive salivation and pharyngitis.

7. Facial pain (or) Discomfort:

Vague discomfort present all over the face.

8. Abnormalities of smell:

The patient may complain of diminished acuity of smell (Hyposmia). He may complain of unpleasant odour (cacosmia) (or) may have distortion of smell perception (Parosmia)

9. Epistaxis:

Inflammatory hypereamia in the nose may result the epistaxis but this is uncommon.

10. The general symptoms of sinusitis include a sense of tiredness, low grade fever and felling of being unwell. Chronic sinusitis may produce effects on other systems like gastro intestinal upsets and chronic bronchitis.

ETIOLOGIAL FACTORS:

1. Deviated nasal septum
2. Nasal polyps
3. Facial Trauma
4. Allergens
5. Extension of odonotogenic infections.
7. The most common organisms involved include
1. Haemophilus influenzae
2. Streptococcus Pneumonae
3. Streptococcus pyogens.
4. Alpha haemolytic streptococci.

INVESTIGATIONS:

1. Radiology of Para nasal Sinus:
   It is the most sensitive and specific test. Show haziness of the affected sinus or all sinus. In cases of empyema fluid can be seen in the maxillary sinus.

2. C.T.SCAN:
   When indicated is even more sensitive in detecting sinusitis.

3. Transillumination Test is helpful in maxillary and frontal sinusitis.

4. Anterior rhinoscopy:
   The nasal mucosa is congested and there may be trickle of pus under the middle turbinate and in the post-nasal space.

5. Nasal swab culture.

6. Serum immunoglobins - IgG., IgA, IgM, Sub.classes.

7. Antibody titres

8. Delayed hypersensitivity tests.

9. Direct sinus aspiration is the only procedure that can provide accurate information concerning aetiology.

Complications of sinusitis:

The para nasal sinuses are situated close to the eyes, brain and nose, and the infection can easily spread from sinuses to orbit and intra cranial cavity giving rise to serious complications.
Nasal compilations:

1) Chronic rhinitis
2) Secondary atrophic rhinitis
3) Chronic hypertropic rhinitis
4) Nasal polyposis.

Orbital complications:

1. Orbital cellulitis
2. Orbital abscess
3. Retrobulbar neuritis
4. Superior orbital fissure syndrome
5. Orbital apex syndrome.

Pharyngeal and Laryngeal complications:

1. Lateral wall pharyngitis
2. Granular pharyngitis
3. Pharyngo Laryngitis
4. Tonsillitis.

Ear Complications:

1. Eustachian catarrh and Middle ear effusion
2. Chronic suppurative otitis media.

Intra ear complications:

1. Meningitis
2. Encephalitis
3. Extra dural abscess
5. Frontal abscess of brain
6. Cavernous sinus thrombosis.

**Bony complications:**

Osteomyelitis of facial bones.

**Miscellaneous:**

Mucoceles

Pyoceles

Oro antral fistule

**CHRONIC SINUSITIS:**

**Definition:**

This is chronic inflammatory process affecting mucosa of various groups of para nasal sinuses. The recurrent attacks of acute sinusitis lead to chronic sinusitis.

**Aetiology:**

1. Nasal obstruction leads to chronic sinus infection (eg),
   a) Deviated nasal septum
   b) Oedematous turbinates
   c) Polyps
2. Recurrent attacks of acute sinusitis and upper and lower respiratory infection.
3. Chronic dental sepsis and also associated with lower respiratory infection.
4. Atmospheric pollution:
   Damp environment and Poor nutrition also leads to chronic sinusitis
5. Inadequate aeration of the sinuses due to allergy and narrowing of the sinus ostium from infection.
**Clinical features:**

1. Nasal obstruction due to oedema of the turbinates and thick mucous tenacious secretions.
2. Sinus infection may set up a chronic rhinitis with nasal obstruction resulting from hyper trophy of the nasal mucosa and turbinates.
3. Pain is not a typical feature, but dull ache may be present over the sinus concerned.
4. Head ache may be present certain periodicity increasing after rising in the morning, but gradually decreasing as the day goes on or vice versa.
5. Excess nasal discharge secretions usually frank nucosa and pus are discharged.
6. Epistaxis results from the inflammatory vasodilation in the nose.
7. **Disturbance of olfaction:**
   
   Abnormalities of smell are common in chronic sinusitis. Some times patient complains of foul smell (or) poor sense of smell and taste. There may be carcosmia (Unpleasant smell) (or) hyposmia and parosmia in patients with under lying allergic rhinitis.
8. General symptoms include low grade, fever, lassitude, mental apathy and depression may be present.
9. Inflammation and swelling of the Eustachian orifice. Occasionally this may turn into acute otitis media.
10. Pharyngitis may be main symptom and tonsils may become infected.

**INVESTIGATIONS :**

1. **RADIOLOGICAL EXAMINATION** of para nasal sinuses shows some of the following features,
a. Mucosal thickening of the lining mucose.
b. Opacity (or) Uniform haziness of the maxillary sinus.
c. Polypoid hypertrophy of lining mucosa
d. Osteitis (or) Osteosclerosis.

2. ANTERIOR RHINOSCOPY:

will reveal dull colour of nasal mucose. Trickle of pus is seen under the middle meatus, if the anterior group of sinuses are involved. The anterior end of the middle turbinate may be oedematous and turgescent. In such case application of 4% Xylocaine will reduce the swelling and trickle of pus will be seen better.

3. POSTERIOR RHINOSCOPY:

Will show pus in the middle meatus in maxillary sinusitis and in the spheno-ethmoidal recess in sphenoidal sinusitis.

4. TRANSILLUMINATION TEST:

Is seldom practised now-a-days.

5. NASAL SWAB

Shows increased eosinophil count in allergy variety, bacteriology shows Streptococcus commonly and also pneumococci.

6. SINOSCOPY:

Fibre-optic sinoscope is introduced in maxillary cavity through antrostomy and detailed pathology seen.

7. CT-SCAN: COMPUTED TOMOGRAPHY.

Computed Tomography is much more sensitive than other routine radiography, particular for ethmoid and sphenoid disease. It should be reserved for complicated cases and for cases in hospitalized patients however. In light of
the recent finding that sinus CT shows reversible acute changes in patients with common cold, it is apparent that routine early use of CT would lead to over diagnosis of bacterial sinusitis.

8. MRI: MAGNETIC RESONANCE IMAGE:

It is very useful diagnostic method, to rule out a drainable orbital abscess in the sinuses.

TREATMENT:

ACUTE SINUSITIS:

The treatment can be discussed in three headings. They are Prophylactic treatment, Medical treatment and Surgical treatment.

4. PROPHYLACTIC TREATMENT:

   a. Good Ventilation.
   b. Proper humidity.
   c. Inherent resistance produced by a healthy life and good mixed diet with sufficient vitamins A, C and D.
   d. Flying and swimming with a cold should be avoided.

2. VACCINES:

They are infected sub-cutaneously or intra dermally, taken orally or applied locally to the nasal mucous membrane. There has been decrease in interest over the last decade regarding the use of vaccines.

B. MEDICAL TREATMENT:

1. To control infection.

2. To encourage opening up of the sinus ostium.

CONTROL OF INFECTION:

by antibiotics.

OPENING UP OF SINUS OSTIUM:


b. Steam inhalation.

c. Anti histamine administration is helpful.

SYMPTOMATIC RELIEF AND GENERAL TREATMENT:

a) Rest - in bed in a warm, well ventilated room.

b) Analgesics - helps to relieve the pain.

c) Local heat - by radiant heat or hot water bottle used for 10 minutes
    relieves pain.

d) Diet - Plenty of fluid and nourishing diet. Vitamins are added. Tobacco and
    alcohol should be avoided as they congest the nasal mucosa.

e) Mouth care - Should be taken in case of dental sepsis.

C. SURGICAL TREATMENT:

Surgical treatment is occasionally needed in acute sinusitis. It is reserved
for those patients in whom improvement is not being obtained, especially if pain
(or) head ache are severe. The sinus is punctured under local anaesthesia and
drained out.

CHRONIC SINUSITIS:

TREATMENT:

Principle in the treatment of chronic para nasal sinus infection should be,

1. To encourage ciliary activity.

2. Aeration of the sinus cavity.

3. Adequate drainage.
Treatment is divided into,

A. Conservative Treatment.

B. Surgical Treatment.

A. CONSERVATIVE TREATMENT:

a. Aggravating factors:

such as dust, alcohol and tobacco should be avoided. Dry climate holiday, if possible is helpful.

b. Nutrious diet and regular diet habits are helpful.

c. Dental treatment. If various tooth (or) other sepsis.

d. Nasal decongestants and anti histamines.

help to reduce oedema and open up sinus ostium. 1% Ephedrine in saline is the ideal decongestant. This helps ciliary activity.

e. Irrigation of the nose:

with normal saline often helps.

f. Displacement theory of proetz:

with normal saline often helps.

g. Control of infection:

Antibiotics are usually ineffective, but a course of broad-spectrum antibiotic has to be given (according to sensitivity) in acute exacerbations and following sinus drainage.

h. Short wave diathermy. May give temporary relief but otherwise disappointing result.

B. SURGICAL TREATMENT:

1. Eradication of sinus pathology:

In cases where there is collection of pus in sinus cavity.
2. Sinus puncture and lavage:

   helps in removal of pus from sinus cavity and the procedure has to be repeated.

b. Radical Surgery:

   If above method fails, then sinus wall has to be opened up and thickened polypoidal lining mucose has to be removed.

2. Removal of nasal obstruction:

   a. Correction of septal deviation.
   
   b. Removal of nasal polyps.
   
   c. Diathermy of the inferior turbinate.

SPECIAL FEATURES AND TREATMENT OF INDIVIDUAL SINUSES:

Chronic Maxillary Sinusitis:

Diagnosis:

1. Pus in the middle meatus.

2. The postual test:

   Middle meatus is first cleared carefully of pus. If pus reappears quickly, it is from frontal sinus. If pus does not reappear then the head is bent sidewards opposite to the sinus involved. In case of maxillary sinus suppuration, pus will reappear in middle meatus as the maxillary ostium becomes dependent.

3. Transillumination Test: May help.


5. Proof puncture: will show evidence of pus.

TREATMENT:

1. Same as mentioned in chronic sinusitis.
2. Antral puncture is performed through inferior meatus and maxillary sinus is washed out. Repeated wash-out is often necessary.

3. Intra-nasal antrostomy:
   
   If repeated antral puncture shows evidence of pus, then permanent opening is made on the medial wall of maxillary antrum at the anterior part of inferior meatus. This is helpful in early reversible cases.

4. Even if this fails to clear up infection, then “caldwell-luc” operation is performed through sublabial approach and the diseased antral mucosa is removed.

**CHRONIC FRONTAL SINUSITIS:**

1. Pus in anterior part of the middle meatus. Pus is cleaned and head is kept erect. If pus reappears within few minutes, then it is coming from the frontonasal duct.

2. X-Ray is diagnostic.

3. Transillumination Test: may help.

**TREATMENT:**

1. General Treatment: Same as in chronic sinusitis.

2. Special Surgical Treatment
   
   a) Frontal Sinus Catheterisation and wash-out, is not performed commonly now-a-days.
   
   b) Howarth’s operation: if performed, is conservative treatment fails.
   
   c) Obliteration operation of the frontal sinuses is not practiced now-a-days.
CHRONIC ETHMOIDAL SINUSITIS:

This is usually associated with ethmoidal polyp formation.

TREATMENT:

1. General Treatment is same as in chronic sinusitis.

2. Special surgical treatment.
   a) Intra-nasal ethmoidectomy.
   b) External ethmoidectomy.
   c) Transantral ethmoidectomy.

3. FESS:

   After done an uncinectomy, a surgery is done to widen the ostio and drain thick secretions. It is very essential in severe acute sinusitis, particularly when ethmoid, frontal (or) Sphenoid disease fails to respond to initial intravenous therapy.

CHRONIC BACTERIAL SINUSITIS:

This condition is caused by dysfunction of the muco ciliary blanket, usually a result of repeated past infections, rather than persistance of bacterial infection. Patient complains of constant sinus pressure, nasal congestion and post nasal drainage (thick and green), especially in the morning. A temperature of $\geq 38^\circ C$ (100.5$^\circ F$) is rare and may signify a superimposed acute bacterial infection.

DIAGNOSIS:

Sinus CT should be used in all cases of chronic sinusitis to define the extend of disease and to help exclude other diagnosis such as an obstructing tumour or a granulomatous process.

FUNGAL SINUSITIS:

Fungal sinusitis is catagorized as non-invasive or invasive.
Non invasive disease is chronic and occurs in immunocompetent host. It has two forms that are analogous to the non-invasive pulmonary diseases of aspergilloma and allergic bronchopulmonary aspergillosis.

A fungal ball (aspergilloma) inside a sinus may cause symptoms of obstruction without invading the mucose. Typically only one sinus is affected and patients have unilateral symptoms and opacification of only that sinus on CT. On Histopathologic examination the thick sinus mucous contain numerous charcot-Leyden crystals, eosinophils and rare fungal hyphae.

Invasive fungal sinusitis presents different in immuno competent and immuno compromised Host.

Mortality from fungal sinusitis is high, even among immuno competent hosts.
ANATOMY OF NOSE

THE- NOSE:

The nose is externally pyramidal shaped.

BOUNDARIES:

It has a roof, floor, medial wall and lateral wall

ROOF:

1. It is a narrow area. The anterior part of the roof is formed by the frontal bones.
2. The middle roof is formed by Cribriform plate of the ethmoid bone.
3. The posterior part of the roof is formed by the body of the sphenoid bone.

FLOOR:

1. Palatine process of the maxilla.
2. Horizontal process of the palatine bones.

THE MEDIAL WALL OF THE NOSE:

(Septum of the nose)

The septum divides the nasal cavity into right and left cavities. The septum may (or) may not be situated in the midline. The septum is formed by bones and cartilages and covered by the mucoperiosteum and skin.

COMPONENTS OF THE SEPTUM:

- Posterio Superiorly by the perpendicular plate of the ethmoid bone.
- Posterio inferiorly by the Vomer bone.
- Anterio inferiorly by septal cartilage.

ACCESSORY COMPONENTS:

1. Rostrum of the sphenoid bone.
2. Frontal bone.
4. Anterior nasal spine of the Maxillae.
5. Palatine bone.
6. The medial crust of the greater alar cartilage.

THE NASAL SEPTUM MAY BE DIVIDED INTO FOLLOWING PARTS:

1. Cuticular part is situated anterior inferiorly.
2. Cartilagenous part is situated in the middle.
3. Bony part is situated posterior superiorly.

BORDERS:

It has 4 borders namely,

1. Anterior border.
2. Posterior border.
3. Inferior border.
4. Superior border.

SURFACES:

It has 2 surfaces namely,

a. Right surface.

b. Left surface.

The surfaces of the septum may show bony spaces. Along the anterior inferior part of the septum, there may be an opening for the vomero nasal organ of Jacobson may be situated.

BLOOD SUPPLY:

1. Long sphenopalatine artery.
2. Greater palatine artery.
3. Superior labial branch of the facial artery.
4. Anterior ethmoidal artery.

In the anterio inferior quadrant of the nasal septum these arteries communicate freely to form the kiesal bach’s area(little area). Injury to this area causes epistaxis.

**VENOUS DRAINAGE:**

1. Facial Vein.

2. Pterygoid Venous plexus.

**LYMPHATIC DRAINAGE:**

1. Submandibular lymphnodes.

2. Retero pharyngeal lymphnodes.

3. Anterio Superior group of deep cervical nodes.

**NERVE SUPPLY:**

1. Olfactory nerves carry the sense of smell from the upper part of the septum.

2. Naso palatine nerve.

3. Anterio Ethmoidal nerve.

4. Anterio Superior alveolar nerve.

**AUTONOMIC NERVE SUPPLY:**

Vidians nerve through the sphenopalatine ganglion.

**THE LATERAL WALL OF THE NOSE.**

This is an irregular space bounded by the nasal surface of the many bones. The bone forming the lateral wall of the nose are arranged into 3 zones.

The anterior zone is formed by,

1. Maxilla.

2. Nasal bone.
The middle zone is formed by,

1. Ethmoid bone.
2. Maxilla.
3. Conchae bone.

The posterior zone is formed by

1. Perpendicular plate of the palatine bone.
2. Medial pterygoid bone.

The lateral wall is irregular because it has three bony elevations called conchae.

The space between the adjacent conchae is known as the meatus.

The lateral wall is lined by mucous membrane called Mucoperiosteum.

The superior and middle conchae are formed by the labyrinthine part of the ethmoid bone.

The inferior conchae is formed by the conchae bone or turbinate bone. The inferior conchae articulates anteriorly with the maxilla and posteriorly with the perpendicular plate of the palatine bone. The lateral wall is divided into three areas.

1. Vestibule.
2. Atrium of the middle meatus.
3. Area of conchae and meatuses.

**THE VESTIBULE:**

This area is lined by the skin. So it is provided with hairs called Vibrisae.

The vibrisae arising from the anterior wall of the vestibule are directed backwards and vibrisae from the posterior wall are directed forwards. These vibrisae forming a sieve at the nasal entry. The vestibule is limited above by the limen nasi.
ATRIUM OF THE MIDDLE MEATUS:

This depression is situated above the vestibule but in front of the middle meatus. It is limited superiorly by a ridge known as agger nasi. The agger nasi is developed in lower mammals.

AREA OF CONCHAE AND MEATUSES:

There are 3 conchae and 4 meatuses. The conchae are,

1. Superior conchae.
2. Middle conchae.
3. Inferior conchae.

The meatuses are,

1. Spheno ethmoidal recess.
2. Superior meatus.
3. Middle meatus.
4. Inferior meatus.

The spheno ethmoidal recess is situated between the superior conchae and body of the sphenoid bone. In to this space the sphenoid air sinus is opening.

Sometimes within the spheno ethmoidal recess the highest conchae may be present. This conchae divides the recess into superior meatus and spheno ethmoidal recess.

THE SUPERIOR MEATUS:

The superior meatus is the narrowest among the meatuses. It is situated between the superior and middle conchae. The posterior ethmoidal air cells opens into space.
THE MIDDLE MEATUS:

This is the space between the middle conchae and inferior conchae. Anteriorly the middle meatus opens into the atrium of the middle meatus. The bulle ethmoidalis is an elevation caused by the middle ethmoidal air cells found in the meatus.

Below the bulle ethmoidalis there is a semilunar shaped gutter called hiatus semilunaris is situated.

The hiatus semilunaris is bounded below by the uncinate process of ethmoid bone. Into the anterior part of the hiatus, ethmoidal infundibulum opens. This opening is a common passage for the frontal air sinus and anterior ethmoidal air cells.

On the surface of the bulle ethmoidalis the middle ethmoidal air cells are opening.

The posterior part of the hiatus semilunaris receives the openings of the maxillary air sinus. There may be more than one opening for the maxillary air sinus.

In the anterior part of the inferior meatus, the naso lacrimal duct opens. This opening is guarded by the Hasner’s valve. This valve does not permit entry of air into the naso lacrimal duct.

BLOOD SUPPLY TO THE LATERAL WALL OF THE NOSE:

The lateral wall of the nose is divided into 4 quadrants. Each quadrant has separate blood supply.

ANTERIO SUPERIOR QUADRANT:

Anterior ethmoidal artery.

Posterior ethmoidal artery.
Facial artery.

**POSTERIO SUPERIOR QUADRANT:**

Spheno palatine artery (Maxillary artery).

**ANTERIO INFERIOR QUADRANT:**

Facial Artery.

Perforating branches of greater palatine artery.

**POSTERIO INFERIOR QUADRANT:**

Greater palatine artery and its branches.

**VENOUS DRAINAGE:**

Anterior part drains into exterior facial vein.

Middle part drains into pterygoid venous plexus.

Posterior part drains into pharyngeal Venous plexus.

**LYMPHATIC DRAINAGE:**

Anterior part drains into sub mandibular lymph nodes.

Posterior part drains into retro pharyngeal lymph nodes.

**NERVE SUPPLY:**

The sense of smell from the lateral wall is carried by the olfactory nerves.

**PARASYMPATHETIC SUPPLY:**

Vidiens nerve (Nerve of the pterygoid canal).

**SENSORY SUPPLY:**

**ANTERO SUPERIOR QUADRANT:**

Anterior ethmoidal nerve.

**POSTERO SUPERIOR QUADRANT:**

Spheno palatine branches of sphenopalatine ganglion.
ANTERIOR INFERIOR QUADRANT:

Anterior Superior alveolar nerve.

POSTERIOR INFERIOR QUADRANT:

Greater palatine nerve (Spheno palatine ganglion).

HISTOLOGY OF THE NASAL CAVITY:

The mucous membrane covering the respiratory portion of nasal cavity as a ciliated columnar epithelium with interspersed Goblet's cells. The underlying lamina propria is rich in mucous glands and blood vessels.

The para nasal sinus are lined by ciliated columnar epithelium, but they lack vascular plexus. They drain through small ostia into the nasal cavity. This ostia can be obstructed by only moderate mucosal swelling (e.g., oedema caused by inflammation) tumour (or) foreign body. The anatomic relationship favour certain roots of spread of disease and therefore play an important role in the development of complication.

ANATOMY OF PARA NASAL SINUSES

PARA NASAL SINUSES:

The para nasal sinuses are air containing bony spaces around the nasal cavity and lined by the mucous membrane of ciliated columnar epithelium. They develop as mucous diverticula of the nasal cavity and invade the neighbouring bones at the expense of the diploic tissue. The sinuses are arranged in pairs and are names as follows,

- Frontal
- Ethmoidal
- Sphenoidal
- Maxillary.
They are divided into two groups. Anterior group comprises frontal air sinus, the maxillary air sinus and the anterior ethmoidal air cells.

The posterior group comprises the posterior ethmoidal air cells and the sphenoidal sinus.

The anterior group of sinuses drains into the middle meatus and the posterior group drains into the superior meatus and the sphenoid ethmoidal recess.

The sinuses are present in rudimentary form at birth, except the frontal sinuses which start development two (or) three years after birth. They enlarge rapidly during the ages of 7-8 yrs.(time of eruption of permanent teeth) and then after puberty.

FUNCTIONS OF PARA NASAL SINUSES:

The exact function is not known. Probably they may have following functions.

1. Warming and moistening of inspired air may be partly done by the large mucosal surfaces of these adjacent sinuses.

2. The air filled sinus cavities probably add resonance for the production of sounds.

3. The temperature buffers. It is regarded that these chambers probably protect contents of orbits and cranial fossae from the internasal temperature variations.

4. Probably sinus formation in the cranial bones helps in reducing the weight of the cranial bones.

5. The sinus mucosa may act as a donor site for reconstructive procedures Eg. for Subglottic stenosis and implantation of maxillary sinus mucose into the nasal cavity in atrophic rhinitis.

6. Protection of the orbit by acting as a shock buffers.
7. Facial growth occurs rapidly after the formation of the sinuses.

**FRONTAL SINUSES:**

They are two in number and are contained within the tables of the squamous part of the frontal bone, deep to the medial end supraciliary arches. It extends upwards above the medial end of eye brow and backwards into the medial part of the root of the orbit. Each sinus is triangular in shape. Absent at birth, fairly developed at 7th to 8th year reach full size only after puberty

**Capacity:**

Each sinus has a capacity of about 7cc.

**MEASUREMENTS:**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth</td>
<td>2.5cm</td>
</tr>
<tr>
<td>Height</td>
<td>3cm</td>
</tr>
<tr>
<td>Breadth</td>
<td>2.5cm</td>
</tr>
</tbody>
</table>

**COMMUNICATIONS:**

It opens into the middle meatus of Nose at the anterior end of the hiatus semilunari’s either through the infundibulum (or) through the fronto nasal duct. The right and left sinuses are usually unequal in size separated by a thin plate of bone. The sinuses are better developed in males than in females. The frontal sinus is lined with columnar epithelium.

- **Blood Supply** - Supra Orbital Artery
- **Lymphatic drainage** - Sub.mandibular nodes
- **Nerve Supply** - Supra orbital nerve
- **Venous drainage** - into the anastomotic vein between the supra orbital and superior opthalmic veins in the supra orbital notch
MAXILLARY SINUSES:

It lies in the body of maxilla and is the largest of all the para nasal sinuses. It is pyramidal in shape with its a base directed medially towards the lateral wall of the nose and the apex directed laterally in the Zygomatic process of maxille. Average measurements of each sinus are as follows,

- Vertical (opposite 1st mode teeth) - 3.75cm
- Transverse - 2.5cm
- Antero - Posterior - 3.25cm
- Capacity - About 9.5 to 20cc

The fully developed maxillary air sinus should extend from the first premolar to the third molars teeth. The sinus reaches upto the floor of the orbit and thus occupies practically the whole body of the maxillary bone.

BOUNDARIES:

Each sinus is roughly pyramidal in shape and presents the following boundaries.

APEX:

Zygomatic process of maxilla

BASE:

By the nasal surface of the body of maxilla, in which lies in the recent state the opening of the maxillary sinus close to its roof. In the disarticulated skull the base presents a large opening, the maxillary hictus which is reduced in size by the following bones.

- Unciate process of ethmoid bone from above
- Ethmoidal process of inferior nasal conchae.
- Descending process of lacrimal bone from the front
Perpendicular plate of palatine bone from behind

The macerated skull two openings are present. One above on the other below the uncinate process in recent state usually the lower opening is closed by a plug of mucous membrane.

**ROOF:**

It is formed by the floor of orbit and is transversed by the infra orbital vessels and nerve in a body canal.

**FLOOR:**

It is formed by the alveolar process of maxilla. The floor is marked by several conical elevations produced by the roots of the upper molar and premolar teeth. The roots may even penetrate the bony floor to lie beneath the mucous lining, so that the infection of maxillary air sinus in apical tooth abscess becomes obvious. Extraction of poorly covered tooth can result in an abnormal communication between mouth and antrum known as Oro-antral fistula.

**ANTERIOR WALL:**

Related to the infra orbital plexus of vessels and nerves and the origins of muscles of upper lip. Within the wall anterior superior alveolar vessels and nerves traverse in a bony canal, the canalis sinuses.

**POSTERIOR WALL:**

It is pierced by posterior superior alveolar vessels and nerves and forms the anterior boundary of infra temporal and pterygo palatine fossae.
**COMMUNICATIONS:**

It opens into the middle meatus of the nose in the lower part of the hiatus semilunaris and the opening lies just below the bulla ethmoidalis. The openings are near the roof that the floor of the sinus. So the opening is located much higher from the floor of the sinus in disadvantagenous position for natural drainage.

The maxillary air sinus is lined by ciliated columnar epithelium. It is richly provided with glands which are situated chiefly around the osteum.

**BLOOD SUPPLY:**

From the anterior middle and posterior Superior alveolar vessels of maxillary.

**LYMPHATIC DRAINAGE:**

Sub. mandibular nodes

**NERVE SUPPLY:**

From the anterior middle and posterior superior alveolar nerves, branches of maxillary and infra orbital nerves.

**VENOUS DRAINAGE:**

Facial vein and pterygoid plexus of veins.

**ETMOIDAL SINUS**

There are numerous small inter communicating spaces which lie within the labyrinth of the ethmoidal bone. They are completed by the frontal, Maxillary, lacrimal, Sphenoidel and palatine bones. They lie between the upper part of the nasal cavity and the orbits and are separated from the orbits by extremely their orbital plates of ethmoids. The sinuses are divided into anterior, middle and posterior groups.
**ANTERIOR SINUSES:**

The anterior ethmoidal sinus is made up of up to 11 air cells. It opens into the anterior part of the hiatus semilunaris of the nose.

**MIDDLE SINUSES:**

The middle group generally comprises three cavities which opens into middle meatus by one of more orifices on (or) above the ethmoidal bulla.

**POSTERIOR SINUSES:**

The posterior group varies from one to seven in number and usually opens by one orifice into superior meatus of the nose.

**BLOOD SUPPLY:**

Anterior and posterior ethmoidal branches of Ophthic Artery.

**LYMPHATIC DRAINAGE:**

Anterior and middle groups of sinuses drained into submandibular lymphnodes.

Posterior group drains into retropharyngeal lymph rones.

**SPHENOIDAL SINUSES:**

These paired sinuses are located within the body of sphenoid bone above and behind the nasal cavity. Each sinus is somewhat asymmetrical and presents the following average measurements.

- Vertical: 2.2cm
- Transverse breath: 2cm
- Depth: 2.2cm.
**EXTENDS:**

Posteriorly it may extend up to the anterior margin of foramen magnum. Anteriorly it may encroach the roof of the orbit laterally extends up to pterygoid canal.

**RELATIONS:**

**ABOVE:** Optic chiasma and Lypophysis cerebri.

**BELOW:** Roof of the nasopharynx.

On each side cavernous sinus and internal carotid artery.

Behind pons and medulla oblongata seperated by the basilar venous plexus, in front of the spheneno ethmoidal recess.

**COMMUNICATIONS:**

Each sinus opens into the spheneno ethmoidal recess and hence into the superior meatus of nose.

**BLOOD SUPPLY:**

Posterior ethmoidal vessels.

**NERVE SUPPLY:**

Posterior ethmoidal nerve and orbital branches of pterygo palatine garglion.

**LYMPHATIC DRAINAGE:**

Retropharyngeal nodes.

**PHYSIOLOGY OF THE NOSE AND PARA NASAL SINUSES:**

The nose forms the gateway of the respiratory system and serves the following important functions.
1. **RESPIRATORY PASSAGE:**

   The inspired air passes upwards in a narrow stream medial to the middle turbinate and then downwards and backwards in the form of an arc and thus respiratory air currents are restricted to the central part of the nasal chambers.

2. **FILTRATION:**

   The nose serves as an effective filter for the inspired air.
   a) **Vibrisaeae (Nasal hair)** in the nasal vestibule arrests large dust particles of inspired air.
   b) The fine particulate matter and bacteria are deposited on the mucous blanket which covers the nasal mucosa. The mucous contains various enzymes like lysozymes having anti bacterial properties.
   c) The mucous with the particulate matter is carried by the ciliary movements posteriorly to the oropharynx to be swallowed.

3. **AIR CONDITIONING AND HUMIDIFICATION:**

   The highly vascular mucosa of the nose maintains constancy of temperature of air and thus prevents the delicate mucosa of the respiratory tract from any damage due to temperature variations. The humidified air is necessary for proper functioning and integrity of the ciliated epithelium.

4. **VOCAL RESONANCE:**

   The nose and para nasal sinuses serve as vocal resonators and nasal passages are concerned with production of nasal consonants like M and N. Thus obstructions of nasopharynx and nose alter the tone of voice.
5. **NASAL REFLEX FUNCTION:**

The respective fields of various reflexes lie in the nose. Those include sneezing and naso-pulmonary, naso - bronchia and olfactory reflexus. These protect the mucosa and regulate the vaso motor for tone of the blood vessels.

6. The nasal cavity serves as an outlet for lacrimal and sinus secretions.

7. **AERATION:**

Air in the nasal cavity helps in aeration of the para nasal sinuses and the middle ear through eustachian tube.

8. **OLFACTORY:**

This function is less developed in human beings. This sensation plays the most important role in behaviours and reflex responses of lower animals.

**SENSE OF SMELL**

**OLFACTORY NERVE:**

These are the sensory nerves of smell. They have their origins in special chemoreceptor nerve cells in the mucous membrane of the roof of the nose above the superior nasal conchae. On each side of the nasal septum nerve fibres from the cell bodies pass through the cribriform plate of the ethmoid bone to the olfactory bulb where inter connections and synapses occur. From the bulle, bundles of nerve fibres from the olfactory tracts which passes backwards to the olfactory area in the temporal lobe of the cerebral cortex in each hemisphere where the impulses are interpreted and Odour perceived.

**PHYSIOLOGY OF SMELL:**

The sense of smell in human beings is generally less acute than in other animals. All odorous materials give off chemical particles which are carried into
the nose with the inhaled air and stimulate the nerve cells of the olfactory region when dissolved in mucous.

The air entering the nose is heated and convection currents can eddies of inspired air from the main stream to the roof of the nose. “Sniffing” concentrates more particles, more quickly in the roof of the nose.

This increases the number of olfactory receptor cells, stimulated and thus the perception of the smell. The sense of smell may affect the appetite. If the odours are pleasant, the appetite may improve and vice versa. The sense of smell may create long lasting memories, especially to distinctive odours.

Adaptation—when an individual is continuously exposed to an odour, perception of the odour quickly decides and eventually ceases. This loss of perception only affect that specific odour and adaptation. Probably occurs both in the cerebrum and in the nerve endings in the nose.

SINUSITIS:

DEFINITION:

Sinusitis is an inflammation of the mucosal lining of sinus cavity. Inflammation may be suppurative or non suppurative.

CLASSIFICATION:

\[
\text{Sinusitis} \quad \rightarrow\quad \text{Acute Sinusitis} \quad \rightarrow\quad \text{Chronic sinusitis}
\]

ACUTE SINUSITIS:

DEFINITION:

It is an acute inflammation of the mucosa of paranasal sinuses. If inflammatory process occurs in more than one sinus, it is called multi sinusitis. If all para nasal sinuses are involved it is called Pan Sinusitis.
AETIOLOGY OF SINUSITIS:

1. DENTAL SEPSIS:
   Eg. Periapical abscess, periodontal abscess etc. (or) dental extraction particularly in connection with maxillary sinus, where roots of teeth project into the sinus.

2. TRAUMATIC:
   In fracture of sinus, infection may spread directly (or) by infected blood clots.

3. SWIMMING AND DIVING:
   Directly spread through the ostium.

4. Secondary bacterial infection from acute rhinitis may spread to sinuses through ostium or sub-mucosal lymphatics.

5. INFECTIONS:
a. Bacterial infection:
   Streptococci
   Staphylococci
   Pneumococci
   Hemophilus influenzae
   Escheriehia coli
   Micrococcus Cataerhalis.
   Bacillus pteiffer and B.

b. Viral infection:
   Rhinovirus
   Para influenza I and II
   Echo 28
Coxsacki A 21
Respiratory Syncytial Virus.

c. Fungal infections:
Para coccidiodomycosis
Mucormycosis
Rinosporidiosis
Rhinophycomycosis
Aspergillosis
Actinomycosis.

6. PREDISPOSING FACTORS:

a. Local:
Foreign body
Nasal Allergy
Enlarged adenoids
Deviation of nasal septum etc.

b. General:
Low general health
Chilling
Environmental pollution
Prolonged Exposure to cold
Associated chest infection

PATHOLOGY OF SINUSITIS:
The mucosa of sinus shows chronic inflammatory changes. The cilia get damaged by the infection with resultant inadequate drainage of the sinus cavity, particularly the maxillary sinus where the ostium is situated high up in the medial
wall. The retained secretions thereby lead to reinfection. Periphlebitis and perilymphangitis, may occur, leading to oedema and polyp formation, so called hypertrophic (or) Polypoidal sinusitis.

Sometimes there occurs metaplasia of the ciliated coloumnar epithelium to startified squamous type with interspread Papillary hyperplastic epithelial and inflammatory cells producing a picture of papillary hypertropic sinusitis. Occasionally the chronic inflammatory process may induce atrophic changes in the sinus mucosa with increase in sub mucosal fibrous tissue. (Atropic Sinusitis).

**CLINICAL FEATURES:**

Patient usually gives history of cold. After 3 to 4 days when symptoms should have diminished, there is exacerbation of symptoms.

1. Nasal obstruction becomes worse, watery rhinorrhoea is changed to thick muco-purulent secreation. Occasionally there may be epistaxis or blood stained nasal discharge.
2. Head ache and sense of heaviness present over the head.
3. Pain over infected sinus-stabbing (or) aching in character. This is made worse by bending (or) coughing.
4. Rise temperature, malaise and depression.
5. Unpleasant taste with post-nasal discharge is often present.
6. Tenderness over the frontal or the maxillary sinus and overlying soft tissue may be oedematous at times.

**INFECTION OF INDIVIDUAL SINUSES:**

**FRONTAL SINUSITIS:**

1. Pain occuring in frontal Sinusitis is usually in the frontal region. There may be periorbital pain, pain is usually located to forehead.
2. Frontal headache, in early stage is called “vaccum frontal head ache” due to blockage of the frontonasal duct and absorption of air.

3. The headache usually severe and periodic, present on walking and increases until mid day and then subsides gradually. Use of eyes may be painful.

4. There may be tenderness on the floor of frontal sinus. In some cases there may be oedema and puffiness of the upper lid.

ETHMOIDAL SINUSITIS:

1. Headache: It is usually located between and behind the eye regions (or) radiates to the temporal eye.

2. Nasal obstruction is frequent with loss of sense of smell.

3. There may be oedema over the nasal bones.

4. The middle turbinate shows oedematous inflamed mucous membrane.

SPHENOIDAL SINUSITIS:

1. Headache: Usually located in the occipital area of the head. The pain may be referred from the occipital region of the mastoid area.

2. The purulent post nasal discharge is a prominent feature of acute sphenoiditis.

3. Vertigo may be present.

MAXILLARY SINUSITIS:

It is the commonest of all sinus infection. Ostium of the maxillary sinus is situated high up in the medial wall which is not advantageous for self drainage and easily blocks, and predisposes to infections. Infection is usually from the nose (or) dental sepsis of upper jaw. The roots of molar teeth lie close to the floor of the maxillary antrum.
CLINICAL FEATURES OF MAXILLARY SINUSITIS:

1. PAIN:

   The symptoms are variable and may be general (or) localized to the ear, nose and throat. The pain is variable mild to severe. It may be present over the sinus (or) along the upper molar and premolar (or) referred to frontal area, temple (or) above the ear. Pain is mainly due to oedema of the ostium producing blackage of the sinus and pressure.

2. Nasal discharge:

   The patient frequently complains of excess nasal discharge which could be mucoid, mucopurulent (or) purulent.

   Nasal discharge is very foul smelling in cases of sinusitis of dental origin. Pus may also be found an hawking.

3. Post nasal Drip:

   Excessive production of post nasal discharge is a common symptom which causes irritation and compels the patient to clear his throat frequently.

4. There is tenderness over the cheek. Swelling of the alveolar margin and the lower part of cheek may be seen in cases of dental sepsis. Oedema over infra orbital region is present in some cases.

5. Nasal obstruction:

   It may be the result of an underlying obstructive pathology of the nose like a deviated septum. Polyposis (or) hyper trophied turbinates (or) because of chronic turgescence of the nasal nucosa.
6. Sore throat:

   Inflammation of air ways due to inflammatory mediators like brady kinin cause smooth muscle contraction resulting in throat pain, hoarseness of voice, excessive salivation and pharyngitis.

7. Facial pain (or) Discomfort:

   Vague discomfort present all over the face.

8. Abnormalities of smell:

   The patient may complain of diminished acuity of smell (Hyposmia). He may complain of unpleasant odour (cacosmia) (or) may have distortion of smell perception (Parosmia)

9. Epistaxis:

   Inflammatory hypereamia in the nose may result the epistaxis but this is uncommon.

10. The general symptoms of sinusitis include a sense of tiredness, low grade fever and felling of being unwell. Chronic sinusitis may produce effects on other systems like gastro intestinal upsets and chronic bronchitis.

ETIOLOGIAL FACTORS:

1. Deviated nasal septum
2. Nasal polyps
3. Facial Trauma
4. Allergens
5. Extension of odonotogenic infections.
7. The most common organisms involved include
1. Haemophilus influenzae
2. Streptococcus Pneumonae
3. Streptococcus pyogens.
4. Alpha haemolytic streptococci.

INVESTIGATIONS:

1. Radiology of Para nasal Sinus:
   It is the most sensitive and specific test. Show haziness of the affected sinus or all sinus. In cases of empyema fluid can be seen in the maxillary sinus.

2. C.T.SCAN:
   When indicated is even more sensitive in detecting sinusitis.

3. Transillumination Test is helpful in maxillary and frontal sinusitis.

4. Anterior rhinoscopy:
   The nasal mucosa is congested and there may be trickle of pus under the middle turbinate and in the post-nasal space.

5. Nasal swab culture.

6. Serum immunoglobins - IgG., IgA, IgM, Sub.classes.

7. Antibody titres

8. Delayed hypersensitivity tests.

9. Direct sinus aspiration is the only procedure that can provide accurate information concerning aetiology.

Complications of sinusitis:

   The para nasal sinuses are situated close to the eyes, brain and nose, and the infection can easily spread from sinuses to orbit and intra cranial cavity giving rise to serious complications.
Nasal compilations:
1) Chronic rhinitis
2) Secondary atrophic rhinitis
3) Chronic hypertropic rhinitis
4) Nasal polyposis.

Orbital complications:
1. Orbital cellulitis
2. Orbital abscess
3. Retrobulbar neuritis
4. Superior orbital fissure syndrome
5. Orbital apex syndrome.

Pharyngeal and Laryngeal complications:
1. Lateral wall pharyngitis
2. Granular pharyngitis
3. Pharyngo Laryngitis
4. Tonsilitis.

Ear Complications:
1. Eustachian catarrh and Middle ear effusion
2. Chronic suppurative otitis media.

Intra ear complications:
1. Meningitis
2. Encephalitis
3. Extra dural abscess
5. Frontal abscess of brain
6. Cavernous sinus thrombosis.

**Bony complications:**

Osteomyelitis of facial bones.

**Miscellaneous:**

- Mucoceles
- Pyoceles
- Oro antral fistule

**CHRONIC SINUSITIS:**

**Definition:**

This is chronic inflammatory process affecting mucosa of various groups of para nasal sinuses. The recurrent attacks of acute sinusitis lead to chronic sinusitis.

**Aetiology:**

1. Nasal obstruction leads to chronic sinus infection (eg),
   - a) Deviated nasal septum
   - b) Oedematous turbinates
   - c) Polyps
2. Recurrent attacks of acute sinusitis and upper and lower respiratory infection.
3. Chronic dental sepsis and also associated with lower respiratory infection.
4. Atmospheric pollution:
   - Damp environment and Poor nutrition also leads to chronic sinusitis
5. Inadequate aeration of the sinuses due to allergy and narrowing of the sinus ostium from infection.
Clinical features:

1. Nasal obstruction due to oedema of the turbinates and thick mucous tenacious secretions.

2. Sinus infection may set up a chronic rhinitis with nasal obstruction resulting from hyper trophy of the nasal mucosa and turbinates.

3. Pain is not a typical feature, but dullache may be present over the sinus concerned.

4. Head ache may be present certain periodicity increasing after rising in the morning, but gradually decreasing as the day goes on or vice verse.

5. Excess nasal discharge secretions usually frank mucosa and pus are discharged.

6. Epistaxis results from the inflammatory vasodilation in the nose.

7. Disturbance of olfaction:

   Abnormalities of smell are common in chronic sinusitis. Some times patient complains of foul smell (or) poor sense of smell and taste. There may be carcsmia (Unpleasant smell) (or) hyposmia and parosmia in patients with under lying allergic rhinitis.

8. General symptoms include low grade, fever, lassitude, mental apathy and depression may be present.

9. Inflammation and swelling of the Eustachian orifice. Occasionally this may turn into acute otitis media.

10. Pharyngitis may be main symptom and tonsils may become infected.

INVESTIGATIONS:

1. RADIOLOGICAL EXAMINATION of para nasal sinuses shows some of the following features,
a. Mucosal thickening of the lining mucosa.
b. Opacity (or) Uniform haziness of the maxillary sinus.
c. Polypoid hypertrophy of lining mucosa
d. Osteitis (or) Osteosclerosis.

2. ANTERIOR RHINOSCOPY:

will reveal dull colour of nasal mucose. Trickle of pus is seen under the middle meatus, if the anterior group of sinuses are involved. The anterior end of the middle turbinate may be oedematous and turgescent. In such case application of 4% Xylocaine will reduce the swelling and trickle of pus will be seen better.

3. POSTERIOR RHINOSCOPY:

Will show pus in the middle meatus in maxillary sinusitis and in the spheno-ethmoidal recess in sphenoidal sinusitis.

4. TRANSILLUMINATION TEST:

Is seldom practised now-a-days.

5. NASAL SWAB

Shows increased eosinophil count in allergy variety, bacteriology shows Streptococcus commonly and also pneumococci.

6. SINOSCOPY:

Fibre-optic sinoscope is introduced in maxillary cavity through antrostomy and detailed pathology seen.

7. CT-SCAN: COMPUTED TOMOGRAPHY.

Computed Tomography is much more sensitive than other routine radiography, particularly for ethmoid and sphenoid disease. It should be reserved for complicated cases and for cases in hospitalized patients however. In light of
the recent finding that sinus CT shows reversible acute changes in patients with common cold, it is apparent that routine early use of CT would lead to over diagnosis of bacterial sinusitis.

8. MRI: MAGNETIC RESONANCE IMAGE:

It is very useful diagnostic method, to rule out a drainable orbital abscess in the sinuses.

TREATMENT:

ACUTE SINUSITIS:

The treatment can be discussed in three headings. They are Prophylactic treatment, Medical treatment and Surgical treatment.

4. PROPHYLACTIC TREATMENT:

   a. Good Ventilation.
   b. Proper humidity.
   c. Inherent resistance produced by a healthy life and good mixed diet with sufficient vitamins A, C and D.
   d. Flying and swimming with a cold should be avoided.

2. VACCINES:

They are infected sub-cutaneously or intra dermally, taken orally or applied locally to the nasal mucous membrane. There has been decrease in interest over the last decade regarding the use of vaccines.

B. MEDICAL TREATMENT:

1. To control infection.
2. To encourage opening up of the sinus ostium.
CONTROL OF INFECTION:
  by antibiotics.

OPENING UP OF SINUS OSTIUM:
  b. Steam inhalation.
  c. Anti histamine administration is helpful.

SYMPTOMATIC RELIEF AND GENERAL TREATMENT:
  a) Rest - in bed in a warm, well ventilated room.
  b) Analgesics - helps to relieve the pain.
  c) Local heat - by radiant heat or hot water bottle used for 10 minutes
      relieves pain.
  d) Diet - Plenty of fluid and nourishing diet. Vitamins are added. Tobacco and
      alcohol should be avoided as they congest the nasal mucosa.
  e) Mouth care - Should be taken in case of dental sepsis.

C. SURGICAL TREATMENT:
  Surgical treatment is occasionally needed in acute sinusitis. It is reserved
  for those patients in whom improvement is not being obtained, especially if pain
  (or) head ache are severe. The sinus is punctured under local anaesthesia and
  drained out.

CHRONIC SINUSITIS:

TREATMENT:
  Principle in the treatment of chronic para nasal sinus infection should be,
  1. To encourage ciliary activity.
  2. Aeration of the sinus cavity.
  3. Adequate drainage.
Treatment is divided into,

A. Conservative Treatment.

B. Surgical Treatment.

**A. CONSERVATIVE TREATMENT:**

a. Aggravating factors:

   such as dust, alcohol and tobacco should be avoided. Dry climate
day, if possible is helpful.

b. Nutrious diet and regular diet habits are helpful.

c. Dental treatment. If various tooth (or) other sepsis.

d. Nasal decongestants and anti histamines.

   help to reduce oedema and open up sinus ostium. 1% Ephedrine in
   saline is the ideal decongestant. This helps ciliary activity.

e. Irrigation of the nose:

   with normal saline often helps.

f. Displacement theory of proetz:

   with normal saline often helps.

g. Control of infection:

   Antibiotics are usually ineffective, but a course of broad-spectrum
   antibiotic has to be given (according to sensitivity) in acute exacerbations
   and following sinus drainage.

h. Short wave diathermy. May give temporary relief but otherwise disappointing
   result.

**B. SURGICAL TREATMENT:**

1. Eradication of sinus pathology:

   In cases where there is collection of pus in sinus cavity.
2. Sinus puncture and lavage:
   helps in removal of pus from sinus cavity and the procedure has to be repeated.

b. Radical Surgery:
   If above method fails, then sinus wall has to be opened up and thickened polypoidal lining mucose has to be removed.

2. Removal of nasal obstruction:
   a. Correction of septal deviation.
   b. Removal of nasal polyps.
   c. Diathermy of the inferior turbinate.

SPECIAL FEATURES AND TREATMENT OF INDIVIDUAL SINUSES:

Chronic Maxillary Sinusitis:

Diagnosis:
1. Pus in the middle meatus.
2. The postual test:
   Middle meatus is first cleared carefully of pus. If pus reappears quickly, it is from frontal sinus. If pus does not reappear then the head is bent sideways opposite to the sinus involved. In case of maxillary sinus suppuration, pus will reappear in middle meatus as the maxillary ostium becomes dependent.
3. Transillumination Test: May help.
5. Proof puncture: will show evidence of pus.

TREATMENT:
1. Same as mentioned in chronic sinusitis.
2. Antral puncture is performed through inferior meatus and maxillary sinus is washed out. Repeated wash-out is often necessary.

3. Intra-nasal antrostomy:

   If repeated antral puncture shows evidence of pus, then permanent opening is made on the medial wall of maxillary antrum at the anterior part of inferior meatus. This is helpful in early reversible cases.

4. Even if this fails to clear up infection, then “caldwell-luc” operation is performed through sublabial approach and the diseased antral mucosa is removed.

**CHRONIC FRONTAL SINUSITIS:**

1. Pus in anterior part of the middle meatus. Pus is cleaned and head is kept erect. If pus reappears within few minutes, then it is coming from the frontonasal duct.

2. X-Ray is diagnostic.

3. Transillumination Test: may help.

**TREATMENT:**

1. General Treatment: Same as in chronic sinusitis.

2. Special Surgical Treatment
   a) Frontal Sinus Catheterisation and wash-out, is not performed commonly now-a-days.

   b) Howarth’s operation: if performed, is conservative treatment fails.

   c) Obliteration operation of the frontal sinuses is not practiced now-a-days.
CHRONIC ETHMOIDAL SINUSITIS:

This is usually associated with ethmoidal polyp formation.

TREATMENT:

1. General Treatment is same as in chronic sinusitis.

2. Special surgical treatment.

   a) Intra-nasal ethmoidectomy.

   b) External ethmoidectomy.

   c) Transantral ethmoidectomy.

3. FESS:

   After done an uncinectomy, a surgery is done to widen the ostio and drain thick secretions. It is very essential in severe acute sinusitis, particularly when ethmoid, frontal (or) Sphenoid disease fails to respond to initial intravenous therapy.

CHRONIC BACTERIAL SINUSITIS:

This condition is caused by dysfunction of the mucociliary blanket, usually a result of repeated past infections, rather than persistence of bacterial infection. Patient complains of constant sinus pressure, nasal congestion and post nasal drainage (thick and green), especially in the morning. A temperature of ≥38°C (100.5°F) is rare and may signify a superimposed acute bacterial infection.

DIAGNOSIS:

Sinus CT should be used in all cases of chronic sinusitis to define the extent of disease and to help exclude other diagnosis such as an obstructing tumour or a granulomatous process.

FUNGAL SINUSITIS:

Fungal sinusitis is categorized as non-invasive or invasive.
Non invasive disease is chronic and occurs in immunocompetent host. It has two forms that are analogous to the non-invasive pulmonary diseases of aspergilloma and allergic bronchopulmonary aspergillosis.

A fungal ball (aspergilloma) inside a sinus may cause symptoms of obstruction without invading the mucose. Typically only one sinus is affected and patients have unilateral symptoms and opacification of only that sinus on CT. On Histopathologic examination the thick sinus mucous contain numerous charcot-Leyden crystals, eosinophils and rare fungal hyphae.

Invasive fungal sinusitis presents different in immuno competent and immuno compromised Host.

Mortality from fungal sinusitis is high, even among immuno competent hosts.
RESULTS AND OBSERVATIONS

The results were observed regarding the following criteria by clinical study on 20 inpatients and 20 outpatients.

- Sex distribution
- Age distribution
- Kaalam
- Thegi
- Gunum
- Religious distribution
- Thinai
- Paruvakaalam
- Siru pozuthu
- Occupational status
- Socio – economic status
- Diet factors
- Habits
- Aetiological factors
- Associated diseases
- Mode of onset
- Duration of illness
- Clinical manifestation
- Systemic examination
- Relevant systemic examination
- Kosam
- Mukkutram
- Disturbance in Vadha
- Disturbance in Pitha
- Disurbance in Kaba
- Seven Udarkattukal
- Envagai thervugal
- Urine analysis
- Laboratory assessment
- Radiological assessment
- Gradation of results
- Clinical assessment
1. **Sex Distribution**

<table>
<thead>
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<th>Sex</th>
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<th>Outpatients</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>30</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>70</td>
<td>11</td>
<td>55</td>
</tr>
</tbody>
</table>

Among 20 patients 30% were males and 70% were females. Among 20 out – patients 45% were males and 55% were female.

2. **Age Distribution:**

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>20 – 30</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>31 – 40</td>
<td>4</td>
<td>20</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>41 – 50</td>
<td>2</td>
<td>10</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>51 – 60</td>
<td>5</td>
<td>25</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>61 – 70</td>
<td>7</td>
<td>35</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>71 – 80</td>
<td>2</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among Inpatients:-

- 20% were in the age group 31 – 40
- 10% were in the age group 41 – 50
- 25% were in the age group 51 – 60
- 35% were in the age group 61 – 70
- 10% were in the age group 71 – 80

Among 20 Outpatients:-

- 25% were in the age group 20 - 30
- 25% were in the age group 31 – 40
- 20% were in the age group 41 – 50
- 25% were in the age group 51 – 60
- 5% were in the age group 61 – 70
3. Kaalam:

<table>
<thead>
<tr>
<th>Kaalam</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Vaadha Kaalam</td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>(1-33 yrs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitha Kaalam</td>
<td>16</td>
<td>80</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>(34-66 yrs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaba kaalam</td>
<td>2</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(67 -100 yrs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among inpatients:

10% belonged to Vadha Kaalam
80% belonged to Pitha Kaalam
10% belonged to Kaba Kaalam

Among Outpatients:

30% belonged to vadha Kaalam
70% belonged to Pitha kaalam

4. Thegi:

<table>
<thead>
<tr>
<th>Thegi</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Vadha thegi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pitha thegi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kaba thegi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thontha thegi</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Among inpatients and outpatients, 100% had Thontha Thegi.
5. Gunam:

| Gunam   | Inpatients | | | Outpatients | | |
|---------|------------|---|--|--------------|---|
|         | No of cases | Percentage | | No of cases | percentage |
| Sathuvam | 20         | 100          | | 20         | 100          |
| Rajogunum| -          | -            | | -          | -            |
| Thamogunum | -  | -      | | -          | -            |

Among inpatients and outpatients 100% had Rajagunum

6. Religious distribution:

| Religion | Inpatients | | | Outpatients | | |
|----------|------------|---|--|--------------|---|
|          | No of cases | Percentage | | No of cases | percentage |
| Hindu    | 17          | 85            | | 20         | 100          |
| Christian | 2          | 10            | | -          | -            |
| Muslim   | 1           | 5             | | -          | -            |

Among inpatients:
85% were Hindu
10% were Christian
5% were Muslim

Among Outpatients:
100% were Hindu

7. Thinai:

| Thinai   | Inpatients | | | Outpatients | | |
|----------|------------|---|--|--------------|---|
|          | No of cases | Percentage | | No of cases | percentage |
| Kurinji  | -          | -            | | -          | -            |
| Mullai   | -          | -            | | -          | -            |
| Marutham | 20         | 100          | | 20         | 100          |
| Neithal  | -          | -            | | -          | -            |
| Palai    | -          | -            | | -          | -            |

Among inpatients and outpatients 100% belonged to Marutham.
8. Sirupozhthu:

<table>
<thead>
<tr>
<th>Sirupozhthu</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Vaikarai</td>
<td>12</td>
<td>60</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Kalai</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pagal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nadu pagal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malai</td>
<td>8</td>
<td>40</td>
<td>11</td>
<td>65</td>
</tr>
<tr>
<td>Nadu Eravu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Paruvakaalam:

This table illustrates the incidence of disease in various seasons.

<table>
<thead>
<tr>
<th>Paruvakaalam</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Kaerkaalam</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Koothirkaalam</td>
<td>3</td>
<td>15</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>Munpanikaalam</td>
<td>11</td>
<td>55</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Pinpanikaalam</td>
<td>6</td>
<td>30</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Elavenilkaalam</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mudhuvenilkaalam</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Among Inpatients:**
15% were affected during Kothirkaalam
55% were affected during Munpanikaalam
30% were affected during Pinpanikaalam

**Among Outpatients:**
75% were affected during Koothirkaalam
25% were affected during Munpanikaalam
### 10. Gnanthiriyam:

<table>
<thead>
<tr>
<th>Gnanthiriyam</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Mai</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vai</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kan</td>
<td>5</td>
<td>25</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Mookku</td>
<td>10</td>
<td>50</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Sevi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### 11. Kanmanthiriyam:

<table>
<thead>
<tr>
<th>Kanmanthiriyam</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Kai</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kal</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vai</td>
<td>5</td>
<td>25</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Eruvai</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Karuvai</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### 12. Occupational Status:

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Servant – maid</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>House wife</td>
<td>3</td>
<td>15</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Farmer</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Traditional Medical</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>practitioners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired Man</td>
<td>2</td>
<td>10</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Daily Wage</td>
<td>2</td>
<td>10</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Beedi worker</td>
<td>4</td>
<td>20</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Student</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Lorry driver</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hotel worker</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Merchant</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Auto mobile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mill workers</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
13. Socio – economic status:

<table>
<thead>
<tr>
<th>Socio – economic status</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Rich</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Middle class</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Poor</td>
<td>14</td>
<td>70</td>
</tr>
</tbody>
</table>

Among Inpatients:
30% were middle class people
70% were economically poor

Among Outpatients:
35% were middle class people
65% were economically poor

14. Diet Factors:

<table>
<thead>
<tr>
<th>Diet types</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Vegetarian</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Non-vegetarian</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mixed diet</td>
<td>18</td>
<td>90</td>
</tr>
</tbody>
</table>

15. Habits:

<table>
<thead>
<tr>
<th>Habits</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Smoker</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Alcoholic</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Tobacco Chewer</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Tobacco inhaler</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
Among Inpatients:
25% were Smokers
15% were tobacco chewers
20% were Alcoholics
5% were tobacco inhaler

Among Outpatients:
35% were Smokers
10% were Alcoholics
25% were tobacco chewers

16. Aetiological factors:

<table>
<thead>
<tr>
<th>Aetiological factors</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Occupation</td>
<td>10</td>
<td>50</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Nasal Allegy</td>
<td>5</td>
<td>25</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Bacterial Infection</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Acute Rhinitis</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Traumatic</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Swimming &amp; diving</td>
<td>1</td>
<td>10</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

Among Inpatients:
50% had occupational aetiology
25% had nasal allegry
5% had Bacterial infection
10% had Acute Rhinitis
2% had infection due to swimming and diving

Among Outpatients:
45% had occupational aetiology
30% had nasal allergy
15% had Acute Rhinitis
10% had infection due to swimming & diving
17. Associated Diseases:

| Associated diseases | Inpatients | | | Outpatients | | |
|---------------------|------------|-----------------|-----------------|-----------------|-----------------|
|                     | No of cases | Percentage | No of cases | Percentage |
| Diabetes Mellitus   | 5           | 25%            | 6             | 30%            |
| Hypertension        | 3           | 15%            | 2             | 10%            |
| Tuberculosis        | 2           | 10%            | 1             | 5%             |
| Bronchial Asthma    | 5           | 25%            | 6             | 30%            |
| PID                 | -           | -              | -             | -              |
| Others              | -           | -              | -             | -              |

Among Inpatients:
25% had Diabetes mellitus
15% had Hypertension
10% had Tuberculosis
25% had Bronchial asthma

Among Outpatients:
30% had Diabetes mellitus
10% had Hypertension
5% had Tuberculosis
30% had Bronchial Asthma

18. Mode of onset:

| Mode of onset | Inpatients | | | Outpatients | | |
|---------------|------------|-----------------|-----------------|-----------------|-----------------|
|               | No of cases | Percentage | No of cases | Percentage |
| Acute         | 15          | 75%            | 14             | 70%            |
| Chronic       | 5           | 25%            | 6             | 30%            |

Among Inpatients:
75% had acute onset
25% had chronic onset

Among Outpatients:
70% had acute onset
30% had chronic onset
19. Duration of illness:

<table>
<thead>
<tr>
<th>Duration of illness</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Below 1 week</td>
<td>7</td>
<td>35</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>8 to 15 days</td>
<td>3</td>
<td>15</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>16 to 20 days</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>20 days to 1 month</td>
<td>3</td>
<td>15</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>1 to 2 months</td>
<td>3</td>
<td>15</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>2 to 3 months</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

20. Clinical Manifestations:

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Profuse watery nasal discharge</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Recurrent sneezing</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Recurrent salivation</td>
<td>10</td>
<td>50</td>
<td>11</td>
<td>55</td>
</tr>
<tr>
<td>Pain in PNS</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Headache</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Otalgia</td>
<td>8</td>
<td>40</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Pain in eyes and eyebrows</td>
<td>10</td>
<td>50</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Sore throat</td>
<td>7</td>
<td>35</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Difficulty in breathing</td>
<td>15</td>
<td>75</td>
<td>17</td>
<td>85</td>
</tr>
</tbody>
</table>

21. Relevant Systemic Examination:

<table>
<thead>
<tr>
<th>Relevant Systematic Examination</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Inspection</td>
<td>5</td>
<td>25</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Palpation</td>
<td>15</td>
<td>75</td>
<td>12</td>
<td>60</td>
</tr>
</tbody>
</table>

Among inpatients:

Inspection revealed 25% had DNS

Palpation revealed 75% had sinus tenderness
Among Outpatients:

Inspection revealed 25% had DNS

Palpation revealed 60% had sinus tenderness

22. Kosam:

<table>
<thead>
<tr>
<th>Kosam</th>
<th>Inpatients No of cases</th>
<th>Percentage</th>
<th>Outpatients No of cases</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annamayakosam</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Pranamaya kosam</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Manomaya kosam</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Gnenemaya kosam</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Ananthamaya kosam</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

23. Mukkutram:

A. Disturbance in Vadha:

<table>
<thead>
<tr>
<th>Disturbance in Vadha</th>
<th>Inpatients No of cases</th>
<th>Percentage</th>
<th>Outpatients No of cases</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piranan</td>
<td>15</td>
<td>75</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>Abanan</td>
<td>2</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Viyanan</td>
<td>5</td>
<td>25</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Udhanan</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Samanana</td>
<td>10</td>
<td>50</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Nagan</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Koorman</td>
<td>15</td>
<td>75</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td>Kirukaran</td>
<td>10</td>
<td>50</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Devathathan</td>
<td>9</td>
<td>45</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Dhananjeyan</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Among Inpatients:

Piranan was affected in 75% of patients

Abanan was affected in 10% of patients

Viyanan was affected in 25% of patients
Udhanan was affected in 100% of patients
Samanan was affected in 50% of patients
Koorman was affected in 75% of patients
Kirukaran was affected in 50% of patients
Devathathan was affected in 45% of patients

**Among Outpatients:**

Piranan was affected in 80% of patients
Viyanan was affected in 35% of patients
Udhanan was affected in 100% of patients
Samanan was affected in 60% of patients
Koorman was affected in 85% of patients
Devathathan was affected in 15% of patients.

### B. Disturbance in Pitha:

<table>
<thead>
<tr>
<th>Disturbance in Pitha</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Ananpithan</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Ranjagam</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Prasagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alosagam</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Sathagam</td>
<td>15</td>
<td>75</td>
</tr>
</tbody>
</table>

**Among Inpatients:**

Anarpithan was affected in 25% of patients.
Ranjagam was affected in 30% of patients.
Alosagaman was affected in 50% of patients.
Sathagam was affected in 75% of patients.

**Among Outpatients:**

Anarpithan was affected in 35% of patients.

Ranjagam was affected in 50% of patients.

Alosagan was affected in 60% of patients.

Sathagam was affected in 75% of patients.

**C. Disturbance in Kaba:**

<table>
<thead>
<tr>
<th>Disturbance in Kaba</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Avalambagam</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>Kilethagam</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Pothagam</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>Tharpagam</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Santhigam</td>
<td>10</td>
<td>50</td>
</tr>
</tbody>
</table>

**Among Inpatients:**

Avalambagam was affected in 75% of patients.

Kilethagam was affected in 50% of patients.

Pothagam was affected in 75% of patients

Tharpagam was affected in 50% of patients

Santhigam was affected in 50% of patients

**Among outpatients:**

Avalambagam was affected in 75% of patients.

Kilethagam was affected in 60% of patients.

Pothagam was affected in 60% of patients

Tharpagam was affected in 75% of patients

Santhigam was affected in 35% of patients
24. Seven Udarkattukal:

<table>
<thead>
<tr>
<th>Seven Udarkattukal</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
</tr>
<tr>
<td>Saram</td>
<td>12</td>
<td>60</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>Seneer</td>
<td>7</td>
<td>35</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Oon</td>
<td>2</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kozhuppu</td>
<td>2</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Enbe</td>
<td>4</td>
<td>20</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Moolai</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sakkilam . Suronitham</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Among inpatients:

Saram was affected in 60% of patients
Seneer was affected in 35% of patients
Oon was affected in 10% of patients
Kozhuppu was affected in 10% of patients
Enbu was affected in 20% of patients.

Among Outpatients:

Saram was affected in 75% of patients
Seneer was affected in 40% of patients
Enbu was affected in 40% of patients
25. Envagai thervugal:

<table>
<thead>
<tr>
<th>Envagai thervugal</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Sparisam</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Naa</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>Niram</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mozhi</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Vizhi</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>Malam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Moothiram</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Naaadi</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pitha vadha Naadi</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Pitha Kaba naadi</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Kaba Vadha naadi</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

**Among Inpatients:**

Sparisam was affected in 35% of patients  
Naa was affected in 75% of patients  
Mozhi was affected in 50% of patients  
Vizhi was affected in 65% of patients  
In 50% of cases the naadi was Pitha vadha Naadi  
In 25% of cases the naadi was Pitha Kaba naadi  
In 25% of cases the naadi was Kaba Vadha Naadi

**Among outpatients:**

Sparisam was affected in 40% of patients  
Naa was affected in 75% of patients  
Vizhi was affected in 35% of patients  
In 35% of cases the naadi was Pitha Vadha Naadi  
In 40% of cases the naadi was Pitha Kaba Naadi  
In 25% of cases the naadi was Kaba Vadha Naadi
26. Urine analysis:

A. Neerkuri

<table>
<thead>
<tr>
<th>Neerkuri</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Colour</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Smell</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Froth</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Deposits</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Among inpatients and outpatients:

Urine colour was affected in 10% of patients.

Specific gravity was affected in 10% of patients.

B. Neikuri:

<table>
<thead>
<tr>
<th>Neikuri</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Vadha Neer</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>(spreading like a shake)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitha Neer</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>(spreading like a ring)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaba Neer</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>(Spreading like a pearl)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thontha Neer</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(coincide of snake, ring, pearl)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among Inpatients:

50% had Vadha neer
10% had Pitha neer
40% had Kaba Neer
Among Outpatients:
60% had Vadha neer
5% had Pitha neer
35% had Kaba neer

27. Radiological examination:

<table>
<thead>
<tr>
<th>X-Ray PNS</th>
<th>Inpatients</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>percentage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frontal sinusitis</td>
<td>8</td>
<td>40</td>
<td>10</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Maxillary sinusitis</td>
<td>7</td>
<td>35</td>
<td>4</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. maxillary Sinusitis</td>
<td>6</td>
<td>30</td>
<td>7</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethmoid Sinusitis</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sphenoid Sinusitis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DNS</td>
<td>4</td>
<td>20</td>
<td>2</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among Inpatients:
25% had frontal sinusitis
35% had L. Maxillary sinusitis
25% had R. maxillary sinusitis
5% had ethmoidal sinusitis
20% had DNS (Deviated nasal Septum)

Among Outpatients:
30% had frontal sinusitis
20% had L. Maxiliary sinusitis
35% had R.maxiliary sinusitis
10% had DNS
28. Clinical Assessment:

<table>
<thead>
<tr>
<th>Clinical Assessment</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Completely relieved</td>
<td>10</td>
<td>50</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Moderately relieved</td>
<td>7</td>
<td>35</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Partially relieved</td>
<td>3</td>
<td>15</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>No improvement</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

After the patients were treated with trial medicines the improvement were accessed as follows.

**Among inpatients:**
50% of patients were completely relieved from all the symptoms
35% of patients were moderately relieved from the symptoms
15% of patients were partially relieved from all the symptoms

**Among Outpatients:**
60% of patients were completely relieved from all the symptoms
25% of patients were moderately relieved from the symptoms
15% of patients were partially relieved from all the symptoms

28. Gradation of Results:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Inpatients</th>
<th></th>
<th>Outpatients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td>No of cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>Good</td>
<td>16</td>
<td>80</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>Fair</td>
<td>4</td>
<td>20</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Poor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

From above all parameters the overall gradation may be as follows,

**Among Inpatients and Outpatients:**
80% of cases showed good results
20% of cases showed fair results
Discussion

Pitha thalai nokkadu produces many clinical entities. If neglected it produces various complications. So the author has chosen the disease to relieve the annoyance of Pitha thalai nokkadu symptoms troubling the patients.

Relapse and recurrence of the symptoms were commonly seen in certain cases, while treating Pitha thalai nokkadu. But the miraculous cure by the trial medicines was obviously noted from the results and observations. The Clinical improvement of the patients were completely discussed which brought out the efficacy of the trial medicines.

Twenty patients were admitted in the Inpatient ward of the PG-I Maruthuvam Department, Govt Siddha Medical College Hospital, Palayamkottai and twenty outpatients were undergone clinical study.

All the patients were administered with trial medicines regularity and the results were observed.

1. Sex Distribution

   Among 20 inpatients 30% were males and 70% were females.

   Among 20 Outpatients 45% were males and 55% were females

2. Age Distribution:

   Among 20 inpatients 20% of cases were in the age between 31-40 years 10% were between 41-50 years, 25% were between 51-60 years 35% were between 61-70 years and 10% were between 71-80 years.
Among Outpatients, 25% were between 20 – 30 years 25% were between 31 – 40 years, 20% were between 41 – 50 years, 25% were between 51 – 60 years and 5% were between 61 - 70 years. So the Occurrence of the disease was found in all age groups.

3. Kaalam:

Among inpatients 10% of cases belonged to vadha Kaalam, 80% belonged to Pithakaalam, 10% belonged to Kabakalam and in outpatients 30% of the cases belonged to Vadhakaalam, and 70% belonged to Pithakaalam.

The maximum number of cases were treated in Pithakaalam

4. Thagi:

Among inpatients and outpatients 100% had thontha thegam as their bodies were constituted by mixed characters of vadha, Pitha and Kaba.

5. Gunum:

Among inpatients and outpatients 100% had Rajokunum.

6. Religious distribution:

85% were Hindu, 10% were christian and 5% were Muslim among inpatients and 100% were Hindus among outpatients.

7. Thinai:

Among inpatients and outpatients 100% came from Marutham
8. Paruvakaalam:

Among inpatients 15% of patients were affected in Koothirkaalam, 55% in Munpani Kaalam, 30% in Pinpanikaalam.

Among outpatients 75% were affected in Koothirkaalam, 25% in Munpanikaalam. The incidence of this disease is encountered in all six kaalam especially in Koothir and Munpanikaalam.

9. Occupational Status:

Among inpatients 5% were servant – maids 15% were House wives, 10% were farmers, 10% retired man, 20% were daily wagers. 20% were Beedi workers, 5% were hotel worker, 10% were merchants, 10% were automobile workers and 5% were unemployed.

Among outpatients 5% were servant maids, 10% were house wives, 15% were farmers, 15% were retired man, 5% were daily wagers, 25% were beedi workers, 10% were students, 15% were merchants and 10% automobile workers.

So the disease found in all sorts of occupations.

10. Socio – economic status:

Among inpatients 30% belonged to middle class and 70% poor.

Among outpatients 35% belonged to middle class and 65% were poor.

So the disease was found to be more in poor people due to their poverty ill hygiene poor health care and ignorance of treatment.
11. **Diet factors:**

    Among inpatients and outpatients 10% were vegetarian and 90% had taken mixed diet.

12. **Habits:**

    Among inpatients 25% were smokers, 15% were alcoholics, 20% were tobacco – chewer and 5% were tobacco inhalers.

    Among outpatients 35% were smokers, 10% were alcoholic and 25% were tobacco – chewers.

    Majority of cases had the habits of smoking and consuming alcohol.

13. **Aetiological factors:**

    Among inpatients 50% had occupational aetiology, 25% had nasal allergy, 5% had bacterial injection, 10% had acute rhinitis, and 10% had swimming & diving.

    Among outpatients 45% had occupational aetiology, 30% had nasal allergy, 15% had acute rhinitis and 10% had swimming and diving.

    Occupational aetiology contributed more percentage due to patients allergic condition. Acute Rhinitis represented the recurrent infection.
14. **Mode of Onset:**

   Among inpatients 75% had acute and 25% had Chronic onset of illness. Among outpatients 70% had acute and 30% had chronic onset of illness. So the clinical presentation of the disease was acute and chronic onset of illness.

15. **Duration of illness:**

   Among inpatients 35% suffered below one week, 15% were affected from 8 to 15 days, 10% suffered from 16 to 20 days, 15% suffered from 20 days to 1 months, 15% suffered from 1 to 2 months and 10% suffered from 2 to 3 months.

   Among outpatients, 50% suffered below 1 week 15% suffered from 8 to 15 days, 10% suffered from 16 to 20 day, 5% suffered from 20 days to 1 month, 10% suffered from 1 to 2 months and 10% suffered from 2 to 3 months.

   Majority of the patients suffered from 1 to 15 days duration and represented acute onset, 5 to 10% suffered from 2 to 3 months durations and represented chronic onset.
16. Clinical Manifestations:

Among inpatients and outpatients 100% had profused watery nasal discharge, recurrent sneezing, pain in para nasal sinus and headache.

Among inpatients 50% had recurrent salivation, 40% had otalgia, 50% had pain in eyes and eyebrows, 35% had sorethroat and 75% had difficulty in breathing.

Among inpatients 55% had recurrent salivation, 60% had otalgia, 40% had pain in eyes and eyebrows, 50% had sorethroat and 85% had difficulty in breathing.

17. Relevant Systemic examination:

Among inpatients, Inspection revealed, 25% had deviated nasal septum and palpation revealed 75% had tenderness and pain in para nasal sinus.

Among outpatients, Inspection revealed, 25% had deviated nasal septum and palpation revealed 60% had tenderness and pain in para nasal sinus.

Majority of cases had tenderness and pain in para nasal sinus, Inspection brought out the deviated nasal septum.

18. Kosam:

Among inpatients and outpatients 100% were affected in annamayakosam, Pranamayakosam, Manomayakosam and Gnanamayakosam.
As the seven udar Kattukal were affected 100% of cases were affected in annamayakosam. As piranan and five motor organs were affected 100% were affected in pranamayakosam. As five sensory organs were affected 100% of cases were affected in Manomayakosam and gnanamayakosam.

19. Mukkutram A : Disturbance in Vadha:

Among inpatients pranan was affected in 75%, Abanan was affected in 10%, Viyanan was affected in 25%, Udhanan was affected in 100%, Samanan was affected in 50% Koorman was affected in 75%, Kirukaran was affected in 50% and devathatahan was affected in 9%.

Among outpatients pranan was affected in 80%, Abanan was affected in 10%, Viyanan was affected in 100%, Udhanan was affected in 100%, Samanan was affected in 60% Koorman was affected in 85%, Kirukaran was affected in 60% and devathatahan was affected in 15%.

B. Disturbance in Pitha:

Among inpatients, Anarpitham was affected in 25% Renjagam was affected in 30% Alosagam was affected in 50% and Sathagam was affected in 75%.

Among outpatients, Anarpitham was affected in 35% Renjagam was affected in 50% Alosagam was affected in 60% and Sathagam was affected in 75%.
C. Disturbance in Kaba:

Among inpatients avalambagam was affected in 75%, Kilethagam was affected in 50% Pothagam was affected in 75%, Tharpagam was affected in 50% and Santhigam was affected in 50%.

Among outpatients avalambagam was affected in 75%, Kilethagam was affected in 60% Pothagam was affected in 60%, Tharpagam was affected in 60% and Santhigam was affected in 35%.

20. Seven Udarkattukal:

Among inpatients Saram was affected in 60%, Seneer was affected in 35% and Enbu was affected in 10%, Oon was affected in 10%, Kozhuppu was affected in 10%

Among outpatients Saram was affected in 75%, Seneer was affected in 40% and Enbu was affected in 15%.

Affected Oon produced ill built

Affected Kozhuppu produced pedal ocdeme.

Affected Enbu produced lowback ache and arthritis.

21. Envagai Thervugul:

Among inpatients sparisam was affected in 35%, naa was affected in 75%, Mozhi was affected in 50% Vizhi was affected in 65% and 50% had Pltha Vadha naadi, 25% had Pitha Kaba naadi and 25% had kaba vadha naadi.
Among outpatients sparisam was affected in 40% Naa was affected in 75%, Mozhi was affected in 35%, Vizhi was affected in 75% and 35% had Pitha Vadha Naadi 40% had Pitha Kaba Naadi and 25% had kaba vadha naadi.

22. Urine analysis Neer kuri:

Among inpatients the colour and specific gravity was affected in 10%

Neikuri:-

Among inpatients 50% had vadha neer, 10% had pitha neer, and 40% had kaba neer.

Among inpatients 60% had vadha neer, 5% had Pitha neer and 35% had kaba neer.

23. Laboratory Investigations:

Routine investigations of blood, Urine and stool were done during the time of admission and discharge among inpatients and were done among outpatients.

The urine analysis of inpatients showed that 30% had sugar, 25% had albumin and 10% had epithelial cells.

Among Outpatients urine analysis showed that 30% had sugar, 10% had albumin and 10% had epithelial cells.

In blood investigation, 90% had raised ESR and Eosinophils both among inpatients and outpatients.
Among inpatients 35% had reduction in haemoglobin. Among inpatients. Among outpatients 40% had reduction in haemoglobin.

Biochemical analysis of blood urea and serum cholesterol were found to be normal in both inpatients and outpatients.

Among inpatients and outpatients 30% of cases showed raised blood sugar.

All the cases showed negative Montoux test.

All the cases showed normal stools examination results.

After treatment 100% of IP and OP cases showed reduced ESR and Eosihophil level.

25. Radiological investigation:

X-ray – PNS among inpatients showed 40% had frontal sinusitis, 35% had L Maxillary sinusitis, 30% had R Maxillary sinusitis, 5% had ethmoide sinusitis and 20% had deviated nasal septum.

Among outpatients 50% and frontal sinusitis, 20% had L maxillary Sinusitis 30% had R maxillary sinusitis and 10% had DNS.

26. Clinical Assessments:

All the patients were treated with trial medicines. The clinical assessment was made by relief of symptoms after treatment.

Among inpatients 50% were completely relieved, 35% were moderately relieved and 15% were partially relieved.
Among outpatients 60% were completely relieved 25% were moderately relieved and 15% were partially relieved

27. Gradation of results:

All the end of the treatment the overall gradation is as follows.

Among inpatients 80% of cases showed good results and 20% of cases showed fair results.

Among outpatients 80% of cases showed good results and 20% of cases showed fair results.

At the end of the treatment the inpatients were discharged and they were advised to follow up treatment in P.G Dept of marathuvam O.P for further management.

During this period each patient was advised to follow diet restrictions & good hygiene.

Special Advices:-

Follow good habits
Follow good hygiene
Follow good dietary regimen
Take oil bath regularly
Avoid stress, strain fear and anxiety
Do simplified yoga and meditation under the guidance of Guru.
Summary

Pitha thalai nokkadu is the most commonly occurring disease. By its prevalence it seeks proper medical attention in the early stage itself otherwise it leads to other cranial complication. So the author has chosen this disease and took strenuous efforts.

This disease is well correlated with sinusitis due to the classical symptoms.

Karpoora Mezuku and peenisa naasa ganapathy thylum were taken as trial medicines for this dissertation work.

The aetiology, Pathology, Classification, Clinical features, diagnosis, complications, differential diagnosis, treatment, prognosis and prevention of disease were collected from available literatures both in Siddha system and Modern system of Medicine.

In this study, 20 patients of both sexes at different age groups with classical clinical symptoms were selected as inpatients and another 20 patients were taken as outpatients.

The trial medicines were given to all the selected patients. From the observations and results, we were clear that the disease was common in the following aspects.

Pithathalai Nokkadu affects both sexes. Age incidence of the disease was seen in all age groups. The majority of patients were treated in pitha Kalam.

Incidence of this disease is encountered in all six kaalam.
The disease had been found more in poor people due to their poverty, unhygiene, poor health and ignorance of treatment.

The disease was present as both acute and chronic onset.

Alterations in equilibrium of the three doshas were elicited. In Vadha pranan was affected more. In Pitha anarpitham was affected more. In kaba avalam, bagam was affected more.

Among seven udarkattukal saram and seneer were affected more in majority of the cases.

Siddha diagnosis was achieved with the help of envagai therugal. In envagai thervugal, Naa, Mozhi and Vizhi were affected in majority of cases.

In Pitha thalai nokkadu, the naadi was Pitha Vadham and Pitha Kabam in majority of the cases. kaba Vadham was also seen in few cases.

Neerkuri showed that all the patients had normal urinary outflow. Specific gravity was raised in diabetic patients.

Neikuri showed the shapes of snake, ring, pearl and co-incidence of shapes in the urine.

In modern aspect, routine blood, urine investigation and special test like moutoux and X-ray had seen in all the patients.

Blood Investigation showed raised ESR and Eosinophil level in all the patients.

X-ray – PNS showed the frontal sinusitis, Maxillary sinusitis and ethmnoidal sinusitis.
The efficacy of trial medicines were observed during the dissertation period.

Most of the patients had showed significant relief of symptoms and had no side effects after treatment.

Each and every patient was advised to follow diet restriction and prophylaxis for Pitha thalai nokkadu.

Biochemical analysis showed that karpoora Mezhuku had presence of calcium, sulphate, ferrous iron, unsaturated compound, Reducing sugar and Amino acid.

Pharmacological studies showed that karpoora Mezhuku and peenisa naasa ganapathy thylam had moderate analgesic and anti – inflammatory and significant anti – histaminic actions.

Microbiological study proved that karpoora Mezhuku was sensitive to *staphylococcus aureas, candida albicans* and *pseudomonas aeruginosa*. 
Conclusion

In this research, clinical results found to be satisfactory in 80% of cases.

Clinically the trial medicines were very effective to the suffering patients who were relieved completely from the symptoms.

Further follow up of all these patients showed efficacy of medicines in recurrent sinusitis also.

Clinical study showed no adverse effects of trial medicines during the study period.

So it is concluded that Pitha Thalai Nokkadu is well controllable by karpoorra Mezuku and peenisa Naasa Ganapathy thylam.

The trial medicine Karpoora Mezuku has the tastes of enippu, Pulippu and karppu.

Suvai - Enippu, Pulippu, Karppu
Thanmai - Veppam
Privu - Kaarpppu

The taste pulippu is converted into Enippu during digestion. So the taste enippu reduces the aggravated pitha and vadha. The taste enippu has the smoothening effect on throat which has been irritated by any infection. The taste karppu has anti – kaba activity, which is elevated due to raised vadha and pitha.
And the trial medicine has its Thanmai as Veppam. All the Veppam natured drugs will eliminate the excessive kaba, which aggreavated due to vitiated vadha. So the medicine act as a Anti – Vadha medicine.

After ingestion when the trial medicine reaches the gastric juice, it will change into the vibagam kaarppu. At this stage, the medicine will act as a Anti – kaba medicine due to the vibagam – Kaarppu which is aggravated due to vitiated vadha and pitha.

Karppoora Mezuku acts as a Anti – Vadha medicine on the basis of suvai, Thanmai, Privu, Vibagam on the basis of Edhir urai to vadha disease.

Thus karppoora Mezuku yield a good prognosis in Pitha thalai nokkadu.
ANNEXURES

A. PREPARATION OF KARPOORA MEZUKU

Ingredients:
Mathulai Verpattai - 35gm
Vallmilagu - 35 gm
Karpooram - 35 gm
Karumbu vellam - 140 gm
Kirambu - 35 gm

Preparation:
Take juice from 7 lemon. Put it in an used claypot. Add powdered camphor in it. This material is heated and made into a gel state. Let it to cool and then put it in a “Kalvam” except “Vellam”, Other materials are pulverished and added into the kalvam. Grind this material till a paste like material appear. Then vellam is added slowly and grind till a paste with “Mezuku” consistency appear.

Dose
500 mg Twice daily.

Indications
Thalaivali, Neerpeenisam, Tammal.

Expiry
5 years

Reference
Kannusamy paramparai vaithiyam
(Page No – 222)
Peenisa Naasa Ganapathy Thylum

Ingredients :
- Gingelly oil - 1 part
- Cow’s milk - ¼ part
- Extract of Notchi leaves - 1 part
- Zinger extract - ¼ part

Preparation :
Gingelly oil, cow’s milk, extract of Notchi leaves and Ginger extract are taken in a vessel, mixed well and heated thoroughly till a material with oil like consistency appears.

Uses :
Take oil bath weekly twice.

Indication :
Vadham – 80, Thalai Vali, Neer Peenisam, Thummal.

Expiry:
1 year

Reference :
Pirana Ratchanirtha Sindhu (Page No.134)
PROPERTIES OF THE DRUGS

1. Karpooram: Camphora Officinarum

Family name: Lauraceae
Parts used: The concrete volatile oil, ie., camphor obtained by distillation with water of the wood of the trees or plants. It occurs as translucent white
Suvai: Crystals, Vuppu, Kaippu, Thuvarppu
Thanmai: Thatpam
Privu: Thuvarppu

Constituents:
Cymene or cyrol, camphoric acid, a semi solid oil contains “safrole along with camphor.

Action:
Diaphoretic stimulant of skin and cardiac stimulant, antiseptic, anti – spasmodic, internally expectorant, sedative, temporary aphrodisiac, warcotic, internally carminative and externally anodyne. In large doses anti – aphrodisiac.

Indications:
It is given in doses of 3 to 10 grains in the forms of pills, powder and in emulsion.

2. Valmilagu: Piper cubeba

Family name: Piperaceae
Parts used: Dried immature full – grown called the cubebs
uvai - Karppu
Thanmai - Veppam
Privu - Karppu

Constituents:
Aromatic oil, Olioresin, cubebin, Arabic acid.
Actions:

Stimulant, carminative, Diuretic expectorant.

3. Kirambu : Eugenia Caryophyllate

Family Name : Myrtaceae
Parts used : Fruit, dried flower, buds and oil.
Suvai - Karppu
Thanmai - Veppam
Privu - Karppu

Constituents:

Eugenol, Eugenia, Caryophyllene.

Actions:

Antispasmiodic, carminative, stomachie

4. Punia Granatum

Family : Lythraceae
Parts used : Granati Redicis Cortex.
Suvai - Thuvarappu
Thanmai - Veppam
Privu - Karppu

Constituents:

Punia tannic acid, Gallic acid, Punianin and mannite.

Actions:

Vermifuge, used in chronic Diarrhoea & Dysentry, Astringent.
5. **Elumitchai**: Citrus lemon

**Family**: Rutaceae  
**Parts used**: Fruit juice  
**Suvai**: Pulippu, Enippu  
**Thanmai**: Thatpam  
**Privu**: Pulippu  

**Constituents**:  
Abundance of essential oil Hesperidin, Citric acid, Gum, Sugar, cossa, Potash.

**Actions**:  
Refrigerent, Antiscorbutic, Relieve from scurvy, Acute Rheumatism and other inflammatory complaints.

---

6. **Kudam Eenal**: Saccharum Officinarum Linn

**Family**: Poecace  
**Parts used**: Roots, Stems  
**Suvai**: Enippu  
**Thanmai**: Seetham  
**Privu**: Enippu

**Actions**:  
The roots are cooling and diuretic. The stems are sweet, cooling, emollient, laxative, expectorant. Cardiotonic, Diuretic, antiseptic, Galactogogue, aphrodisiac, haemostatic and tonic.  
They are useful in cough, bronchitis, Dipsia, Cardiac debility, haematemesis, anaemia, emaciation and general debility.
Peenisa Naasa Ganapathy thylum

**Gingelly oil**  : தெய்வைலண்டிவெப்பம்

- **Botanical name**  : Sesamum indicum
- **Family**  : Pedaliaceae
- **Parts used**  : Oil
- **Suvai**  : Enippu
- **Thanmai**  : Veppam
- **Privu**  : Enippu

**Constituents** :

Oil contains 70% of liquid fats consisting of the glycerides of oleic acid and linolenic acids and 12 to 14% of solid fats, sterin, Palmitin and myristin.

**Actions**:

- Laxative, emollient, demulcent, diuretic.

**Notchi**  : Vitex Nigundo

- **Family**  : verbenaceae
- **Parts used**  : Extract of leaves
- **Suvai**  : Kaippu, Thuvarppu, Karppu
- **Thanmai**  : Veppam
- **Privu**  : Karppu

**Constituents** :

Leaves contain essential oil and resin.

**Action**  : Alterative, Vermifuge

**Ingi**  : Zingiber Officinalis

- **Family**  : Zingiberaceae
- **Parts used**  : Extract of zinger rhizome
- **Suvai**  : Karppu
- **Thanmai**  : Veppam
- **Privu**  : Karppu

**Constituents**:

The principle constituents of ginger are starch, volatile oil and resin.
Actions:

Internally: It is a stimulant, aromatic and Carminative.

Externally: Rubifacient so frequently it will relieve headache and Toothache.

**Cow milk**

Suvai: Enippu

Thanmai: Thatpam

Privu: enippu

**Constituents:**

Casein, fat, Sugar (milk Sugar) calcium Phosphate, Potassium Phosphate, Magnesium Phosphate, Sodium Chloride and iron.

**Action:**

Demulcent, Nutrient and cardiac tonic.
## B. BIO-CHEMICAL ANALYSIS OF KARPOORA MEZUKU

**Preparation of the Extract:**

5 mgs of the drug is weighed accurately and placed in a 250ml beaker. Then 50mls of distilled water is added and dissolved it well. Then it is boiled well. For about 10 minutes. Then cool it and filter in a 100ml volumetric flack and then it is make up to 100ml with distilled water. This filled is taken for analysis.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Experiment</th>
<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test for Calcium: 2ml of the above prepared extract is taken in a clean test tube. To this add 2ml of 40% Ammonium oxalate solution is added</td>
<td>A white precipitate is formed</td>
<td>Indicates the presence of calcium</td>
</tr>
<tr>
<td>2</td>
<td>Test for sulphate: 2ml of the extract is added to 5% barium Chloride solution</td>
<td>A white precipitate is formed</td>
<td>Indicates the presence of sulphate</td>
</tr>
<tr>
<td>3</td>
<td>Test for Chloride: The extract is treated with silver nitrate solution.</td>
<td>No white precipitate is formed</td>
<td>Absence of Chloride</td>
</tr>
<tr>
<td>4</td>
<td>Test for Carbonate:- The substance is treated with concentrated HCL</td>
<td>No brisk effervescence is formed</td>
<td>Absence of carbonate</td>
</tr>
<tr>
<td>5</td>
<td>Test for Starch:- The extract is added with weak iodine solution</td>
<td>No blue colour is formed</td>
<td>Absence of starch</td>
</tr>
<tr>
<td>6</td>
<td>Test for Iron:- Ferric: - The extract is treated with glacial acid and potassium Ferro cyanide.</td>
<td>No blue colour is formed</td>
<td>Absence of ferric Iron</td>
</tr>
<tr>
<td>7</td>
<td>Test for Iron:- Ferrous: - The extract is treated with concentrated Nitric acid and ammonium thio cyanate</td>
<td>Blood red colour is formed</td>
<td>Indicates the presence of ferrous Iron</td>
</tr>
<tr>
<td>No</td>
<td>Test</td>
<td>Result</td>
<td>Conclusion</td>
</tr>
<tr>
<td>----</td>
<td>------------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Test for Phosphate:-</td>
<td>No yellow precipitate is formed</td>
<td>Absence of phosphate</td>
</tr>
<tr>
<td></td>
<td>The extract is treated with ammonium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Molybdate and concentrated and nitric</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Test for Albumin:</td>
<td>No yellow precipitate is formed</td>
<td>Absence of Albumin</td>
</tr>
<tr>
<td></td>
<td>The extract is treated with Esbach’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>reagent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Test for tannic Acid:-</td>
<td>No blue black precipitate is formed</td>
<td>Absence of tannic acid</td>
</tr>
<tr>
<td></td>
<td>The extract is treated with ferric</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chloride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Test for reducing Sugar:-</td>
<td>Colour change occurs</td>
<td>Indicates the presence of</td>
</tr>
<tr>
<td></td>
<td>5ml of Benedict’s qualitative solution is</td>
<td></td>
<td>Reducing Sugar</td>
</tr>
<tr>
<td></td>
<td>taken in a test tube and allowed to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>boil for 2 mts and added 8 – 10 drops</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>of the extract and again boil it for</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 mts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Test for Amino Acid:-</td>
<td>Violet colour is formed</td>
<td>Indicates the presence of</td>
</tr>
<tr>
<td></td>
<td>One or two drops of the extract is</td>
<td></td>
<td>Amino acid</td>
</tr>
<tr>
<td></td>
<td>placed on a filter paper and dried it</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>well. After drying 1% Ninhydrin is</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sprayed over the same and dried it well</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C. PHARMACOLOGICAL ANALYSIS
ANALGESIC STUDY OF KARPOORA MEZUKU
(In Albino rate by trial flick method)

Aim:
To study the analgesic effect of karpoor Mezuku in Albino rates by tail flick method.

Preparation of the test drug:
1 gm of karpoora Mezuku was taken and dissolved in 10ml of the hot water. This 1ml contains 100mg of test drug karpoora mezuku. A dose of 1ml containing 100mg of drug was given to each rat.

Instrument:
Hot water bath maintained at $55^\circ \pm 0.5^\circ$C was used as the source of stimulus.

Procedure:
Three groups of healthy albino rats on both sexes were selected. Each group having 2 rats, weighing between 100 to 150 gm.

The tail was dipped into the bath, and the time taken for each rat to remove its tail from the hot water bath was noted. The rat, which took more than 5 seconds for removing of its tail from hot water bath, was excluded from the experiment. First group was kept as control by giving distilled water of 1ml per 100gm of body weight. The second group was given paracetamol 20mg per 100gm of body weight and kept as standard.
The third group was given the test drug karpoora Mezhuku 100mg / 100gm of body weight.

30 minutes after Medicines administration, the tail of each rat was dipped into hot water bath one by one. The time taken for each rat to remove its tail was noted. The whole experiment was repeated after 30 minutes.

The results of control group, standard group and drug treated group were tabulated and compared.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of drugs / Groups</th>
<th>Dose 100gm body weight of Albinorat</th>
<th>Initial reading in sec</th>
<th>Administration After ½ hr</th>
<th>After 1 hr</th>
<th>After ½ hr</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control (Water)</td>
<td>1ml</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>3.0</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Standard (Paracetamol)</td>
<td>20mg/1ml</td>
<td>2.5</td>
<td>4.0</td>
<td>5.0</td>
<td>6.5</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Test drug (Karpoora)</td>
<td>Mezhuku</td>
<td>2.5</td>
<td>3.5</td>
<td>4.0</td>
<td>5.5</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Inference:

It is observed that karpoora Mezhuku has significant analgesic action.
**Acute Anti – inflammatory Study on Karpoora Mezhuku**

*(By kind paw method in albino rats)*

**Aim:**

To study the acute anti-inflammatory effect of Karpoora Mezuku

**Preparation of Test Medicine:**

1gm of Karpoora Mezuku was taken and dissolved in 10ml of the hot water. This 1ml contains 100mg of drug was given to each rat.

**Procedure:**

Nine healthy albino rats weighing 100-150gm were taken and divided into three groups, each consisting of 3 rats.

First group was kept as control by giving distilled water of 1ml / 100gm of body weight. The second group was given Ibuprofen at a dose of 20mg/1ml per 100gm of body weight and kept as standard. The third group was received the test medicine at a dose of 40mg/1ml per 100gm of body weight.

Before administration of test drug, the hind paw volume of all rats was measured. This was done by dipping the hind paw upto tibio tarsal junction, into a mercury plethysmograph. While dipping the hind paw by pulling the syringe piston, the level of mercury in the centre small tube was made to coincide with red marking and reading was noted from the plethysmograph.

Soon after the measurement the drugs were administered orally. One hour later, a subcutaneous infection of 0.1ml of 1% w/y carragenin in water was injected into planter surface of both hind paws of each rat.
Three hours after carragenin injection the hind paw volume was measured once again. The differences between the initial and final volumes showed the amount of inflammation.

By taking the volume in the control group as inflammation the anti-inflammatory effect of the test drug was calculated.

**Tabulations of the result were recorded**

<table>
<thead>
<tr>
<th>S.N</th>
<th>Groups</th>
<th>Dose 100gm body weight</th>
<th>Initial reading average</th>
<th>Final reading average</th>
<th>Mean difference</th>
<th>Inflammation %</th>
<th>Inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water</td>
<td>1 ml</td>
<td>0.65</td>
<td>1.5</td>
<td>0.85</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Ibuprofen</td>
<td>20 mg / ml</td>
<td>0.80</td>
<td>0.85</td>
<td>0.05</td>
<td>6.25</td>
<td>93.75</td>
</tr>
<tr>
<td>3</td>
<td>Karpoora Mezhuku</td>
<td>40 mg /ml</td>
<td>0.85</td>
<td>1.20</td>
<td>0.35</td>
<td>43.75</td>
<td>56.25</td>
</tr>
</tbody>
</table>

**Inference:**

It was observed that Karpoora Mezhuku had **Moderate** acute anti-inflammatory effect.
Chronic anti inflammatory study of Karpoora Mezhuku

Cotton pellets granuloma method

AIM:

To study the chronic anti – inflammatory activity of drug, Karpoora Mezhuku in the rats by cotton pellets implantation (Granuloma) method.

Preparation of the test drug:

1 gm of Karpoora Mezhuku was taken and dissolved in 10ml of the hot water. This 1ml contains 100mg of test drug Karpoora Mezhuku. A dose of 1ml containing 100mg of drug was given to each rat.

Procedure:

Cotton pellets each weighing 10gm was prepared and sterilized in an autoclave for about one hot under 15Hg atmosphere pressure. 6 albino rats weighing 100 to 150gm were selected and were divided into 3 groups each containing 2 rats. Each rat was anaesthetized with ether and cotton pellets were implanted subcutaneously in the groin, two on each side.

First group was kept as control by giving Luke warm water of 1ml/100mg of body weight. To the second group the standard drug ibuprofen in a dose of 20mg/100gm body weight was given. The third group of animals was given test drug karpoora Mezuku in a dose of 100mg/100gm of body weight. On the 8th day of the experiment, all the rats were scarified and cotton pellets found to be surrounded by granulation tissue were removed and dried in hot oven at 55°C – 60°C. The concordant weight of granuloma of control...
group and treated group give an estimation of degree of inhibitory activity of test drug.

Results:

The details of the experiment results are shown in the table.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Name of drug / groups</th>
<th>Dose 100gm body weight</th>
<th>Pellet weight</th>
<th>Pellet weight of the granuloma of drug</th>
<th>Mean Difference</th>
<th>% of inflammatory</th>
<th>% of inhibition</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water (control)</td>
<td>1ml</td>
<td>10mg</td>
<td>250mg</td>
<td>-</td>
<td>100.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Ibuprofen (Standard)</td>
<td>20mg / 1ml</td>
<td>10 mg</td>
<td>56 mg</td>
<td>-</td>
<td>22.4</td>
<td>77.6</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Karpoora Mezuku</td>
<td>100 mg / 1ml</td>
<td>10 mg</td>
<td>130mg</td>
<td>-</td>
<td>52.0</td>
<td>48.0</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Inference:

The test drug Karpoora Mezhuku has got Moderate chronic anti-inflammatory effect.
Anti – Histamiac effect of Karpoora Mezhuku

Aim:
To study the anti – histamiaic effect of Karpoora Mezhuku

Preparations of drug:
5mgs of Karpoora Mezhuku was added to 50ml of water and made into decoction of 10ml and this was used for the studies.

Solution required:
Histamine (1 in 1,00,000) strength

Method:
A Guinea pig weighing about 450gms was starved for 48 hrs and only water allowed. It was killed by stunning with a sharp blow on the head and cutting its throat to bleed to death. The abdomen was quickly opened and the viscera inspected and loops of intestine identified using the patch as a landmark, then the ileum was removed and placed in a shallow – disk containing warm “Tyrode solution”. With the help of 25ml pipette, the lumen of ileum was gently rinsed with saline. It was cut into segments of required length, generally 4cm, in a fully relaxed state and the sutures were made with needle and tied at either ends. The segment is suspended in an isolated organ bath. It was aerated by an oxygen tube and immersed in Tyrode solution at 37°C. Drugs were given to study the inhibitory effect of histamine indeed contractions.

Inference:
The drug Karpoora Mezhuku has good – anti histaminic effect.
Acute Anti-inflammatory Study on Peenisa naasa

Ganapathy Thyam

(By kind paw method in albino rats)

Aim:

To study the acute anti inflammatory effect of Peenisa naasa Ganapathy Thylam.

Preparation of Test Medicine:

1gm of Peenisa naasa Ganapathy Thylam was taken and dissolved in 10ml of the hot water. This 1ml contains 100mg of drug was given to each rat.

Procedure:

Nine healthy albino rats weighing 100-150gm were taken and divided into three groups, each consisting of 3 rats.

First group was kept as control by giving distilled water of 1ml / 100gm of body weight. The second group was given Ibuprofen at a dose of 20mg/1ml per 100gm of body weight and kept as standard. The third group was received the test medicine at a dose of 40mg/1ml per 100gm of body weight.

Before administration of test drug, the hind paw volume of all rats was measured. This was done by dipping the hind paw upto tibio tarsal junction, into a mercury plethysneograph. While dipping the hind paw by pulling the syringe piston, the level of mercury in the centre small tube was made to coincide with red marking and reading was noted from the plethysmograph.
Soon after the measurement the drugs were administered orally. One hour later, a subcutaneous infection of 0.1ml of 1% w/y carragenin in water was injected into planter surface of both hind paws of each rat.

Three hours after carragenin injection the hind paw volume was measured once again. The differences between the initial and final volumes showed the amount of inflammation.

By taking the volume in the control group as inflammation the anti inflammatory effect of the test drug was calculated.

Tabulations of the result were recorded

<table>
<thead>
<tr>
<th>S. N</th>
<th>Groups</th>
<th>Dose 100gm body weight</th>
<th>Initial reading average</th>
<th>Final reading average</th>
<th>Mean difference</th>
<th>Inflammation %</th>
<th>Inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water</td>
<td>1 ml</td>
<td>0.65</td>
<td>1.5</td>
<td>0.85</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Ibuprofen</td>
<td>20 mg / ml</td>
<td>0.80</td>
<td>0.85</td>
<td>0.05</td>
<td>6.25</td>
<td>93.75</td>
</tr>
<tr>
<td>3</td>
<td>Peenisa naasa Ganapathy Thylam.</td>
<td>External</td>
<td>0.65</td>
<td>1.3</td>
<td>0.65</td>
<td>81.30</td>
<td>18.70</td>
</tr>
</tbody>
</table>

Inference:

It was observed that Peenisa naasa Ganapathy Thylam had Mild acute anti – inflammatory effect.
Anti – Histaminic effect of Peenisa naasa Ganapathy Thylam

Aim:
To study the anti – histaminic effect of Peenisa naasa Ganapathy Thylam.

Preparations of drug:
5mgs of Peenisa naasa Ganapathy Thylam was added to 50ml of water and made into decoction of 10ml and this was used for the studies.

Solution required:
Histamine (1 in 1,00,000) strength

Method:
A Guinea pig weighing about 450gms was starved for 48 hrs and only water allowed. It was killed by stunning with a sharp blow on the head and cutting its throat to bleed to death. The abdomen was quickly opened and the viscera inspected and loops of intestine identified using the patch as a landmark, then the ileum was removed and placed in a shallow – disk containing warm “Tyrode solution”. With the help of 25ml pipette, the lumen of ileum was gently rinsed with saline. It was cut into segments of required length, generally 4cm, in a fully relaxed state and the sutures were made with needle and tied at either ends. The segment is suspended in an isolated organ bath. It was aerated by an oxygen tube and immersed in Tyrode solution at 37°C. Drugs were given to study the inhibitory effect of histamine indeed contractions.

Inference:
The drug Peenisa naasa Ganapathy thylum has significant anti – Histaminic effect.
Anti – Microbial study of Karpoora Mezhuku

Aim:

To study the anti microbial action of Karpoora Mezhuku.

Procedure:

To prepare 20mg and 40mg concentration of the drugs, 2 grams of the drug was dissolved in 1ml of sterile distilled water and from this master dilution 20 micro litres and 40 micro litres were loaded on the disc.

Preparation of standard stains:

Standard laboratory referral strains such were initially grown in Nutrient agar and maintained at 370c.

Before antibacterial testing each strain was inoculated in 5ml of B.H.I Brothe and inoculated at 370c for 30 minutes.

Antibacterial activity testing by disc diffusion method:

For antibacterial activity, 90mm periplates of muller – Hinton Agar (M.H.A) was used. For each organism the inoculum was poured on the separate MHA plate and allowed to spread uniformly. The excess brothe was drained aspectically.

The discs which contain 20 g and 40 g concentration of drug was placed on the MHA and inoculated at 370c for 24 hours.

Interpretation:

Reading were taken after 24 hours of incubation. The inhibitory zone diameter was measured in millimeter scale.
Results:

Karpoora Mezhugu was compared with standard antibiotics. The medicine was well sensitive against pseudomonas aeruginosa candida albicans and staphylococcus aureus.
O.P.No :    Occupation : 
Name :    Income : 
Age / Sex :    Treatment starting date : 
Address :    End of treatment date : 
Total number of days treated : 
Result : 
Diagnosis – PITHA THALAI NOKKADU 
Medical Officer 

COMPLAINTS AND DURATION 
1. Profused watery nasal discharge : 
2. Recurrent Sneezing : 
3. Excessive salivation : 
4. Pain in Para Nasal Sinus : 
5. Head ache : 
6. Otalgia : 
7. Pain in eyes and eyebrows : 
8. Sore throat : 
9. Difficulty in breathing : 
10. Constipation : 
11. Insomina :
DURATION OF ILLNESS

PAST HISTORY

General Examination : 
Consciousness : 
Decubitus : 
Nutrition : 
Anaemia : 
Cyanosis : 
Jaundice : 
JVP : 
Pedal Oedema : 
Temperature : 
Lymphadenopathy : 
Pulse Rate : 
Koilonychia : 
Heart Rate : 
Clubbing : 
Respiratory Rate : 
Blood Pressure :

ENVAGAI THERVUGAL

Naadi : 
Sparisum : 
Naa : 
Niram : 
Mozhi : 
Vizhi :
Maalam :
Moothiram :
  a. Neeikuri :
    Niram :
    Manam :
    Edai :
    Nurai :
    Enzel :
  b. Neikuri :

xxiii
EXAMINATION OF NOSE AND PARA NASAL SINUS

Inspection:

Nasal Mucosa: 
Nasal Septum: 
Nasal Polyp: 

Palpation:

Maxillary Region: 
Frontal Region: 
Ethmoidal Region: 
Intra Orbital Region: 

Relevant other Systemic Examination:

Cardiovascular system: 
Respiratory system: 
Central Nervous System: 
Alimentary: 

LAB INVESTIGATION:

Blood:

TC: 
DC: 
ESR: 
Hb: 
Sugar (R): 
Urea: 
Serum Cholesterol: 

Urine:

Albumin: 
Sugar: 
Deposit: 

Motion:

Ova: 
Cyst: 

xxiv
Other Investigation:
   X-Ray, Skull for PNS

Treatment:

1. Karpoora Melugu – 500 mg BD
2. PEENISA NAASA GANAPATHY THYLUM – 30ml for bath. Weekly twice.

Diet and Advice:

1. பிள்ளை புலம், குளிகல், மூக்கைக் கொள், குறுகி, பூக்கள், குறுகி தில்லுக்குள் அரசன்று.
2. கல்மு, புச்சம், பிள்ளை, புலம் தில்லுக்குள் குறிக்கப்படும்.
3. குறின்றிய பசு குழுக்கு குறிக்கப்படும்.
4. குறின்றிய பசு குழுக்கு குறிக்கப்படும்.
5. குறின்றிய பசு குழுக்கு குறிக்கப்படும்.
6. குழு, புலம், குறின்றிய புலம் தில்லுக்குள் குறிக்கப்படும்.
7. குழு, குழு தில்லுக்குள் அரசன்று.
8. சிறுவரை குழுக்கு தில்லுக்கு சிறுவரை குறிக்கப்படும்.
9. பொட்டை குழுக்கு, சிறுவரை குழுக்கு குறிக்கு புலம் அரசன்று.
GOVT. SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI
DEPARTMENT OF POST GRADUATE MARUTHUVAM [POTHU]
CASE SHEET PROFORMA FOR PITHA THALAI NOKKADU
IN PATIENTS

IP NO : Occupation :
Bed No : Income :
Ward No : Nationality :
Name : Religion :
Age : Date of Admission :
Sex : Date of Discharge :
Permanent Address :

No of days treated :
Diagnosis :
Results :
Medical Officer :

Complaints and Duration :
History of present illness :
History of past illness :
Personal History :
Family History :
Habits :
General Examinations:

Consciousness : 
Decubitus : 
Nutrition : 
Anemia : 
Cyanosis : 
Clubbing : 
Jaundice : 
Hymphadenopathy : 
Pedal oedema : 
JVP : 
Engorged vein : 
Congenital anomaly : 
Miscellaneous :

Vital sigas :

Temperature 
Pulse Rate 
Heart Rate 
Blood Pressure
SIDDHA ASPECT

NILAM :
Kurunji
Mullai
Marutham
Neithal
Palai

PARUVAKALAM :
1. Kaar Kaalam - சுமார், புட்ட பர்க
2. Koothir Kaalam - துப்பாரி, கோஷ்னிகாக
3. Munpani Kaalam - மார்க்காய், கா
4. Pinpani Kaalam - மார்க், பப்பர்தி
5. Elavenil Kaalam - கிளியுண், காந்தாரி
6. Muthuvenil Kaalam - அருள், அழு

SIRUPOZUDHU:
1. Vaikarai
2. Kalai
3. Pagal
4. Erpadu
5. Malai
6. Yamam

UDAL NILAI:
1. Vadham
2. Pitham
3. Kebam
4. Kalappu
Gunum:
1. Sathuvagunum
2. Rajogunum
3. Thamogunum

IMPORIAL:
Mei - Skin
Vai - Tongue
Kan - Eye
Mookku - Nose
Sevi - Ear

KANMANTHIRIYAM:
Kai :
Kal :
Vai :
Eruvai :
Karuvai :

KOSAM:
Anna maya kosam :
Prana maya kosam :
Manomaya kosam :
Vigana maya kosam :
Ananthamaya kosam :
UYIR THATHUKKAL :

VADHAM :

Piranann :
Abanan :
Viyanan :
Udhanan :
Samanan :
Nagan :
Koorman :
Kirukaran :
Devathathan :
Thananjeyan:

PITHAM :

Anarpitham :
Ranjekam :
Sathagam :
Alosagam :
Prsagam :

KABAM :

Avalambegam :
Kilethagam :
Pothagam :
Tharpagam :
Santhigam :

UDAL KATTUKAL :

Saram :
Seneer :
Uon : 
Enbu : 
Kozuppu : 
Moolai : 
Sukkilam / suronitham :

ENVAGAI THERVUGAL :
Naadi :
Sparisam :
Nae :
Niram :
Mozhi :
Vizhi :
Malam :
Moothiram :
Neer kuri : Niram :
Manam :
Edai :
Nurai :
Eajel :

Neikuri :
MODERN ASPECT

A. ALLERGIC TO:
   Pollens:
   Dust:
   Smoke:
   Fumes:
   Drugs:
   Others if any

B. PRECIPTATING FACTORS:
   Cold climate
   Exercise
   Drugs
   Psychological
   Others if any

Examination of Nose and PNS
A. General Examination
1. Nasal Discharge
   a. Mucoid
   b. Muco purulent
   c. Purulent
   d. Blood stained
   e. Bloody
   f. Roul discharge
   g. Unilateral / Bilateral

2. Nasal obstruction
   Uni lateral / Bilateral
3. Disturbance of smell
4. Recurrent sneezing / Nasal Irritation
5. Itching / Watering of eyes
6. Otalgia
7. Headache
8. Vertigo
9. Voice

Local examination :

1. Inspection :
   Nasal Mucosa
   Nasal Polyp
   Nasal Septum

2. Palpation :
   Maxillary region :
   Frontal region :
   Intra Orbital region:
   Mastoid region :

Examinations of other system :
   RS :
   CVS :
   GIT :
   CNS :
LABORATORY INVESTIGATION:

Blood:
- TC:
- DC: P : L : E
- ESR:
- HB:
- Sugar:
- Urea:
- Cholesterol:

Urine:
- Albumin:
- Sugar:
- Deposit:

Motion:
- Ova:
- Cyst:

Sputum for AFB:

Mantoux Test:

X-ray – skull for PNS:

CT Scan:

MRI:

Treatment:
1. Karpoora Mezuku - 500 mg BD
2. Peenisa Naasa Ganapathy thylum – 30 ml (for bath) (weekly twice)
DIET AND ADVICE:

1. Piliyattam, kovilakam, paliyattamkarmsam, kadalm, palakkath, kalam
   vellam sabarapalam.
2. Pambuthu, kalava pambu-kechum alankaram.
3. Kala, palakkal, palav, pallank adhippalam.
5. Kathuve erumpu adhippam puthu pambuthu padippum adhippam.
6. Vellappattu pilli chari paippum kannu.
7. Malarparvampilli chari paippum kannu.
8. Paddu charakkam, pabuthu pilli charikum adhippam kannu kannu.
## DISCHARGE CASE SHEET

<table>
<thead>
<tr>
<th>No</th>
<th>During Admission</th>
<th>During Discharge</th>
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<tbody>
<tr>
<td>1</td>
<td>Profused watery Nasal discharge</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Recurrent Sneezing</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Recurrent Salivation</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Pain in para nasal Sinus</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pain in eyes and eyebrows</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Otalgia</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Head ache</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Sore throat</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Difficulty in breathing</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Constipation</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Insomnia</td>
<td></td>
</tr>
</tbody>
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Place :

Date :
BIBLIOGRAPHY

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1. Agasthiyar 2000
2. Agasthiyar Ayarvedham – 1200
3. Agasthiyar Gunavahadam
4. Agasthiyar Kanma kaandam – 300
5. Agasthiyar Mani 4000 Enum Vaithiya Chinthamani
6. Agasthiyar Rathina Kirikidam
7. Agasthiyar Vaithiya Vallathi – 600
8. Agasthiyar Vaithiya Kaviyam - 1500
9. Anubhava Vaithiya Devarahasiyam
10. Gunapadam – Mooligai Vahuppu – S.Murugan Mudhaliyar
11. Gunapadam – Thathu, Jeeva Vahuppu – Dr.R.Thiyagaraja
12. Jeeva Rakshamirtham
13. Mammurukkiyam
14. Materia Media – Nadkarni I & II
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17. Pathenenn Siddar naadi Sasthiram
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23. SiLitcha rathna Deepam – II part c. Kannusam
24. T.V. Sambasivam Pillai Maruthuva Anaradhi vol – III
25. Thanavanthri Vaithiyam
26. Theraiyar Neerkuri Neikuri Nool
27. Theraiyar Vahadam
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<td>28.</td>
<td>Theraiyar Venba</td>
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<td>29.</td>
<td>Theran karisal</td>
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<td>Thirukkural – Thiruvalluvar</td>
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<td>31.</td>
<td>Thirumanthiram – Thirumoolar</td>
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<td>32.</td>
<td>Thirumoolar karukkidai vaithiyam – 600</td>
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<td>33.</td>
<td>Yugi Vaithiya chinthamani – 800</td>
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<td>34.</td>
<td>Kannusamy parambarai vaithiyam</td>
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<tr>
<td>35.</td>
<td>Piranaratchamirtha chindhu</td>
</tr>
</tbody>
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**Modern Aspect :-**

1. Gray’s Anatomy
2. Davidson’s Principles and Practice of Medicine
3. Colour Atlas of Human Anatomy
4. Guyton’s Text book physiology
5. Harrison’s Principle of Internal Medicine
6. Text Book of Pharmacology – Stoskar
7. Fundamentals of Ear, Nose, Throat diseases – Dr. Ramalingam
8. Encyclopedia of Allergy and Environmental – Ellen Rothere
## IN PATIENTS CASE SHEET

<table>
<thead>
<tr>
<th>S.No</th>
<th>IP.No</th>
<th>NAME</th>
<th>Age/Sex</th>
<th>Duration of illness</th>
<th>Date of Admission</th>
<th>Date of Discharge</th>
<th>No of days treated</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2356</td>
<td>Petchiammal</td>
<td>30/F</td>
<td>5 days</td>
<td>13.11.06</td>
<td>28.11.06</td>
<td>16</td>
<td>30 Good</td>
</tr>
<tr>
<td>2</td>
<td>2650</td>
<td>Krishnammal</td>
<td>65/F</td>
<td>7 Days</td>
<td>23.11.06</td>
<td>02.12.06</td>
<td>10</td>
<td>35 Good</td>
</tr>
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<td>3</td>
<td>2357</td>
<td>Muppidathy</td>
<td>62/F</td>
<td>4 Days</td>
<td>24.11.06</td>
<td>03.12.06</td>
<td>10</td>
<td>30 Good</td>
</tr>
<tr>
<td>4</td>
<td>2916</td>
<td>Mary</td>
<td>45/F</td>
<td>5 Days</td>
<td>19.12.06</td>
<td>03.01.07</td>
<td>16</td>
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</tr>
<tr>
<td>5</td>
<td>2852</td>
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<td>57/F</td>
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<td>13.12.06</td>
<td>28.12.06</td>
<td>16</td>
<td>25 Good</td>
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<tr>
<td>6</td>
<td>370</td>
<td>Pratti</td>
<td>63/F</td>
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<td>08.02.07</td>
<td>22.02.07</td>
<td>15</td>
<td>30 Good</td>
</tr>
<tr>
<td>7</td>
<td>227</td>
<td>Amutha</td>
<td>40/F</td>
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<td>8</td>
<td>228</td>
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<td>32/F</td>
<td>15 days</td>
<td>02.02.07</td>
<td>19.02.07</td>
<td>18</td>
<td>25 Good</td>
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<tr>
<td>9</td>
<td>364</td>
<td>Reeta</td>
<td>60/F</td>
<td>1 month</td>
<td>08.02.07</td>
<td>22.02.07</td>
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<td>30 Fair</td>
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<tr>
<td>10</td>
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<td>Susella</td>
<td>37/F</td>
<td>7 days</td>
<td>02.02.07</td>
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<td>15</td>
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<td>11</td>
<td>144</td>
<td>Murugan</td>
<td>60/M</td>
<td>2 months</td>
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<td>12</td>
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<td>13</td>
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<td>14</td>
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