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INTRODUCTION

God has created many wonderful creations of all this creation
“Man” is the supervene.

“எனவும் அன்றுவாழ் முற்றிலுமையே
மன்னர் வரல் அருங்குழந்து”

- தொல்கப்பியல்

These lines mentioned in Tholkapiam state that the birds and animals possess only five senses but mankind is the only group that possess six senses. They are superior than any other beings in the world in that they can express their feelings and have a divinity.

“எனவும் அரிதியை மருதாக அமைந்து
ஜெஷுவார் முன்னுதோறும் எங்கும் எருவாக
எனவும் மகக்கத்துக்கு மக்கவும் அவிழ்க்கு
எனவும் மகக்கத்துக்கு மன்னர் மகக்கத்தின்சிதலு”

- சிருமுளோர்

This quotation from Thirumoolar’s Thirumanthiram stresses the importance of maintaining a healthy body. He says that when one’s body deteriorates the soul also deteriorates and prevents the person from attaining “Meignanam”. He says that by knowing the methods of protecting the body from deterioration one can obtain longevity of the soul.

Accordingly to siddha system of medicine the treatment is given not only to the body also to the mind. Since, psychological changes are the causes for a disease, it is apt to say “A sound mind in a sound body”.

The word siddha means “SIDDHI” which means “Perfection” heavenly as “An object to be achieved”.
Siddha system believes that all that present in the cosmos is present in the human being also. It’s principles are eternal.

“அல்லாஹ்வின் பொருளை விளக்கு விளக்கு விளக்கு
அல்லாஹ்வின் பொருளை விளக்கு விளக்கு
அல்லாஹ்வின் பொருளை விளக்கு விளக்கு”

- கடவுள் குரான்

Without understanding the basic concept of siddhars one cannot be a perfect siddha physician.

Siddhars have mentioned the functions and constitutions of the body in a beautiful way. All the things in this universe including man are made up of five basic elements namely “Pancha Boothas”. They are Earth, Water, Fire, Air and Space. This maintains the integrity of nature humour called vatha, pitha and Kapha.

The three humours exists in the ratio 1: $\frac{1}{2}$ : $\frac{1}{4}$ normally. Any deviation in this ratio affects the homeostasis of human physiology and leads to pathological condition called pini (or) Noi.

The Pini (or) Noi must cure by “Marunthu” Marunthu which cure physical, mental illness which posses preventive aspects from diseases and also to postpone death.

Maruthuvam is classified in to 3 types. They are.

1. சிற்று மாருதுவம்
2. பிராங்கிய மாருதுவம்
3. அணகாரம் மாருதுவம்.

The Sirappu Maruthuvam comes under the theva Maruthuvam.

Sirappu Maruthuvam is a special branch in siddha system of medicine. The specialties are
1. Kaya Kalpam
2. Yoga therapy
3. Varmam
4. Thokkanam
5. Treatment to the psychosomatic disorder (Kirigaiand Kanma Noigal).
6. In Siddha Medicine the dermatological problems are also told under Sirappu Maruthuvam.

The author of this dissertation work has selected “Saganavatham” is regarded as one of the vatha disease by “Yugi Munivar vaithiya Sinthamani – 800” and the Clinical entity comparable to “cervical spondylosis” in modern medicine.

The research of mine analysis the factors that cause pain in the neck 80% of the people who suffer from neck pain those who are engaged in works which make chronic flexion of the cervical vertebrae as in tailor, porters, agricultural labours.

In treating vatha diseases the siddha system of medicine has its wonderful effect so the author has tried to formulate a treatment methodology to treat the disease. The author’s choice of drugs for clinical study are.

1. **Aayil Pattai Chooranam** – Agathiyar Attavanai Vagadam.
2. **Kalappaiizhangu oil** - Pathartha Kuna Vilakkam.

The drugs were prepared by the author and were tried in 20 selected “Sagana vatham” cases of various aetiology.
AIM AND OBJECTIVES

The clinical study of “Saganavatham” compared with “Cervical Spondylosis” in modern medicine was done in 20 selected cases of both sexes and treated in the In Patient ward of the Post Graduate Department of Sirappu Maruthuvam at Government Siddha Medical College, Palayamkottai.

Aim and Objective are Follows:

- To have a clinical trial in Sagana Vatham affected individuals with selected siddha drugs viz, Aayilpattai Chooranam (Internal Medicine) kalappai Kizhangu Oil (External Application).
- To make a detailed study of various literatures dealing with definition, aetiology, classification, signs and symptoms, prognosis, diet and treatment for “Saganavatham”.
- To expose the greatness and efficiency of siddhar’s diagnostic principles.
- To have an idea of the incidence of this disease with age, sex, occupation, social – economic status, diet and Paruvakalam.
- To have clinical trail with specific medicine.
- To know the extent to which the correlation of aetiology, classification, signs and symptoms of saganavatham with that of modern medicine.
- To study Bio chemical analysis and pharmacological actions of the medicine treated on this disease.
- To utilize the possible diagnostic tools in confirming the diagnosis by clinical investigations.
In our ancient Siddha literature the diseases are classified into 4448 types based on the Mukkutra theory (vatham, Pitham, Kabam). However vatha diseases got a major role among them. There are 80 types of vatha diseases and Sagana Vatham is one of the type which is taken for my dissertation.

As per our Siddha aspect the first phase in human life is attributed to vatham, the middle to pitham, and the last phase to kabam.

This is known from the following verses.

“நான்கு முக்குற்றாக வாம் குன்று
அறிந்திருந்தே பொருந்து”

- கோயில் வரலாறு பாகம்

The details of vatham have been dealt before reviewing the specific signs and symptoms of Sagana Vatham.

Definition:

Vatham is one of the three humours. Among the five elements (pancha boothas) Vatham is formed by vayu (Air) and Aahayam (sky). In a healthy individual the existence of the three humours are in the ratio 1:1/2:1/4 respectively. When the three humours are in the above said ratio, they are called as thathus and when they are deranged, they are called as kuttram.
The alteration of the above ratio may be due to environmental factors, diet and behaviours etc. When vatham is affected the other two thathus are also affected that leads to the pathological changes. This is known as follows.

“ஏராலை வாயுக்கு ஏர்முடைய நிலம்”

- இலைகறை

**RELATION WITH FIVE ELEMENTS:**

Vatham - Vayu + Aahayam

Pitham - Agni

Kabam - Appu + Pirthivi

Vatham has vayu and sky as it’s elemental constituents. If vayu and sky (or) any one of them is decreased (or) increased from the normal level, it will surely lead to pathological state of vatham.

Regarding diet, bitter, pungent and astringent tastes contains air and bitter alone contains “SKY”. So if these are consumed in large amounts results in the vitiation of vatham and eventually vatha diseases.

The six tastes and their constituent elements are as follows,

- Sweet: Earth + Water
- Sour: Earth + Agni
- Salt: Water + Agni
- Bitter: Air + Aahayam (SKY)
- Pungent: Air + Agni (Fire)
- Astringent: Earth + Agni
Relation with Taste:

"புரத்து றுதையானது வேட்டுக்குறிக்கும் வாரம்
சுருக்கியது, கரும்பிதியும் விளையாட்டும் - கிரகிரையுடன்
கராபிதியும் விளையாட்டும் வார் வேட்டுக்குறிக்கும் வாரம்
சுருக்கியது வேட்டுக்குறிக்கும்"

Sour and astringent are the tastes that increase vatham.

"மாறு வைத்திருக்கும் வாரம் புறநின்று
சுருக்கியது, கரும்பிதியும் - கிரகிரையுடன்
கராபிதியும் விளையாட்டும் வாரம் வேட்டுக்குறிக்கும்
சுருக்கியது வேட்டுக்குறிக்கும்"

Sweet, sour and salt are the tastes that neutralize the vatham.

THREE PHASES PRAPAKAM (METABOLISM)

<table>
<thead>
<tr>
<th>PRAPAKAM (METABOLISM)</th>
<th>THODAM</th>
<th>TASTE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inippu</td>
<td>Kabam</td>
<td>Sweet</td>
<td>Moistening of Food</td>
</tr>
<tr>
<td>Pulippu</td>
<td>Pitham</td>
<td>Sour</td>
<td>Conversion of Food</td>
</tr>
<tr>
<td>Kaarppu</td>
<td>Vatham</td>
<td>Pungent</td>
<td>Absorption and separation of food</td>
</tr>
</tbody>
</table>

ALTERATIONS OF VATHAM

Vatham is specialized in Aadi, Aavani, Purattasi, and Iyppasi Physiologically.

The three humours are affected either themselves or with Udal Thaadukkal, pathologically.
The types of alterations of Vatham are:

1. **Thannilai Valarchi (தன்னிலை வாலார்சி)**

   **Definition:** A kutram, which is provoked in its own location is called “Thannilai Valarchi”.

   **Limitation:** Hatefulness of the things which are causing Thannilai Valarchi and likeness of the things which are getting opposite properties are the limitations of “Thannilai Valarchi.”

   **Duration:** Vatham gets “Thannilai Valarchi” during Mudhuvenil Kaalam (Aani and Aadi).

2. **Vetrunilai Valarchi (வெற்றுநிலை வாலார்சி)**

   **Definition:** A kutram, which is provoked to other locations is called “Vetrunilai Valarchi.”

   **Limitation:** Signs and symptoms of the affected kutram and the pathological conditions of the Udal Thaadhukkal give the details of the limitations.

   **Duration:** Vatham gets “Vetrunilai Valarchi” during kaar Kaalam (Aavani and Purattaasi).

3. **Thannilai Adaithal (தன்னிலை அடைதல்)**

   **Definition:** A provoked kutram, which is neutralizing in its own property is called Thanilai Adaithal

   **Duration:** The provoked Vatham neutralizes during koodhir kaalam (Iyppasi and karrthigai)
FACTORS WHICH ALTER VATHAM

1. When hot foods are mixed with vatham, “Vatham” gets Thanniliai Valarchi”.

2. When cold foods are mixed with Vatham, “Vatham” gets ‘Vetrunilai valarchi’.

3. And when oily foods with hotness are mixed with Vatham. “Vatham” neutralizes in its own property that means healthy conditions.

“மங்கலம் முடுத்தாமல் தள்ளல்
மங்கலம் மாறாததம் செய்பவுருண்டு
மங்கலம் வரலாறுகள் கடைளைக்
மங்கலம் வரலாறு ஊர்வர்களைத்
மங்கலம் வரலாறு வல்ளலைத்
மங்கலம் வரலாறு வேளைத்
மங்கலம் வரலாறு காலைத்
மங்கலம் வரலாறு காலைத்”

- விக்ரமராஜன் காந்திகம்

Varieties of Vatham:

The vatham is divided into 10 types according to their locations and functions described in siddha texts.

1. PRAANAN: (Heart Centre)

It corresponds to the Cardiac plexus and refers to the chest. It maintains the action of the heart, the functioning of the mental faculties of perception and concentrations and also cares for the arteries, veins and nerves. It regulates the respiration and digestion. It is otherwise called as “Uyirkkaal”.
2. ABAANAN (Moolaadharam Centre)

It corresponds to the pelvic plexus and controls the excretion. It is focussed in the lower part of the gut and also occupies the sites in the bladder and genitals. It has a tendency to travel downwards. It moves in the whole Genito Urinary Tract and regulates the defaecation, micturition, menstruation, parturition and ejaculation. It is otherwise termed as “Kezhnokkukaal”.

3. VIYAANAN: (Fore Head Centre)

It corresponds to the naso ciliary plexus at the root of the nose and base of the skull and controls the will. It helps in the circulation of energy throughout the entire nervous system and the movements of various parts of the body. It also transports nutrients and blood throughout the entire body. It is also known as “Paravukaal.”

4. UDHAANAN: (Throat Centre)

This corresponds to the pharyngeal plexus in the throat region and controls speech and breathing. It is also responsible for the physiological reflex actions like vomiting, hiccup, cough, etc., It has the tendency to travel upwards. It is otherwise named as “Melnokkukaal.”

5. SAMAANAN: (Navel Centre)

It corresponds to the solar plexus in the navel region and controls digestion. It selects the useful substances from the swallowed food and supplies them to the whole body. It balances the other ‘Vayuss” it is also called “Nadukkaal.”

6. NAAGAN:

It is responsible for the intelligence of an individual, winking, singing and pilo erection.
7. KOORMAN:

It is responsible for yawning, closing of mouth (immovable of lower jaw) winking, shedding of tears, vision and opening of the eyes.

8. KIRUGARAN:

It is responsible for salivation and nasal secretion. It helps in digestion and meditation. It produces cough and sneeze.

9. DHEVATHATHAN:

It is responsible for laziness, lassitude, to quarreling arguing, begging and also for much anger. It helps movements of the eyeball in various directions and is present in genital and anal region.

10. THANANJEYAN:

It is present in nose and responsible for swelling of the body and tinnitus. It leaves from the body by blowing up the cranium only on the third day after death.
SAGANA VATHAM

Definition:

Saganavatham is one of the vatha disease described in ‘Yugi Vaidhya Sindhamani – 800’. It is a condition dealing with the involvement of the neck which is identical to the cervical spine, comprising the symptoms of pain in the nape of the neck, radiating pain in the upper limbs, feeling of heaviness of the body, mental depression, giddiness, burning sensation of the eyes and constipation.

Aetiology:

The common aetiiological factors for all types of vatha disease including “Saganavatham” have been described generally in Yugi Vaidhya Chinthamani – 800, Agasthiyar Kanma Kaandam – 300 and Agasthiyar Gunavagadam.

1. In Agasthiyar Gunavagadam:

"நின்றும் நாயில் சிங்கநோய் மகற்சொன்னல்
நின்றும் நாயில் சிங்கநோய்
சங்கரப்பிற்றன் மகற்சொன்னல்
சிங்கப்பிற்றன் மகற்சொன்னல்
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சங்கரப்பிற்றன் மகற்சொ

1. Brain disease
2. Renal disorders
3. Sexually transmitted disease
4. Disease of the vertebral column and spinal card

2. In Agasthiyar Kanma Kandam – 300

3. In Yugi Vaidhya Chinthamani

"ஒந்தியம் அல்லது வெளியில் வந்தவர் விரைந்து நடைந்து வந்தவர் விரைந்து நடைந்து வந்தவர் விரைந்து நடைந்து வந்தவர்

- மாணவர் நல்லம்மா பாகல் 56

3. In Yugi Vaidhya Chinthamani

"நுண்சந்தை கருஞ்சை கூட்புக்குப்பிடப்பதால்

சுருக்கத்தன்மை சுருக்கத்தன்மை சுருக்கத்தன்மை

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சுருக்கат்தை கூட்புக்குப் பாகல் 244
Clinical Features:

The signs and symptoms of Sagana vatham is described in Pararasasekaram, Yugi Vaithya Chinthamani, Agasthiar Nadi and agasthiar 2000 by the following verses.
2. Agasthiyar Naadi

"ஏகமனின் அம்மா என்னும் மத்திய விளைவு
ஏகமனின் தன்மை விளைவு
ஏகமனின் பழங்குடிய விளைவு
ஏகமனின் தன்மை விளைவு"

1. Weakness of the limbs
2. Sluggishness
3. Stiffness
4. Numbness

3. In Agasthiyar 2000

"ஏகமனின் அதிர்வேளையாளினது பாக்கித்தியப்பட்டு பாக்கித்தியப்பட்டு
பாதுகாப்பு என்று பாதுகாப்பு என்று
பாதுகாப்பு என்று பாதுகாப்பு என்று
பாதுகாப்பு என்று பாதுகாப்பு என்று பாதுகாப்பு என்று பாதுகாப்பு என்று பாதுகாப்பு என்று பாதுகாப்பு என்று

1. Giddiness
2. Numbness in the limbs
3. Chillness of body
PATHOPHYSIOLOGY OF SAGANA VATHAM
(IN SIDDHA ASPECT)

Thannilai Valarchi

VATHAM

Viyanan
- Pain in the cervical dorsal spine
- Cruciating pain along the upper limb
- Heaviness of the body

Abanan
- Constipation

Devatham
- Mental Depression

Vetrnilai Valarchi
- Second-degree dearangement

KABAM
- Tharpagam
- Burning sensation of the eyes

PITHAM
- Sathagam
- Giddiness
Pathology

When there is ideality in life style, occupation, food and habits, there is no way for the development of disease. When any one of them is altered it causes derangement of micro elements in the body (Panchaboothangal), improper food habits directly alters the elemental composition while other acts also cause derangement of these elements indirectly.

When elemental composition is altered naturally, uyir thaathugal of the three humours which are made up of these elements get deranged. This simultaneously leads to derangement of seven udal thathukkal and produces symptoms.

The aetiological factors for Sagana Vatham (cervical spondylosis) are both diets that produce excessive vayu and other agents cause vitiation of vayu, aahayam. Depending upon the type of agent, those are vitiated to affect the corresponding uyir thaathu. Here vali and aahayam constitute vatham, earth and water corresponds to kabam and fire corresponds to pitham. So, vatham, pitham and kabam are deranged. Simultaneously udal thathukkal get deranged. These even give rise to clinical features of Sagana vatham.

In the uyir thaathu, vatham, due to the derangement of viyanan there is pain in the cervical and dorsal spine, pain along the upper limbs, pain like cruciating pain and heaviness of the body. Due to derangement of abanan, there is constipation. Due to the derangement of devathathan there is mental depression.
In pitham due to the derangement of sathaga pihtam giddiness results.

Kabam also gets deranged during the course of the disease. Here due to the derangement of tharpagam there is burning sensation of the eyes.

Simultaneously along with uyir thathus is derangement of Saaram, Senner, Oon, Kozhuppu and Enbu. The whole events constitute the clinical condition Sagana Vatham.

**KUGARANA MAATRAM (PATHOGENESIS):**

The derangement of panjapootha in Sagana Vatham is as follows.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Pootham</th>
<th>Nature of derangement</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mann</td>
<td>↑</td>
<td>Osteophytes</td>
</tr>
<tr>
<td>2.</td>
<td>Neer</td>
<td>↓</td>
<td>Giddiness (Decrease blood supply).</td>
</tr>
<tr>
<td>3.</td>
<td>Thee</td>
<td>↑</td>
<td>Breaking the Cartilage Fragments.</td>
</tr>
<tr>
<td>4.</td>
<td>Vayu</td>
<td>↑↑</td>
<td>Swelling and Pain, Mental Depression.</td>
</tr>
<tr>
<td>5.</td>
<td>Aagayam</td>
<td>↓↓</td>
<td>Joint Space Narrows.</td>
</tr>
</tbody>
</table>

**PINIYARIMURAIMAI (Diagnosis)**

It is very important part of the treatment. It is helpful to select the correct line of treatment and good prognosis. It is based upon the following diagnostic methods.
1) PORIAAL THERTHAL

The physician should examine the patient’s porigal by his porigal.

1. Mei: Feels all types of sensations
2. Vaai: For knowing taste
3. Kan: Meant for vision
4. Mooku: For knowing the smell
5. Sevi: For hearing

2) Pulanaal Arithal:

The physician should examine the patient’s pulangal (Functions of the sensory organs)

1. Ooru - Perception of sensation
2. Suvai - Perception of taste
3. Oli - Perception of vision
4. Nattram - Perception of smell
5. Oosai - Perception of sound

In case of saganavatham pain in the cervical region that radiates either one (or) both upper limbs and numbness over the both upper limbs, shows that ooru is affected.

3. VINADHAL (Interrogation)

The physician should interrogate about the patient’s name, age, occupation, native, socio- economic status, dietetic habits, prone to any allergens, complaints, history of previous illness, history of past illness and frequency of attacks. If the patient is unable to speak, or is a child physician should interrogate the details with his immediate relatives who are taking care of him.
4. ENNVAGAI THERVUGAL

The prime method adopted to diagnose the disease is by means of “Ennvagai thervugal”. The value of ennvagai thervugal is very important for diagnosing purposes, which is the unique and special method described in siddha system of medicine.

"தருகா மைக்க நா டீ ஓர் விளக்க விளக்க
அவ் முன்னோடியம் மதிக்காமலாம்"
- ஜெடேஷா

"செல்வாந்தை சுற்றிருந்து விளக்க சர் விளக்காணியும் காத்தும்".

**The diagnosis is made by Envagai thervugal**.

1. Naadi
2. Sparisam
3. Naa
4. Niram
5. Mozhi
6. Vizhi
7. Malam
8. Moothiram

**1. NAADI (PULSE)**

The study of Naadi is the important factor in ‘Ennvagai thervugal’ which gives almost the correct diagnosis. Naadi may be studied at ten places in the body, which are Heel, Genital organ, Abdomen, Chest, Ear, Nose, Neck, Hand, Eyebrow and Vertex. But the study of naadi in hand is the best because the radial artery is located superficially. The unique factor which pertaining the soul in the body is known as ‘Naadi’. ‘Naadi
must be studied in right hand for men and left hand for women. The three Uyir thaadhukkal are formed by the combination of

- Edakalai + Abaanan - Vaadham
- Pinkalai + Piraanan - Pitham
- Suzhumunai + Samaanan - Kabam

The naadi can be felt one inch below the wrist on the radial side by means of palpation and percussion with the tip of the index, middle and ring finger corresponding of Vatham, Pitham and Kabam respectively. The three humours exist in the ratio of 1:1/2:1/4 normally. Derangement of this ratio leads to various diseases.

In cases of Sagana vatham the following stages of Naadi are seen.

**Vatha Naadi:**

- "அந்தாய்மதை தோற்றுத்து பாசைக்கிட்டு
  கொண்டு முடிந்து பூச்சு தொட்டுக்கொள்ளப்போட்டியல்
  கொண்டு முடிந்து முடித்து பூச்சு
  கொண்டு முடிந்து முடித்து பூச்சு என்று"

- (சுருங்கும்)
“பிர்கோவைென் வர்த்தகா மின்சூர்களை
நீங்களைச் சுருக்குவதற்கு விளக்கம் கொள்ளலாம்
நீங்கள் வர்த்தகா சுருக்குவதற்கு
நீங்களுடைய சுருக்கமைப்பாளர் விளக்கம்”
- அக்கதீஸ் தாரா

“ஏராட்சிய வாழிட்டின் கன்னகள் பக்தர்கள் விளக்கம்”
- காண்கிளி தாரா

Vatha Pitha Naadi

“பெருநோக்கா வாழிட்டின் விளக்கம் பிள்ளற்று
……………………………………
கேட்டினது வேறுப்புச் சேர்த்தலைப் பிள்ளற்று
தாராயும் குறிப்பிட்டு
……………………………………
நிறைவு குறிப்பிட்டு”
- சுந்தரா

“விருதுவாரம் வாழிட்டின் விளக்கம் விளக்கம்
பார்க்குமான் விளக்கம் விளக்கம் பிள்ளற்று”
- வீராச்சின் தாரா

Vatha Kaba Naadi

“பார்க்குமான் வாழிட்டின் விளக்கம் விளக்கம்
பார்க்குமான் விளக்கம் விளக்கம்”
- சுந்தரா

“வாழிட்டின் விளக்கமைப்பாளர் வாழிட்டின் விளக்கம்”
- அக்கதீஸ் தாரா

Pitha Vatha Naadi

“வாழிட்டின் வாழிட்டின் விளக்கம் வாழிட்டின் விளக்கம்
அதில் பார்க்குமான் விளக்கம் வாழிட்டின் விளக்கம்”
- அக்கதீஸ் தாரா
Pitha kaba Naadi

"மிதியின் பிக்குதல்களில் மாற்றுகள் உள்ளது இல்லேயென்று வந்து கைதி கலந்து வந்தது என்று சொல்லியளர்.

- முதலீடி ராஜ்

Kaba Vatha Naadi

"சன்னாத்திய சிலையுறுநில்லில் மாற்றாம்
சிலையுறையில் மற்றைய வலுவுகளில் மாற்றமில்லை
சன்னாத்திய முன்புறாக்கும் பாதி விளையுடையே
செரிப்பட்டும் முகமுறையுடைகள் மற்றும் கனவு விளையுடையே அனுமம்.

- முதலீடி ராஜ்

"மக்களால் பிக்புதல்களில் மாற்றாம்
துணைய போக்கும் வலுவுகளில் மாற்றாம் திரும்பும்

- முதலீடி ராஜ்

In all sagana vatham patients Vatha, Pitha, Thondha naadi was noted.

2. Sparisam

The temperature of body, roughness, dryness patches of skin, growths, sweating, swellings and tenderness are to be examined.

In Saganavatham Patients:

General body temperature – Slight warmth, swelling and tenderness may be present in the nape of the neck and upper extremities.

3. Naa (Tongue)

- Coating of tongue
- Dryness, movement, deviations, ulcers, sensory changes are examined by this criteria.

In Saganavatham – the tongue is coated due to constipation.
4. **Niram (Colour)**

- Colour of skin
- Mucous membrane
- Hair & nail are examined

**In Saganavatham Patients**

- The area of swelling and tenderness – bears inflammatory changes

5. **Mozhi (Speech or Voice)**

- Tone of speech (low or high pitched)
- Hoarseness of voice are detached

**In Saganavatham Patients**

- No change of voice is found out. But pain in neck due to thyroid gland enlargement produces a hoarseness of voice.

6. **Vizhi (Eyes)**

- Testing for – acuity of vision, colour-redness, pallor, whiteness, any burning sensation.

**In Saganavatham Patients**

- Burning sensation of eyes is present.
- In aged patients acuity of vision is diminished

7. **Malam**

- The waste and excretory products of body are called as malam
- The faeces should be in semi – solid without hardness and lossness.
- In faeces examination nature, colour, quantity, presence of blood and mucous are also noted.

**In Saganavatham Patients**

- Constipation present.
8. Moothiram

➢ Neerkuri

➢ Neikuri

“ஆதிபுரூரக்குழு அணியுப்பாறை
ஆயிரம் அளந்து மாகங்கள் மற்றும்
குரோயப்புறச் செய்தி மாகங்கள்
செரியான கங்கையால்
நீர்குரி மாதிக் கங்கையால் தீர்க்கை
நீர்குரி நீர்குரி நீர்த்தக்கு கண்டை”.

Neerkuri

“நீர்குரி குரோயப் பெண்கள் ரன்பிற்குள்
முற்படு வருணகால் மேலியை”

In Neerkuri the Niram (Colour), Manam (Odour), Nuria (Froth), Edai (Specific gravity) and Enjal (Quantity) is noted. It should be examined withing 3 ¾ nazhigai. Apart from these, the frequency of urination, abnormal constituents such as sugar, protein etc., and sediments are also noted.

Neikuri

Neikuri is an important test to assess the predominantly affected humour.

“னீர்குரி குரோயப் பெண்கள் ரன்பிற்குள்
செரியான கங்கையால் மாகங்கள் மற்றும்
குரோயப்புறச் செய்தி மாகங்கள்
செரியான கங்கையால்
நீர்குரி நீர்குரி நீர்த்தக்கு கண்டை”

“அரியாள் நீலகால் அளர்வு
அளிவு மாகங்கள் அள் திட்டிமுக
பெண்கள் பொண்டு குரோயப்புறம்”
Early morning urine of the patient is collected in a glass container and examined within 1 ½ hrs. A drop of gingely oil is dropped and kept in the sunlight at a calm place. The nature of the oil drop in the urine is noted.

If the oil drop,

1. Spreads like a snake, it indicates vatha disease
2. Spreads like a ring, it indicates pitha disease
3. Appears like a pearl, it indicates kaba disease.

**In saganavatham the following vayus are affected.**

<table>
<thead>
<tr>
<th>Vatham</th>
<th>Physiological function</th>
<th>Feature in Saganavatham</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abanan</td>
<td>Act with downward movement</td>
<td>Constipation present</td>
</tr>
<tr>
<td>Viyanan</td>
<td>Helps in various movements of body, responsible for sensation</td>
<td>Restricted neck movements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Radiating pain in shoulder and arm, tingling sensation</td>
</tr>
<tr>
<td>Samanan</td>
<td>Regulates all other vayus</td>
<td>Affected</td>
</tr>
<tr>
<td>Nagan</td>
<td>Responsible for intelligence</td>
<td>Sluggishness and depressive mood in aged patients.</td>
</tr>
<tr>
<td></td>
<td>Helps in opening and closing of eyes</td>
<td></td>
</tr>
<tr>
<td>Koorman</td>
<td>Responsible for lacrimation.</td>
<td>In aged patients acuity of vision is diminished.</td>
</tr>
<tr>
<td></td>
<td>Helps in visualization of all things of world</td>
<td></td>
</tr>
<tr>
<td>Thevathathan</td>
<td>Responsible for laziness, rotation of eye balls</td>
<td>Sleeplessness due to pain</td>
</tr>
</tbody>
</table>
Pitham

Pitham is a force of heat, God to all disease, mother to dasha vayukkal, assistant to boothas and responsible for fever.

<table>
<thead>
<tr>
<th>Pitham</th>
<th>Function</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anar pitham</td>
<td>Digests all the ingested particles</td>
<td>Affected</td>
</tr>
<tr>
<td>Ranjaga pitham</td>
<td>Increase the blood and gives colours to blood</td>
<td>Affected</td>
</tr>
<tr>
<td>Saathaga pitham</td>
<td>Makes the work to complete what mind thinks to do</td>
<td>Affected, Neck pain and restricted movement</td>
</tr>
<tr>
<td>Aalosaga pitham</td>
<td>Responsible for vision of eyes</td>
<td>Affected in old age people</td>
</tr>
<tr>
<td>Prasaga pitham</td>
<td>Gives colours to skin</td>
<td>Not affected</td>
</tr>
</tbody>
</table>

Kabam

It is classified into five types

<table>
<thead>
<tr>
<th>Kabam</th>
<th>Function</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avalampagam</td>
<td>Controls other 4 types of kabam</td>
<td>Affected</td>
</tr>
<tr>
<td>Kilethagam</td>
<td>Moistness the food</td>
<td>Affected</td>
</tr>
<tr>
<td>Pothagam</td>
<td>Helps to know the taste</td>
<td>Not affected</td>
</tr>
<tr>
<td>Tharpagam</td>
<td>Gives cooling affect to the eyes</td>
<td>Affected, Burning sensation of eyes present</td>
</tr>
<tr>
<td>Santhigam</td>
<td>Gives lubrication of joint</td>
<td>Affected</td>
</tr>
</tbody>
</table>
There are seven udal thathukkal in human body.

<table>
<thead>
<tr>
<th>Udal Thathukkal</th>
<th>Description</th>
<th>Stage of Affection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saram</td>
<td>Strengthens the body and mind</td>
<td>Affected</td>
</tr>
<tr>
<td>Seneer</td>
<td>Preserves brightness, boldness power and knowledge</td>
<td>Affected</td>
</tr>
<tr>
<td>Oon</td>
<td>Gives structure and shape to body. Responsible for movement</td>
<td>Early stage – not affected. Later stage – Affected</td>
</tr>
<tr>
<td>Kozhuppu</td>
<td>Lubricate the joints</td>
<td>Affected</td>
</tr>
<tr>
<td>Enbu</td>
<td>Responsible to joint movement</td>
<td>Affected</td>
</tr>
<tr>
<td>Moolai</td>
<td>It is present in the bones and gives strength</td>
<td>Affected</td>
</tr>
<tr>
<td>Sukkilam or Suronitham</td>
<td>Meant for reproduction</td>
<td>Not Affected</td>
</tr>
</tbody>
</table>

**Kanmenthiriyam**

<table>
<thead>
<tr>
<th>Kai</th>
<th>Description</th>
<th>Affected.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Works done by the hands</td>
<td>Radiating pain tingling sensation</td>
</tr>
<tr>
<td>Kaal</td>
<td>For walking</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vaai</td>
<td>For speaking</td>
<td>Not Affected</td>
</tr>
<tr>
<td>Eruvai</td>
<td>For defecation</td>
<td>Affected</td>
</tr>
<tr>
<td>Karuvai</td>
<td>For reproduction</td>
<td>Not Affected</td>
</tr>
<tr>
<td></td>
<td>Sensation/Function</td>
<td>Affected State</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Mei</td>
<td>Feels the sensation of touch</td>
<td>Affected paresthesia, present in upper limb. Radiating pain, tingling sensation</td>
</tr>
<tr>
<td>Naa</td>
<td>Analyses taste</td>
<td>Not Affected</td>
</tr>
<tr>
<td>Kan</td>
<td>For vision</td>
<td>Not Affected</td>
</tr>
<tr>
<td>Mooku</td>
<td>For smell</td>
<td>Not Affected</td>
</tr>
<tr>
<td>Sevi</td>
<td>For hearing</td>
<td>Not Affected</td>
</tr>
</tbody>
</table>

**Alteration of Udal Vanmai:**

Udal vanmai is described as Iyarkai vanmai, cheyarkai vanmai and kaala vanmai.

1. **Iyarkai Vanmai** is considered with three Gunangal (Sathuva, Raso and Thamo Gunam)

2. **Kaala Vanmai** is considered with Age and Season. Most of the vatha diseases occur in old age because the kaala vanmai is diminished in old age.

3. Changes in cheyarkai Vanmai also plays a major role. Wrong postures, sedentary life style and improper foods, disturb cheyarkai vanmai and causes the Sagana vatham.
THINAIGAL:

Nilam is classified into five types. They are

1. Kurinji  : Mountain and its surroundings. Kabanoigal
               and liver diseases are common

2. Mullai   : Forest and its surroundings, pitha noigal, vatha
               noigal, liver diseases are common

3. Marutham : Field and its surroundings safest place to
               maintain good health.

4. Neidhal  : Sea and its surrounding, Vatha diseases and
               liver enlargements are common.

5. Paalai   : Desert and its surroundings, Vatha, Pitha and
               kaba noigal are common.

Study of five lands is very much needed, as some diseases are
common in the particular lands.

In case of **Sagana vatham** most of the patients were from marutha nilam
Paruvakaalam:

The whole years is constituted by six seasons. They are

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Kalam</th>
<th>Kuttram</th>
<th>State of kuttram</th>
<th>Suvai</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kaar kaalam (Aavani – Puratasi)</td>
<td>Vatham ↑↑ Pitham ↑</td>
<td>Vettrunilai Valarchi Thannilai valarchi</td>
<td>Enippu Pulippu Uppu</td>
</tr>
<tr>
<td></td>
<td>(Aug 16 – Oct 15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Koothir kaalam (Iypasi – karthigai)</td>
<td>Vatham (⁻) Pitham ↑↑</td>
<td>Thannilai adaithal Vettrunilai valarchi</td>
<td>Enippu Kaippu Thuvarppu</td>
</tr>
<tr>
<td></td>
<td>(Oct 16 – Dec 15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Munpani kaalam (Markazhi – Thai)</td>
<td>Pitham (⁻)</td>
<td>Thannilai Adaithal</td>
<td>Enippu Pulippu Uppu</td>
</tr>
<tr>
<td></td>
<td>(Dec 16 – Feb 15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Pinpani kaalam (Masi – Panguni)</td>
<td>Kabam ↑</td>
<td>Thannilai valarchi</td>
<td>Enippu Pulippu Thuvarppu</td>
</tr>
<tr>
<td></td>
<td>(Feb 16 – Apr 15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Elavenil kaalam (Chithirai – Vaikasi)</td>
<td>Kabam ↑↑</td>
<td>Vettrumilai valarchi</td>
<td>Kaippu Karppu Thuvarppu</td>
</tr>
<tr>
<td></td>
<td>( Apr 16 – Jun 15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Mudhuvenil kaalam (Aani – Aadi)</td>
<td>Vatham ↑ Kabam (⁻)</td>
<td>Thannilai valarchi Thannilai Adaithal</td>
<td>Enippu</td>
</tr>
<tr>
<td></td>
<td>(Jun 16 – Aug 15)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

↑ - Valarchi ↓ - Samappaduthal

(⁻) - Thannilai Adaithal
In Sagana vatham the disease show its exacerbation during Muthu venil kaalam

Noi Kanippu Vivatham (Differential Diagnosis)

There are certain other vatha noigal which resemble the clinical symptoms as Sagana Vatham. Sagana Vatham is differentiated from certain other conditions.

They are,

1. Pannikamba vatham
2. Kumba vatham
3. Pei vatham

1. Pannikamba vatham

"கார்க்காண்கம் என்பதுமே தீம்புண்டுக்கு இல்லமாசாக இடமையிட்டு கார்க்காண்க கூட்டு சாத்திக்குறுக்கு

கார்க்காண்கம் கண்விஞ்ஞனின் துறைச்சாகம்

கார்க்காண்கம் கார்க்காண்கம் தீம்தொட்டுக்குறுக்கு

கார்க்காண்கம் கார்க்காண்க 

பானிகம் என்பதும் ஆங்கிலத்தை சாத்திக்குறுக்கு

பானிகம் என்பதும் பக்திகுறிப்பிட்டு பக்திகுறிப்பிட்டு".

The main clinical features are:

- Loss of sensation in both upper limbs
- Numbness in upper limb
- Sleeplessness
- Anorexia
- Shivering of upper limbs
2. Kumba vatham

The main clinical features are:

- Burning pain in shoulder and upper limbs
- Burning sensation in the cheek and eyes
- Twitching over the scalp
- Pain in the lower abdomen
- Glossitis

3. Pei Vatham

- பெருந்தூரைச்சிக்கும் பாலமுறை கலவூர்
- பாலமுறைக் கெட்டிகள் குறிப்புள்ள
- செரிசையிலுள்ள குறிப்புச் சிறுத் குறிப்பிட்டு
- வெண்கலமுடன் வெண்கலை வைத்து வெண்கலை
- வேலாகமுடன் வேலாகமை வைத்து வேலாகமை

- பெருந்தூரைச்சிக்கும் குறிப்பிட்டு 800
The main clinical features are:

- Pain and swelling in neck, upper and lower limb
- Numbness in the neck and limbs
- Giddiness
- Swelling all over the body
- Vomiting
- Bitter taste in tongue

**LINE OF TREATMENT:**

According to the Siddha system line of treatment is divided into three. They are,

1. Kaappu (Prevention)
2. Neekkam (Treatment)
3. Niraivu (Restoration)

**Kappu (Prevention)**

To prevent sagana vatham

1. Avoid take excess sour astringent and bitter taste foods.
2. Sleep without pillows.
3. Avoid holding neck in one position for a long period (watching TV)
4. To follow the Noi Anugavidhi” described as follows.

**சுருக்கப்படுத்தப்பட்டு வழிபாடுகள்:**

1. வெள்ளை காட்சி, அல்லது முழுநேரத்தாக, வெள்ளையலர்கள் 2-முறை காட்சிகளைக் கொள்ளுங்கள்.
2. பார்வை குண்டுப்பட்ட உடலற்ற முயற்சி ஓரிடத்தாக காட்சிகளைக் கொள்ளுங்கள்.
   (பார்வை அகலவாயுடன், முயற்சி தரிசனத்தாக)
3. பார்வை குண்டு குண்டுப்பட்ட உடலற்ற முயற்சி ஓரிடத்தாக காட்சிகளைக் கொள்ளுங்கள்.
NEEKAM (TREATMENT):

Since the siddha system of medicine is based on Mukkutra theory the treatment is mainly aimed in bringing the three athosas in to its equilibrium state.

1. To bring the three Dhosas in equilibrium

2. Purgative

3. Treatment of disease by internal, medicine external applications
4. Diet & Advices
5. Yoga Therapy
6. Thokkanam
7. Kanma neekkam

i) Bring the Three Dhosas in equilibrium

“நம்பிருக்கவும் மாற்றும் மத்தியில்
முக்குறு குவித்திற் மத்தியில்
சுட்டும் விக்களில் மத்தியில்
சொழிகுறுகிறார் விளையும் மத்தியில்”

Since the siddha system of medicine is based on Mukkutra theory
the treatment is mainly aimed in bringing the three athosas in to its
equilibrium state.

ii) Purgatives:

Kalichal Maruthuvam (Purgation) corrects the vitiated vatham. The
following varses reveal the importance of kalichal Maruthuvam.

“மாற்றும் வாக்கு வாக்கு”

i. Asta bairava Mathirai     - 3 to 4
ii. Koda soori Mathirai     - 2 to 3
iii. Vellai Ennai            - 10 to 20 ml
iv. Agasthiyar Kuzhambu     - 100mg

III. Internal Medicine:

Aayilpattai Choornam     – 1gm tds with Hot water,

External applications:

Kalappai kizhangu oil    – 30ml (External)
iv) Pathiyam (Diet regimen)

Pathiyam which is peculiar to siddha system of medicine, is a medicinal advice which includes life style modification and dietary modification as per diseased condition.

“பதியம் பல்லுக்குரிய ஒழுங்காக்கப்பட்டு நடத்து
பதியம் விளக்கம் வேட்டு வருத்து - பதியம் நடத்து
பதியையில் நெய்யும் கட்டு பெண்கல்சிட்டு காணும்பட்டு
பதியையில் குறைந்தது பக்து”

- நடேர்ச்சு பதியைப் பாடல் 449.

Proper dietetic regimen enhance the bio-available of the drug and are conductive to the maintenance of good health. If dietetic regimen is not followed, certain food may be incompatible and antagonize the drug effect and produce harmful effect to the body.

严格Pathiyam:

“சிறியமல் இரு வகையானால் விளக்கு காணிப்பாத்தவரும்
குளிர் லிங்காட்சும் பயனுறும் - லிங்காட்சும்
சிறியமல் மூன்று வகையானால்
சிறியமல் காணிப்பாத்தும்”

- பாணார்ச்சு ஹரசா நீதிகரைதல்

i.e. Root of water lily (pontederia Veginalis), costus root (costus speciosus), honey collected on branches of trees, black pepper (piper nigrum), gingelly oil, asofoetida, leaves of clerodendron phlomoides, castor oil, black gram etc, cure vatha disease.

சிறியமல் பதியையில் (Strict Pathiyam):

“சிறியமல் பதியையில் பதியையில் செய்ய முதலாளும்
அரசியல் ஒழுங்காக்கப்பட்டு செய்ய முதலாளும்
சிறியமல் முன்னும் புதியாளும் குறிப்பி கையில்
சிறியமல் குறிப்பிட்டு போச்சாளும் பக்தும்”

- காண்காரவரை அபுர்வானையும் பருப்பு மாந்தை
i.e., a small quantity of fried salt is added to cooked rice which is eaten after adding hot water. Burnt tamarind, unripe brinjal and drumstick are taken in the form of soup along with fried salt.

**Kanma Neekam: (Expiation)**

Kanma being a cause of vatha disease, its remedial measures have been described below.

"\textit{Kanma being a cause of vatha disease, its remedial measures have been described below.}
\textit{Kanma Neekam: (Expiation)}"

- To expiate the misdeeds of the kanma, planting of young trees, establishing gardens, laying roads and pathways, digging wells and ponds for public use, constructing temples, donating ornaments to poor children must be done.

**Niraivu (Restoration)**

The topic “Niraivu” deals about the description to avoid the recurring of the disease.

After the treatment efforts should be taken to clear the residual effects of the disease, to bring back the body condition of the patient to normal, this is treated as “Niraivu”

To follow all the preventive methods mentioned in the topic “Kappu” will give good result to the patients.
Application of Special medicine methods to the Disease Saganavatham

All the wonders of modern science will not bring happiness, peace of mind, health or a long life. Although wonders have been achieved in our external environment – space travel, computers etc. our internal environment has been neglected. In the manner of rectifying this negligence and also as an immediate and preventive cure for saganavatham patients in our sirappu maruthuvam branch, the author have explained yogas.

Yoga:

Yoga is a science of consciousness. It unites the mind, body and soul. Yoga offers a significant variety of proven health benefits. The yoga for health aims at the maintenance of highest physical efficiency, purification and relaxation of all organs, removal of diseases, longevity and moral mental perfection.

The classic yoga, commonly known as the eight – fold path (Ashtanga Yoga). The eight steps are,

Iyama : Conditioned yoga behaviour, both personal and social.
Niyama : Attitude sublimated to yoga norms.
Asanas : Discipline of the physical body
Pranayama : Control over bioenergy through respiratory action
Prathyahara : Withdrawal of the senses inwards through abstraction.
Dharana : Concentration
Dhyana : Mediation
Samathi : Conciousness absolute or transconciousness

- Pandit shambhu nath

ASANAS

Asanas are postures, which are performed by the physical body with the involvement of breath, the mind and the intelligence and these asanas help in balancing and harmonizing the basic structure of the human body.

Our Siddhars were well aware of the importance of the spine in relation to disease. Hence they explained many asanas and postures which were designed to make the spine more flexible to prevent spinal misalignment and some may correct minor spinal misalignments. The author had explained about few asanas for Saganvatham patient as a preventive cure.

1. Bujangasanam
2. Shalabhasanam
3. Makrasanam
4. Konasanam
5. Pavana muktsanam (Without lifting up the neck)
6. Tadasanam
7. Chakrasanam
8. Dhanurasanam
9. Patchimothasanam
10. Gomugasanam
Procedures of few asanas:

Bujangasanam (Snake pose)
Final position resembles hooded snake.

Posture:

Lie flat with legs fully stretched out. Raise the upper portion of the body while breathing in.

Benefits:

- Adjusts minor displacement of the vertebra.
- Tones the deep muscles supporting the spinal column.
- Promotesspinal circulation.

Patchimothasanam

Posture:

In sitting position stretch out legs in front with feet together without bending the knees. Bend trunk and head slowly forward towards the knee while breathing out.

Benefits:

- Maximum posterior stretch of spine.
- Good for stiff spine
- Tones spinal muscles and nerves and improves considerably.

Chakrasanam: (The wheel pose)

Stand with feet apart, raise arms upward and first lean backward with inhalation and then bend forward from the waist with exhalation.

Benefits:

- Exercise of neck and shoulders
- To relieve neck pain.
Vakrasanam:

Sit with legs stretched forward, with arms thrown in front, rotate sidewards alternately while exhaling

Benefits:

- Gentle twist of spine
- Removal of minor displacements of vertebrae
- Removal of lateral curvatures of spine

How Asanas relief the pain in Saganavatham Patients?

1. Effect on Vertebral Muscle:

Asanas dampens the inflow of sensory impulses to the brain, which causes less stimulation to the emotional brain. (Limbic cortex, Hypothalamus, Anterior pituitary and their connectives with Adrenal glands). Therfore, there are loss visceral disturbances to disturb attention and concentration. The reduction of sensory input creates a reciprocal chain, relaxing the muscle. Inhibition of synapses at the relaxed neuromuscular junctions in turn reduces the sensory input further. Thus asanas made musculature of vertebrae as relaxed as possible.

2. Effects on Tendons and Ligaments:

The accentuated curve of the spine makes it supply and mobile. The action on the ligaments and tendons of the spine has important effects on the nervous activity.

3. Effects on Nervous System:

Acts on the spine by stretching it, generates reflex actions in the vegetative functions and tones the chains of ganglions situated on both sides of the spine.
MUDRA

Mudra is a hand gesture (or) position of body which is a symbol of energy centre. Mudra is a medium of communication of pranic energy and balancer of five elements. It brings harmony between conscious and sub conscious mind.

Importance of mudras:

- Mudra is a switch board of the body
- Chakras are activated by mudras
- Give the body energy
- Mudras control tridosas – vatha, pitha and kabha.
- Mudras purify the nerves, leads to knowledge, energy and joy of consciousness.

The author had explained about few mudras for saganavatham patient as a preventive cure.

1. Vayu mudra
2. Pankaj mudra

i. Vayu mudra:

It can be performed in any pose but vajrasana is the best asana for it, keep spine erect. Bend the fore finge r (index / tarjani) and put it at the base of the thumb. Press the finge r with the thumb. Duration is 48 minutes. Do it according to your capacity.

Benefits:

- Pain in the neck can be removed
- Unsteadiness of mind is removed
- It cures the impurities in the blood circulation.
Pankaj Mudra:

Pankaj means lotus. Lotus is the symbol of purity and non-attachment. Keep the fingers like lotus. In this mudra both the thumbs and little fingers touch each other.

Benefits:

- Makes spine healthy
- Makes nervous system stronger

THOKKANAM (MASSAGE)

Thokkanam is a systemic manipulation of the body parts by the physician (or) the physiotherapist.

“துக்கானம் கலந்து கைகளைக் கூட்டும் பாதுகாப்பு மூலம்”

- பதி புனிதமான குழுவின் மீது
- பெருமுக வலுவாகவிங்கள் கற்று பால்
- கொள்ளல் பல்

Thokkanam acts directly on vascular system, nervous system, lymphatic system and musculo system and brings the affected body to normal condition physically and mentally. It also gives a sense of well being, gives a good sleeps and increase the vital power and also provides relaxation.

Benefits of Massage:

- Besides being physically and emotionally relaxine.
- Improves blood and lymph circulation.
- Reduces nerve irritation.
- Swelling and thickening of tissues are reduced.
- Brings fresh oxygen and other nutrients to the affected tissues.
- Massage may also cause the body to produce fewer stress hormones like cortisol and nor-epinephrine (Formerly adrenalin), and may also increase the body’s production of pain killing endorphins, and the need altering hormone seratonin.

**Among 9 types of thokkanam,**

**Effleurage (Pidiththal):**

Starts from the sides of the neck to supraclavicular area

Back of neck to supra clavicular area

Back of neck to the medial angle of the scapula to the axilla.

**Kneading (முடியும்):**

Finger pads are used on the posterior aspect from the occiput.

On the lateral aspect of the neck the fronts of the two distal phalanges of all four fingers are used.

Flat handled kneading in upper thoracic area.

**Picking up (மேற்குத்து):**

The lower parts of the upper fibres of trapezius are compressed against the underlying bone.

**Wringing (குறுவு):**

Done for sternocledo mastoid muscle

**Scapula rolling:**

The deep scapular muscles are intermittently compressed against the rib cage with potentials.
Hacking and clapping:

Start from occiput to lateral part of the shoulder.

How massages reduce cervical spondylotic pain?

Reflex in which peripheral central portions of the nervous system both cerebrum spinal and sympathetic are chiefly active, an impression made upon the nerve ends of the sensory (or) afferent fibres, (this is area, the nerve is pinched where it leaves the spine) connected with the nerve centres of the cerebrospinal and sympathetic system being transmitted to the related centers, where new activities are set up resulting in the sending out of nerve impulse by which vital changes are effected not only on the parts directly acted upon but in related parts also.

**PRANAYAMA**

PRANAYAMA – PRAN + AYAMA

PRANA - Means bioenergy

IYAMA - Means control (or) discipline.

The real meaning of pranayama, therefore, is control of bioenergy.

“பிரான்சேசுப்பிளக்கம் புதிக்கும்
பிராந்தி பிராந்தியும் மாரமைக்கும்
pிராந்தி பிராந்தியும் மாரமைக்கும்
பிராந்தி பிராந்தியும் மாரமைக்கும்”

- சிற்பஞ்சிகள்

PRANAYAMA PRACTICES CAN HELP IN MANY WAYS:

- To develop the respiratory organs and to improve your vital capacity.
- To aid the circulation of the blood.
- Helps in steadiness of the mind and in concentration.

  In our siddha system various type of pranayama are explained by our siddhars. Specific type of pranayama which shows positive relief in Saganavatham Patients is.

  1. Deep breathing
  2. Auloma viloma pranayama
  3. Bhramari pranayama

- Dr.V.K. Ahluwalia.

**Exercises advised for Sagana vatham**

1) Neck Bending

   a) **Starting Position**

   - Sit with both legs straight.
   - Place the palms on the floor by the side of the buttocks
   - Keep the back, neck and head straight
   - Close the eyes
   - This is Dandasana

   b) **Practice**

   **Stage – I (Forward – Backward Movement)**

   - Slowly move the head forward and try to touch the chin to chest.
   - Then move the head as far back as comfortable.
   - Try to feel the stretch of the muscles in front and back of the neck and the loosening of the spine in the neck.
   - Practice 10 times.
   - Inhale on the backward movement and exhale on the forward movement.
Stage –II (Bending to Right and Left)

- Close the eyes and face directly forward.
- Slowly bend the head to the right and ear coming to the shoulder turning the head or lifting the shoulder.
- Bring the head back to the normal position
- Then bend in to the left side and try to touch the left ear to the left shoulder in the same fashion. Lift the head to the centre
- This is one round. Practice 10 rounds
- Inhale on the upward movement and exhale on the downward movement.

Stage –III (Turning the head to Right and Left)

- Keep the head upright and eyes closed.
- Gently turn the head to the right so that the chin is in line with the shoulder.
- Slowly turn the head to the left through the centre till the chin is in line with the shoulder. Bring the head to centre.
- This is one round. Practice 10 rounds.
- Inhale while turning to the front. Exhale while turning to sides.

c) Note : (For all the three stages)

- Move the head as far as comfortable. Do not strain
- Keep the shoulders relaxed and unmoved
- Feel the release of tension in the neck muscles and the shoulder muscles.

Contra – Indications

- Should not be performed extreme positions by elderly people
- Cervical spondylosis cases to avoid during acute pain
Benefits

- Theses asanas release tension (accumulated especially after prolonged work at a desk) and also heaviness and stiffness in the head, neck and shoulder region.

Additional points to Note

- Make the movements cautiously and slowly when there is Neck pain.
- Practice them with normal breathing
- Hold the neck in the final positions for a few moments
- If you have pain at any stage, stop in that position for a while.
  As you bring your complete awareness to the area of pain, start breathing consciously and deeply, then continue the movement.
- It can be practiced even while standing in Tadasana or sitting on a chair, or in Vajrasana.

2. Neck Rotation

a) Starting Position

Sit in Dandasana

b) Practice

Stage – I (Half Rotation)

- Relax the head bending forward
- Bring the right ear to the right shoulder in a circular way.
- Bring the left ear to the left shoulder in a circular bending the head forward.
- Now relax the head forward again in a circular way and finally lift the head to normal position. This is one round.
- Repeat 10 rounds clockwise and 10 rounds anti – clockwise with breathing.
Stage -11 (Full Rotation)

- Relax the head forward trying to touch the chin to the chest.
- Slowly rotate the head in as large a circle as possible, keeping the chin tucked in.
- Practice 10 rounds clockwise and 10 rounds anti-clockwise while breathing normally.

A) Note

- In both cases (Half and full Rotations) you may take about one minute or even longer for one cycle. Allow normal breathing without trying to synchronise the breath & neck movements.
- In full rotation, try to make the circle bigger and bigger.
- Keep the eyes closed throughout the practice.
- Feel the shifting stretch around the neck and loosening up of the joints and muscles of the neck.
- Practice full rotation very carefully. Start with half rotation and then go for full rotation.
- If there is pain in any position, hold the head in that position. Become aware of the point or area of pain and start breathing consciously and deeply. This will relieve you of pain and then you can continue.
- Can be practiced in cross-legged sitting position, or sitting on a chair.

Contra – indications

- Should be performed carefully by elderly people
- Cervical spondylosis cases to avoid during acute pain
TRAUMATOLOGICAL ASPECTS OF CERVICAL SPONDYLOSIS AND RELATED VARMA DISEASES

A slight misalignment of a vertebra, which impinges on the nerve, that travels to that particular organ. This cause interference to the life forces [nerve impulse] to the organ. As a result, the organ cannot function at its optimum level. If the spinal misalignment is not corrected to organ may develop pathology.

In our Siddha system, Siddhars explained these words as Varma diseases, results from derrangments of varma areas around cervical spine, which is given later.

The traumatological cervical disc lesion (Acute cervical disc lesions) may grouped under two categories:

a) Occurs in normal spine, as the result of sports injury in a young person.

b) Occurs in a person who already has an abnormal neck due to cervical spondylosis. For this patient sudden flexion or extension of the neck may lead to the symptoms of disc herniation.

What is varma?

A varma points is a place where the life forces is acting. If it is hurt in a particular manner and with forces, signs and symptoms develop according to the site of the point. If these signs and symptoms are not set right within the stipulated period death will occur. So these varma emergencies which can be called as orthopaedic emergencies according to recent medical science.

According to sites and symptoms, the author had given 3 Varmas.
Pinnuvathi Varmam:

Pinnuvathi Varmam is a treatment for cervical spine pain and giddiness. It involves specific manual techniques to alleviate pain and tension in the cervical region.

Mimic Features:

- Giddiness
- Pain in the cervical region
- Pain in the shoulder and upper limb after one year

Site of Varmam:

Site of Varmam is the Atlanto occipital Joint.

Suzhiyaadi Varmam:

Suzhiyaadi Varmam is a subsequent treatment that is applied to the site of Pinnuvathi Varmam. It involves additional techniques to further alleviate pain and stiffness in the cervical region.

"Mimic Features:

Giddiness

Pain in the cervical region

Pain in the shoulder and upper limb after one year

Site of Varmam:

Pinnuvathi Varmam

Suzhiyaadi Varmam"
Site of Varmam:

அறிந்திருந்த குடும்பம் (Atlanto occipital joint)

Mimic Features

Quadriperesis

3. Vilangu Varmam:

When vilangu varmam is injured it leads to symptoms of saganavatham. The symptoms are pain in cervical region, pain in the shoulder and upper chest, difficulty in lifting the corresponding upper limb. This should be differenciated from the saganavatham. The verse for vilangu varmam is as follows.

"அடையார் பார்த்திருந்த கார்க்கு
அறிந்திருந்த வகையிலான் குடும்பம் மாடும்
அறிந்திருந்த வகையிலான் பார்த்திருந்த விளக்க
குற்றுயாது வகை நிற்கும்
நிருத்துக்குன்று நிராகரித்து நிராகரித்து
அடையார் பார்த்திருந்த வகையிலான் குடும்பம்
நூல் நான்கோட்டால் சித்திரின்யான்கூடு
நிருத்துக்குன்று நிராகரித்து நிராகரித்து"

-மார்ம ஆனந்தி
MODERN ASPECTS

THE ANATOMY

The Vertebral Column:

The Vertebral column forms a pillar in the midline of the dorsum of the body, lodges and protects the spinal cord and its meninges in a canal within it called the vertebral canal. It contains 33 segments and length about 70 cm in an average male and 60 cm in a female. It supports the body weight and transmits it to the ground through the lower limbs.

The segments can be divided into cervical, thoracic, lumbar, sacral and coccygeal segments.

The cervical segment has seven vertebral bones, thoracic twelve, lumbar five, sacral five and coccygeal four. All are separate bones except the sacrum and coccyx.

The Curvatures of the Spine:

There are four curvatures in the vertebral column. They are two primary and two secondary curvatures.

The primary curvatures are the thoracic and the sacral. They are convex posteriorly. The secondary curvatures are the cervical and lumbar. They are anteriorly convex. The cervical curvature becomes prominent when the child is able to hold its head up and fit upright. The lumbar curvature appears by 12 -18 months after the child starts walking. A slight lateral curvature is seen in the upper thoracic region. It is curved to the right in right handed persons and vice versa.
The General features of the vertebrae:

The vertebrae can be divided into vertebral body and a dorsal vertebral arch. The vertebral arch has 2 pedicles, 7 processes and 2 laminae. Pedicles are thick bars projecting backward from the body. The laminae are vertical plate like structures, fuses together to form spinous process. The spinous process projects downwards and is the lever for the muscles. The articular processes are four in number, bearing the articular facets and articulate with the adjacent vertebrae. Transverse processes project laterally from the junction of pedicle and laminae. In thoracic region they articulate with ribs.

Inter-Vertebral Discs:

They are fibro cartilagenous discs interposed between the adjacent surface of the vertebral bodies. They are thicker in lumbar region than in thoracic. Their peripheral parts are supplied by the adjacent blood vessels but the central parts are avascular. They receive their nutrients by diffusion from spongy bone of adjacent vertebrae.

The ventral portion of disc is known as **Nucleus pulposus** and the peripheral zone is known as **Annulus Fibrosus**. The central portion is made up of gelatinous mucoid material. On going it is converted into fibro cartilaginous material and its water binding capacity is reduced. The annular fibrosus contains collagen bundle in the periphery and fibro cartilaginous tissue in the inner part.

The thickness of the discs varies daily. In the morning it is thick due to absorption of fluids in lying posture during night and it is thin at night.
Uses:
They absorb shock and allow easy movements of the vertebral column.

The cervical Vertebrae:
The cervical segment of vertebral column contains 7 vertebrae. The first, second and the seventh are atypical and the third to sixth are typical. They are smaller and delicate than the thoracic and lumbar vertebrae. All the cervical vertebrae have a foramen in the transverse process known as foramen transversorium. This is identical to the cervical vertebrae.

Typical Cervical Vertebrae:
1. Body:
   It is small and oval. It’s superior surface is concave transversely with upward projecting lips on each side and its inferior surface is saddle shaped, convex from side to side and concave from before backwards.

2. Vertebral Foramen:
   It is larger than the body and triangular in shape because the pedicles are directed backwards and laterally

3. Vertebral Arch:
   i) Pedicles:
      These are short and directed outwards and backwards from the middle of postero lateral parts of the body and they form the postero medial wall of the foramen transversorium.
   ii) Laminae:
      These are long and narrow, being thinner above than below.
iii) Articular Facets:

The superior and inferior articular processes form the articular pillars which project laterally at the junction of the pedicle and the lamina. The superior articular facets are flat and directed backwards and upwards. The inferior articular facets are also flat but directed forwards and downwards.

v) The Spine:

It is short and bifid.

Foramen Transversorium:

It transmits the vertebral artery, vertebral veins and sympathetic plexus.

The Atypical Cervical Vertebrae:

1. Atlas:

It is the first cervical vertebrae which lodges the skull. It has no body and spine. It has anterior and posterior arch, right and left lateral masses and transverse processes.

The anterior arch bears an anterior tubercle in the anterior aspect. Its posterior aspect bears an oval facet which articulates with dens. The posterior surface of the posterior arch has a median posterior tubercle. The two lateral masses bear an elongated superior articular facet for atlanto-occipital joint and an inferior articular facet for atlanto axial joint.

2. The Axis:

The Axis has a peg like projection in its upper part of the body known as the dens (or) odontoid process. It has circular facet anteriorly articulating with atlas. There are two articular facets on either side of the
dens on the upper surface of the body. The laminae are thick. The spine is large and bifid. The transverse process is small and possesses a tubercle in its tip.

3. The Seventh Cervical Vertebrae:

   It is also known as the “Vertebral Prominent”. The transverse process does not possess anterior tubercle. The foramen transversorium is small (or) absent. It transmits accessory vertebral vein only. The spine is long.

Palpable parts of Cervical Vertebrae:

1. The spine of C₂ is in the nape of the neck 5 cm below the external occipital protuberance.
2. The spine of C₇ where the collar bone crosses the posterior medium line of the neck.
3. The transverse process of C₁ through the anterior border of sternocleidomastoid, immediately below the tip of the mastoid process.

Joints of the Vertebral Column:

The vertebrae from the 2nd cervical to 1st sacral are articulated to one another by a series of cartilagenous joints between vertebral bodies and a series of synovial joints between the vertebral arches. The vertebral bodies are united by anterior posterior longitudinal ligaments and vertebral disc of fibrocartilage.
1. **Atlanto Occipital Joint:**

   It is a synovial condyloid variety.

**Articular ends:**

Superiorly - Occipital condyles.

Inferiorly - Superior articular facet of the atlas. Ligaments, joints capsule, anterior and posterior occipital membranes.

Blood supply - Vertebral artery

Nerve supply - First cervical nerve

**Ligaments:**

1. Capsular ligament.

2. The Anterior Atlanto-occipital membrane.

3. The posterior Atlanto-occipital membrane.

**Movements:**

Flexion, extension and slight lateral flexion are possible.

2. **Atlanto Axial Joint:**

   Comprise of

   1. A pair of lateral atlanto-axial joints.


**Articular ends:**

Inferior facets of atlas and the superior facets of axis.

**Ligaments:**

1. Capsular ligament.

2. Longitudinal ligament.

3. Cruciform ligament.
Movement:

Rotatory movements around a vertical axis occur in this joint.

Ligaments between axis and the occipital bone:

1. Membrana tectoria
2. Cruciate ligament
3. Apical ligament of dens
4. Linear ligament

The Unco Vertebral (Luschka’s) Joints:

Luschka’s joints are not true synovial joint, which develop as a result of degenerative changes in the edges of the disc in early adult.

Luschka’s joints are important, because

1. They are the commonest site of osteophyte formation.
2. The osteophytes may compress the cervical nerves.

Blood supply of Vertebral Column:

The vertebrae and longitudinal muscles attached to them are supplied by segmental arteries. The arteries give multiple small branches to the vertebral bodies. The extensor muscles of the neck are supplied by the occipital, the deep cervical and the transverse cervical arteries.

Venous Drainage:

The internal vertebral venous plexus lies within the vertebral canal, but outside the spinal dura. It received tributaries from

(i) The vertebrae through the basilvertebral veins.

(ii) The meninges and the spinal cord.

The internal vertebral venous plexus is drained by the intervertebral veins, which pass out through the inter vertebral foramen.
Here they are joined by the tributaries from the external vertebral and sacral veins. About the internal venous plexus communicates with the occipital and basilar veins through the foramen magnum.

**Movements of the Vertebral Column:**

The greater thickness of the discs in the cervical and lumbar regions as compared with the thoracic region is associated with the greater individual range of movements occurring in those regions.

Flexion (or) forward bending, extension (or) backward bending, lateral flexion and rotation are possible in vertebral column.

**Movements of the Head and Neck:**

<table>
<thead>
<tr>
<th>Movements</th>
<th>Muscles</th>
<th>Nerve Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>Sternocleidomastoid</td>
<td>Accessory ventral rami of cervical spinal nerves C₂, C₃, C₄.</td>
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<tr>
<td></td>
<td>Longus Coli</td>
<td>Cervical ventral rami C₂ – C₆.</td>
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<tr>
<td></td>
<td>Longus Capitis</td>
<td>Cervical ventral rami C₁ – C₃</td>
</tr>
<tr>
<td></td>
<td>Rectus capitis Anterior</td>
<td>Cervical ventral ramus C₁</td>
</tr>
<tr>
<td></td>
<td>Splenius cervicis and capitis</td>
<td>Dorsal cervical nerve</td>
</tr>
<tr>
<td></td>
<td>Erector spinae</td>
<td>Dorsal rami</td>
</tr>
<tr>
<td></td>
<td>Rectus capitis posterior major and minor</td>
<td>Dorsal rami C₁</td>
</tr>
<tr>
<td></td>
<td>Oblique capitis Superior</td>
<td>C₁ – Dorsal ramus</td>
</tr>
<tr>
<td></td>
<td>Trapezius</td>
<td>Accessory</td>
</tr>
<tr>
<td>Lateral flexion and rotation</td>
<td>Accessory, ventral rami of cervical spinal nerves C₂, C₃, C₄.</td>
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<tr>
<td>Sternocleido mastoid</td>
<td>Cervical ventral rami C₃ – C₈</td>
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<tr>
<td>Scalene</td>
<td>Cervical ventral rami C₃ – C₈</td>
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<td>Longus Coli</td>
<td>Cervical ventral rami C₃ – C₈</td>
<td></td>
</tr>
<tr>
<td>Levator scapulae</td>
<td>Cervical ventral rami C₃, C₄, C₅</td>
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<td>Rectus capitis</td>
<td>C₁ – ventral ramus</td>
<td></td>
</tr>
<tr>
<td>Splenius</td>
<td>Cervical dorsal ramus</td>
<td></td>
</tr>
<tr>
<td>Longismus oblique capitis superior and inferior</td>
<td>C₁ Dorsal ramus.</td>
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</tbody>
</table>
SPINAL CORD

The spinal cord is an elongated, cylindrical part of the central nervous system, occupying the superior two thirds of the vertebral canal. It extends from the level of the upper border of the atlas to the lower border of the vertebra L₁ (or) the upper of the vertebra L₂. The lower end is conical and is called as conus medullaris. The apex of the conus is continued down as the filum terminale. Along its length, the cord presents, two thickenings, the cervical and lumbar enlargements which give rise to nerves for the limbs. The spinal cord gives off 31 pairs of spinal nerves.

**The meninges of the Spinal Cord:**

The spinal cord is covered by three membranes like the brain and is called as meninges. They are

1. **Dura Mater:**

   The outer most covering is thick opaque, vascular layer and it is continuous with the inner meningeal layer of dura mater of the brain. This is attached anteriorly with the posterior surface of the bodies of C₂ and C₃ and posteriorly with longitudinal ligament. Laterally it is pierced by spinal nerves.

2. **Arachnoid Mater:**

   It lies between duramater and Piamater and is avascular, transparent membrane. It is continuous with the arachnoid mater of the brain and ends in second sacral level. The sub arachnoid space contains cerebrospinal fluid (CSF).
3. **Pia Mater:**

This transparent vascular membrane lies as an innermost layer and is the continuation of piamater of brain. But it is thicker than piameter of brain.

**External Features:**

The surface of spinal cord presents an antero median fissure, a postero median sulcus and a pair of antero lateral and postero lateral sulci. The posterior nerve roots are attached to the posterior sulci and anterior nerve roots emerge from antero lateral sulci. Continuous with the cord is a series of paired dorsal and ventral root of spinal nerves. Ventral spinal roots contain efferent somatic and efferent sympathetic nerve fibres at same levels. Efferent sympathetic nerve fibres are emerging from their spinal sources. Each ventral root emerges as a variable number of rootlets, which appear over an elongated vertical elliptical area.

Dorsal spinal roots have an ovoid swelling ganglia one on each root proximal to its junction with a ventral root in an intervertebral foramen. Each fans out into 6-8 rootlets entering the cord in a vertical row in the postero lateral sulcus. These are usually said to contain only afferent axons from unipolar neurons in spinal root ganglia.

The region of spinal cord associated with the emergence of a pair of nerves is a spinal segment, but there is no actual surface indication of segmentation. Recent researches show that ventral spinal nerve roots contain only one neuro mediator, Acetyl choline whereas dorsal root
contain at least seven—Glutamate, Aspartate, substances P, VIP, CCK, somatostatin, Dynorphin, and Angiotensin II.

**Internal Structure:**

When seen in transverse section, the grey mater of the spinal cord forms a ‘H’ shaped mass. In each half of the cord, the grey mater is divisible into

1. The anterior grey column (or horn) and
2. The Posterior grey column. In some part of the spinal cord, a small lateral grey column is also present.

The anterior horn contains motor cells and the posterior horn contains sensory cells. Central canal is situated in the central part of the cord and contains CSF. The lateral horn of spinal cord gives origin to sympathetic nervous system from the thoracic to lumbar regions.

The white mater of the spinal cord is divided into right and left halves in front by a deep anterior median fissure and behind by the posterior median septum. In each half of the white mater is divided into the posterior, lateral and anterior white column.

**Blood Supply:**

The blood supply to the spinal cord is derived from the anterior and posterior branches of vertebral arteries and they are reinforced to form spinal twigs. The twig at the level of 1\textsuperscript{st} and 11\textsuperscript{th} thoracic is known as “Arteries of Adam Kiewicks”.

The spinal twigs and radicular arteries are the important vascular supply of the cord.
Venous drainage:

There are 6 channels of veins are present around the cord. One pair is situated behind the each anterior & posterior nerve roots. The rest 2 channels are present in anteromedian fissure and posteromedian sulcus. They are drained into lateral sacral, lumbar, posterior intercostals veins.

Spinal Nerves:

There are 31 pairs of spinal nerves emerge from the cord. The part of the cord to which one pair of spinal nerve is attached is called spinal segment. The spinal cord is made of 8 cervical, 12 Thoracic, 5 lumbar, 5 sacral and 1 coccygeal segments.

Cervical plexus:

These are formed by the anterior rami of upper cervical nerves. Each nerve root divides into ascending & descending branch of another nerve and forms the plexus. The important branches, (1) transverse cutaneous nerve which supplies the skin infront of the neck, (2) Phrenic nerve which is a motor nerve to the diaphragm.

Brachial Plexus:

These are formed by anterior rami of the lower four cervical and anterior primary rami of the first thoracic.

The important branches are ulnar nerve from medial cord axillary & radial nerves from posterior cord.
## NERVE AND ROOT SUPPLY OF MUSCLES

### UPPER LIMB

<table>
<thead>
<tr>
<th>Muscles</th>
<th>Spinal Roots</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spinal Accessory Nerve</strong></td>
<td></td>
</tr>
<tr>
<td>Trapezius</td>
<td>C₃C₄</td>
</tr>
<tr>
<td><strong>Branchial Plexus</strong></td>
<td></td>
</tr>
<tr>
<td>Rhomboides</td>
<td>C₄C₅</td>
</tr>
<tr>
<td>Serratus anterior</td>
<td>C₅C₆C₇</td>
</tr>
<tr>
<td>Pectoralis Major</td>
<td></td>
</tr>
<tr>
<td>Clavicular</td>
<td>C₅C₆</td>
</tr>
<tr>
<td>Sternal</td>
<td>C₆C₇C₈</td>
</tr>
<tr>
<td>Supra Spinatus</td>
<td>C₅C₆</td>
</tr>
<tr>
<td>Infra Spinatus</td>
<td>C₅C₆</td>
</tr>
<tr>
<td>Latissimus Dorsi</td>
<td>C₆C₇C₈</td>
</tr>
<tr>
<td>Teres Major</td>
<td>C₅C₆C₇</td>
</tr>
<tr>
<td><strong>Axillary Nerve</strong></td>
<td></td>
</tr>
<tr>
<td>Deltoid</td>
<td>C₅C₆</td>
</tr>
<tr>
<td><strong>Musculo Cutaneous Nerves</strong></td>
<td></td>
</tr>
<tr>
<td>Biceps</td>
<td>C₅C₆</td>
</tr>
<tr>
<td>Brachialis</td>
<td>C₅C₆</td>
</tr>
<tr>
<td><strong>Radial Nerve</strong></td>
<td></td>
</tr>
<tr>
<td>Triceps</td>
<td></td>
</tr>
<tr>
<td>Long Head</td>
<td>C₆C₇C₈</td>
</tr>
<tr>
<td>Medial Head</td>
<td></td>
</tr>
<tr>
<td>Brachio radialis</td>
<td>C₅C₆</td>
</tr>
<tr>
<td>Extensor Carpi radi alis longus</td>
<td>C₅C₆</td>
</tr>
</tbody>
</table>
**Posterior Interosseous Nerve**

- Supinator: C₆C₇
- Extensor Carpi Ulnaris: C₇C₈
- Externor digitorum: C₇C₈
- Abductor pollicis Longus: C₇C₈
- Extensor pollicis Longus: C₇C₈
- Extensor pollicis brevis: C₇C₈
- Extensor indicis: C₇C₈

**Median Nerve**

- Pronator teres: C₆C₇
- Flexor Carpi radialis: C₆C₇
- Flexor digitorum superficialis: C₇C₈T₁
- Abductor pollicis brevis: C₈T₁
- Flexor pollicis brevis: C₈T₁
- Opponens pollicis: C₈T₁
- Lumbricals I & II: C₈T₁

**Anterior Interosseous Nerve**

- Flexor digitorum profundus I & II: C₇C₈
- Flexor pollicis longus: C₇C₈

**Ulnar Nerve**

- Flexor carpi ulnaris: C₇C₈T₁
- Flexor digitorum profounds III & IV: C₇C₈
- Hypothenar muscle: C₈T₁
- Abductor pollicis: C₈T₁
- Flexor pollicis brevis: C₈T₁
- Palmar interossei: C₈T₁
- Dorsal interossei: C₈T₁
- Lumbricals III &IV: C₈T₁
CERVICAL SPONDYLOSIS

Nomenculture:

Cervicco - Latin Word, Means neck
Spondylo - Greek Word, Means Vertebra
Osis - Condition

It is a type of pathological condition in cervical vertebra.

Synonyms:

Cervical spondylotic Myelopathy  Burner syndrome
Cervical Osteoarthritis  Pinched syndrome
Cervical Radiculopathy  Cervical discogenic pain syndrome
Cervical osteophytic bars  Cervical Facet syndrome

Definition:

Cervical spondylosis is a chronic degenerative condition of the cervical spine that affects the vertebral bodies and intervertebral discs of the neck as well as the contents of the spinal canal.

Epidemiology:

1. It is the most common cause of spinal cord disturbances in patients older than 55 years.
2. X -Ray findings suggest that 90% of men older than 50 years and 90% women older than 60 years have evidence of degenerative changes in the cervical spine.
3. Both sexes are affected equally but problems begin earlier in males.
**Location:**

Generally the C5 & C6 roots are most commonly affected by cervical spondylosis as a result of the increased mobility at the C5 – C6 & C6 – C7 levels.

Acute disc lesions are seen most often at the C7 level followed by C6 level.

High level cervical disc involvements are very common.

**Mortality / Morbidity:**

The course of cervical spondylosis may be slow and prolonged and patients may either remain asymptomatic (or) have mild cervical pain.

Morbidity ranges from chronic neck pain, radicular pain, diminished cervical range of motion (ROM), headache, myelopathy leading to weakness and impaired fine motor coordination to quadri paresis and (or) sphincteric dysfunction.

**Etiology:**

Causes of this disorder are explained as follows.

**a. Degenerative Causes:**

They are primary & Secondary

- **Primary**
  - Senility
  - Genetic factors
  - Metabolic factors
  - Manual labour

- **Secondary**
  - Osteo arthritis, Rheumatoid arthritis
  - Metastatic carcinoma
  - Lymphoma of spine
  - TB Spine
b. Injury
- Automobile accidents with whiplash injury and athletic injury.
- Sudden jerks on the arms during falling down.
- Previous injury with fracture or disc prolapsed.

c. Occupational causes

d. Hereditary factors
- Congenital narrowing of the cervical spinal canal.
- Segmental defects – Hemivertebra, Fused vertebra.
- Acquired narrowing of cervical spinal canal due to
  - Osteophytes
  - Ossified posterior longitudinal ligament (OPLL)
  - Facet joint hypertrophy (results foraminal stenosis and compression of root of radicular artery)
  - Hypertrophied ligamentum flavum (Compress the cord during extension).

Factors responsible for myelopathy in cervical spondylosis:
1. Uncovertebral osteophytes cause anterior compression of cord.
2. Bony ridges on the posterior vertebral bodies cause central compression on the cord.
5. Dynamic effect of narrowing of the cervical canal.
6. Calcification of the posterior longitudinal ligament.
7. Teethering of the roots to the osteophytes.
8. Arachnoiditis, postoperative scar.
9. Interference of blood supply to cord.
Pathophysiology:

Intervertebral discs lose hydration and elasticity with age and these leads to cracks and fissures. The surrounding ligaments also lose their elastic properties and develop traction spurs. As the disc space narrows, the annulus bulges, and facets override. This change, in turn, increases motion at that spinal segment and further hastens the damage to the disc. Annulus fissures and herniation may occur. Acute disc herniation may complicate chronic spondylotic changes.

As the annulus bulges, the cross-sectional area of the canal is narrowed. This effect may be accentuated by hypertrophy of the facet joints (posteriorly) and of the ligamentum flavum, which becomes thick with age. Neck extension causes the ligaments to fold inward, reducing the anteroposterior (AP) diameter of the spinal canal.

As disc degeneration occurs, the uncinate process overrides and hypertrophies, compromising the ventrolateral portion of the foramen. Facet hypertrophy decreases the dorsolateral aspect of the foramen. This change contributes to the radiculopathy that is associated with cervical spondylosis. Marginal osteophytes begin to develop. Additional stresses, such as trauma long term heavy use, may exacerbate this process. These osteophytes stabilize the vertebral bodies adjacent to the level of the degenerating disc and increase the weight bearing surface of the vertebral end plates.

Degeneration of the joint surfaces and ligaments decreases motion and can act as a limiting mechanism against further deterioration.
Thickening and ossification of the posterior longitudinal ligament (OPLL) also decreases the diameter of the canal.

The blood supply of the spinal cord is an important anatomic factor in the pathophysiology radicular arteries in the dural sleeves tolerates compression and repetitive minor trauma poorly.

**Pathology:**

Cervical spondylosis is very common and histological evidence of degenerative changes are present in virtually even present over the age of 70.

Osteophytes may form posteriorly with osteoarthritis of the apophyseal joints and also anteriorly in relation to degenerative changes and narrowing of the intervertebral disc with sclerosis of the bony end plates.

The osteophytes may cause symptoms by encroaching on the spinal nerve foramine (or) in the cervical region on the vertebral artery foramen. In the cervical region intermittent pain and discomfort may be followed eventually by stiffness and limitation of movements.

In cervical spondylosis, changes occur in the following structures.

- Intervertebral disc
- Uncovertebral
- Apophyseal joints
- The foramine (Intervertebral and transverse)

**Intervertebral Disc:**

All these parts of disc cartilage plate, nucleus and annulus are involved.
Cartilage plate:

First the cartilage plate things out and cracks. Fissuring and erosion is common. The whole plate is replaced by fibrous tissue.

Nucleus:

Nucleus becomes fibrous with degeneration. The process of dehydration occurs and concludes with reduction in water binding mucoprotein.

Annulus:

Annulus undergoes some changes as in nucleus. Focal necrosis and calcification is common. They form hard ridge with in the cervical canal.

Uncovertebral joints:

The uncovertebral joints are most affected as C5-C6 and C6 – C7 levels, progressive decrease in disc above the uncinate process approximates against the vertebral body undergoes erosion and formation of the osteophytes.

Apophyseal joints:

They may remain unaffected for long time. When they subjected to heavy weight pathological changes like erosion, degeneration, lipping and osteophyte formation occurs.

Microscopical changes:

1. Demyelination most prominent in lateral column of level of osteophytic bars.
2. The medial portion of the long myelinated tracts is affected.
3. Loss of anterior horn cells
4. Central cavitation
5. Archnoiditis around nerve sleeve

6. Demylinated plaques, swelling of myelion, axons, ganglia is found in the white matter.

**Biochemical changes:**

<table>
<thead>
<tr>
<th>Load stress</th>
<th>Aging</th>
<th>Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remodelling of IVD</td>
<td>Chondrocyte</td>
<td>Type II Collagen → Type I Collagen</td>
</tr>
<tr>
<td>Loss (or) decreased synthesis of</td>
<td></td>
<td>Injury → With stands minimally to stress</td>
</tr>
</tbody>
</table>

The biochemical changes in IVD, due to the cumulative effect of injury, aging, load stress of chondrocytes diminishes the synthesis of proteoglycans, cathepsin and leads to the alteration in collagens type II to type I. All causes are due to cartilage’s injury.

**Symptoms and signs:**

1. Pain in the neck, radiating to the shoulder blades, top of the shoulders, upper arms and hands (or) back of the head.

2. Crunching sounds with movement of neck (or) shoulder muscles.

3. Numbness and Tingling sensation in the arms, hands and fingers, some less of feeling in the hands and impairment of reflexes.

4. Muscle weakness and deterioration
6. Head ache
7. Dizziness and Unsteady gait
8. With advanced stages, loss of bladder control and leg weakness

**Common clinical syndromes associated with cervical spondylosis include the following:**

i) **Cervical pain:**
   * Chronic suboccipital head ache may be present. Mechanism include direct nerve compression, degenerative disc, joint (or) ligamentous lesions and segmental instability.
   * Pain may radiate to the occiput, shoulder, scapula (or) arm
   * The pain, which is worse when the patient is in certain positions, can interfere with sleep.

ii) **Cervical radiculopathy:**
   * Compression of cervical nerve roots leads to ischaemic changes that cause sensory dysfunction (eg. Radicular pain) and motor dysfunction (eg. Weakness) radiculopathy most commonly occurs in persons aged 40-50 years.
   * An acute herniated disc (or) chronic spondylotic changes can cause cervical radiculopathy and myelopathy.
   * The C₆ root is the most commonly affected one because of the predominant degeneration of the C₅ – C₆ interspace. The next common sites are at C₆ – C₇.
   * This is also frequently referred pain and tenderness along the medial border of the scapula
Cervical myelopathy:

Cervical spondylotic myelopathy is the most serious consequence of cervical intervertebral disc degeneration, especially when it is associated with a narrow cervical vertebral canal.

It has an insidious onset, which typically becomes apparent in persons aged 50-60 years.

- Upper motor neuron signs
- Develop in the limbs with spasticity of the legs.
- Sensory loss in the upper limbs is common
- Tingling and numbness with progressive clumsiness.
- Involvement of the sphincters is unusual at presentation.

Five categories of cervical spondylotic Myelopathy as follows:

Transverse lesion syndrome: Corticospinal and spinothalamic tracts as well as posterior columns, are involved.

Motor syndrome: This primarily involves the corticospinal (or) anterior horn cells.

Central cord syndrome: Motor and sensory involvement is greater in the upper extremities than the lower extremities.

Brown – sequard syndrome: Unilateral cord lesion with ipsilateral corticospinal tract involvement and contralateral analgesia are present.

Brachialagia and cord syndrome: Predominant upper limb pain is present
CSM can cause disability which are characterized by

G0  -  Root signs symptoms with no cord involvement
G1  -  Signs of cord involvement present. Gait is normal
G2  -  Mild gait involvement present. Patient may be employed.
G3  -  Gait abnormality. Prevent patient embloydment.
G4  -  Ambulation is possible only with assistance
G5  -  Patient in chair – bound (or) bed ridden

Less common manifestations:

- Primary sensory loss
- Tandem spinal stenosis is a simultaneous cervical and lumbar stenosis resulting from spondylosis.
- Dysphagia may be present if the spurs are large enough to compress the oesophagus.
- Vertebrobasilar insufficiency and vertigo may be observed
- Elevated hemidiaphragm, caused by spondylotic compression of C3-C4.

Signs:

- **Spurling sign**: Radicular pain exacerbated by extension and lateral bending of neck toward the side of the lesion, causing additional foraminal compromise.
- **Lhermittessign**: This generalized electrical shock sensation is associated with neck extension.
- **Hoffman sign**
- **Distal weakness**
- Decreased ROM in the cervical spine especially with neck extension.
- Hand clumsiness
- Loss of sensation
- Increased reflexes in the lower extremities and in the upper extremities below the level of the lesion.
- A characteristically broad-based, stooped, spastic gait.
- Extensor plantar reflex in severe myelopathy.
- Atrophy of hand musculature (Intrinsic muscle atrophy)

**Summary of the site of lesion:**

Cervical spondylosis can produce and compression (upper motor neuron signs) (or) not compressions (lower motor neuron signs)

<table>
<thead>
<tr>
<th>Motor</th>
<th>Reflex</th>
<th>Sensory</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₅</td>
<td></td>
<td>Upper, lateral, arm, near/over deltoid (axillary)</td>
<td>Upper, lateral arm, never below elbow.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C₆</td>
<td></td>
<td>Lateral forearm (musculocutaneous N)</td>
<td>Lower lateral arm, possibly into thumb.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C₇</td>
<td></td>
<td>Elbow extension (radial N)</td>
<td>Deep pain in triceps, front and back of forearm.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C₈  Motor - Thumb index pinch (ant. Interrosseus N)
Reflex -
Sensory - Medial forearm (anterior brachial
cutaneous N)
Pain - Medial Forearm, into 2 medial fingers.

T₁  Motor - Finger abduction (ulnar N)
Reflex -
Sensory - Medial arm (brachial cutaneous N)
Pain - Deep pain in axilla and shoulder some
      nodiation down inside of the arm.

Stepwise Physical Examination:
Examination divided into several categories, which where done for
saganavatham - in - patients and photography illustrations are given.

Posture

- Have a smooth cervical lordosis with gentle transition into
  thoracic cyhosis.
- Compensatory increase in the lumbar and cervical lardosis.
- Cervical range of motion.

<table>
<thead>
<tr>
<th>(ROM) – Cervical</th>
<th>Normal</th>
<th>Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch chin to chest with mouth cheared</td>
<td>Flexion 60°</td>
<td>Reduced</td>
</tr>
<tr>
<td>Looking straight up to the ceiling</td>
<td>Extension 70°</td>
<td>Reduced</td>
</tr>
<tr>
<td>Rotate chin to approach the shoulder</td>
<td>Rotation 80°</td>
<td>Reduced</td>
</tr>
<tr>
<td>Bend the neck towards the shoulder</td>
<td>Lateral bending 45°</td>
<td>Reduced</td>
</tr>
</tbody>
</table>
Provocative tests:

Used to determine the differential diagnosis

1. **Spurling test (Foraminal compression test)**

   Extends the neck and then rotates and laterally bends the head to the same side, while the examiners applies downward pressure to the top of the head. If this position with (or) without pressured reproduces radicular symptoms into upper limb, cervical spondylosis is suggested.

2. **Phalan wrist flexion test:**

   Full passive flexion of the patients wrist for 30-60 seconds and looking for reproduction (or) worsening of finger dysenthesiasis.

3. **Tinel’s sign:**

   Elicted by tapping over the median nerve on the volar aspect of the wrist. This sign also present in carpal tunnel syndrome.

4. **The elbow flexion test:**

   Fully flex the elbow and observe for ulnar nerve distribution.

5. **Adson’s test:**

   Turns his head to the involved side, raises the chin and holds a deep inspiration and while the ipsilateral radial pulse in palpated with the arm slightly abducted from the side. If pulse diminishes – test positive – suggest thoracic outlet syndrome.

**Roo’s test:**

The patient is asked to abduct the shoulders $90^\circ$, flex the elbow $90^\circ$ and open and close the hands slowly for 3 minutes.

- Hand pallor
- Ulnar dysesthesias
- Diminished pulse

Suggest thoracic putlet syndrome
Investigation:

1. Plain cervical radiography is routine, including A.P, lateral and oblique views show.

   This examination is valuable in evaluating the uncovertebral and facet joints, the foramen, intervertebral disc spaces and osteophyte formation.
   - Disc space Narrowing
   - Osteophyte Formation
   - Degeneration in facet and uncovertebral joints
   - Foraminal Stenosis
   - Central Stenosis

2. Myelography, with computed tomography (CT) scanning is usually the imaging test of choice to assess spinal and foraminal stenosis.

   Hylogram – may show compression of the spinal cord.

3. CT Scanning: with (or) without intrathecal dye, can be used to estimate the diameter of the canal.

   CT scans may demonstrate small, lateral osteophytes and calcific opacities in the middle of the vertebral body.

4. MRI (Magnetic resonance imaging)
   - Direct imaging in multiple planes
   - Neural compression
   - Increased accuracy in evaluating
   - Intrinsic spinal cord disease
   - Disc degeneration

5. Examination of CSF:
   - Very high protein
Other tests:

- Electromyography is useful in evaluating radiculopathy caused by spondylosis.
- In myelopahty, somatosensory evolved potential (SSEP) responses are delayed (or) have a low amplitude.
- Cortical motor evolved potentials (MEP) may be more sensitive than SSEPs in evaluating spinal cord and dysfunction.
- Urodynamic studies may be helpful in evaluating bladder incontinence.

Differential diagnosis:

- Other non – specific neck pain lesions; acute neck strain, postural neck ache (or) whiplash
- Malignancy – primary tumours, secondary deposits (or) Myeloma
- Infections – osteomyelitis (or) Tuberculosis
- Mechanical lesions:- disc prolapse.
- Fibro myalgia
- Pshychogenic neck pain
- Infammatory disease: rehumatoid arthritis
- Metabolic diseases: Page’s disease, osteoporosis

Histologic findings:

- Thinning and fragmentation of the articular cartilage may be observed.
- The normal smooth, white articular surface becomes irregular and yellow.
Continued loss of articular cartilage leads to exposure of areas of subchondral bone, which appear as shiny foci on the articular surface (eburnation).

Fibrosis, increased bone formation, and cystia changes occur in the underlying bone.

Loss of articular cartilage stimulates new bone formation, usually in the form of nodules (osteophytes) at the bone edges.

**Diagnosis:**

The clinical diagnosis is arrived from the features of cervical radiculopahty and myelopathy. The diagnosis may be confirmed by the radiography, myelography, tomography and magnetic resonance imaging.

**Complications:**

- Paraplegia
- Tetraplegia
- Recurrent chest infection
- Pressure sores
- Recurrent urinary tract infection

**Management:**

1. **Non operative:**
   1. Analgesics
   2. Local modalities
   3. Exercise programme and cervical traction
2. Operative:

1. Indicates for surgery include the following;
   - Progressive neurologic deficits
   - Documented compression of the cervical nerve root and spinal cord.
   - Intractable pain

2. The aims of surgery are to relieve pain and neuronal structured compression.

3. Approaches for surgery are anterior (or) posterior.

Cervical Radioculopathy:

Conservative treatment with analgesics and a cervical collar results, in resolution of symptoms in the great majority of patients. In chronic complicated cases foraminectomy (or) disc excision to be recommended.

Cervical myelopathy:

Surgical procedures, including laminectomy and anterior excision of disc may arrest progression in disability but do not usually result in neurological improvement and carry a significant risk particularly in the elderly, the judgements as to where surgery should be undertaken may be difficult.

Physiotherapy:

In acute exacerbation of disease affection the cervical spine, rest may be initial treatment.
1. **Cervical collar:**

- Immobilization of the cervical spine is the mainstay of conservative treatment for patients with cervical spondylosis. Immobilization limits the motion of the neck, thereby reducing nerve irritation.

- Soft cervical collars are recommended for daytime use only. More rigid orthoses (Eg. Philadelphia collar, Minerva body jackset). Can significantly immobilize the cervical spine. A program of isometric cervical exercise may help to limit the loss of muscle tone that results from the use of more restrictive orthoses.

- Molded cervical pillows can better align the spine during sleep and provide symptomatic relief for some patients.

- Passive modalites generally involve the application of heat to the tissues in the cervical region, either by means of superficial device (eg. Moist – heat packs) (or) mechanism for deep heat transfer (eg. Ultrasound, diathermy)

- Manual theraphy, such as massage, mobilization and manipulation, may provide relief for patients with cervical spondylosis.

- Manual traction may better tolerated than mechanical traction in some patients)
2. Cervical traction:

Vertebral traction should be the first choice of pain relief for patients suffering nerve root pain. Intermittent sustained traction is carried out after careful positioning has localized the involved segment in such cases the treatment atleast once a day is essential, prolonged pain relief will take several days to obtain.

Cervical traction provides positive patient response and can relieve the pain associated with certain neck disorders. It applies a stretch to muscles, ligaments and tissue components of cervical spine.

Cervical traction may be useful because it promotes immobilization of cervical region and widens the foraminal openings.

It is no indicated for use in condition of instability such as with “whiplash” injury.

It is most commonly used when the patient is in the supine position (lying on the back with knees bent at a 45° angle) with the neck placed at 20°-30° of flexion (Forward tilt)

3. Exercise of cervical spondylosis:

- Yogic exercise: exercise programmes strengthen the neck muscles. Neck rotations of left/right, side bending, up/down and half rotation is beneficial for cervical spondylosis, neck stiffness and pain. Pranyayama (Breathing exercise) releifes the stress in the neck.

- **Morning walk:** It gives some relief to the patient, but if it is cold outside patient should always use a woolen scarf around neck while going out of house.
Range of motion exercise:
(i) Slowly turn head to the right until it hurts, hold and return to the centre. Do the same to the left.
(ii) Drop chin down slowly towards chest, hold and relax. Bring head back up.
(iii) Tilt head straight over towards left ear, hold and return it to the centre. Do the same on the right side.

Isometric exercise:
(i) Don’t hold breath as you do these. For each exercise, press for 5 – 6 counts, then relax. Press forehead into palms. Resist any motion. Press hand against the side of head. Try to bring ear to the shoulder, but resist any motion.
(ii) Press both hands against the back of head. Try to pull head up, but resist any motion.
(iii) Press hand against your temple. Try to turn chin to shoulder, but resist any motion.

Helpful diet to fight cervical spondylosis:
- Sour things particularly curd, one strictly prohibited.
- Fried things, pulses and various preparations of pulses are also contra indicated in this condition
- Bitter vegetables like bitter variety of drumstick, neem flowers and bitter ground are very useful.
- Wheat is better than rice. But avoid taking refined wheat such as maida and suji as they lead to constipation.
Instructions:

- Do not get down to read (or do any other work). Bring the reading materials to the eye level.
- All neck movements can be performed with practice, by using trunk movements.
- Use a low level pillow supporting the head and neck. Pillow line up to the shoulders level.
- While lying on sides, head should be in neutral position.

Prevention:

1. Avoid high impact exercise, i.e. Running and jumping.
3. Maintain neck muscles strength especially neck extensors strength.
4. Sleep without pillows.
5. Avoid holding neck in one position for a long period (watching TV).
6. Avoid prolonged neck extension.
7. If the patient has only a morning stiffness, take hot shower every morning.

Prognosis:

Cervical spondylosis progresses slowly. By studying the pathological conditions of the spine, spinal cord and the nerve roots; the prognosis can be assessed. Improvement can be felt with some of the reversible changes with drug treatment. In complicated cases improvement is not possible. The signs and symptoms due to myelopathy are unmanageable. Long history of suffering multiple disc lesions and in severe compression of spinal cord may adversely affect the prognosis.
COMPARATIVE STUDY

"சார்பிய காற்றில் குது அதுற்கும் வேறு"

Our body has 33 vertebrae, in that there are 7 cervical vertebrae. Cervical spondylosis occur mostly in the lower half ie C₄, C₅, C₆, C₇. The above line that the pain is Present in the lower half of the cervical vertebrae.

"இத்தகவல் கருவியாகத்தாக திரும்பிய நேர்முறை" 

This line indicates the radiating pain in both the upper limbs. This pain is due to the pathological changes occurring in the cervical vertebrae. There are 31 parts of spinal nerves in that 8 pairs are cervical nerves, having dorsal and ventral nerve roots. These nerve roots traverse through the intervertebral foraminae. While passing through the foraminae compression of these nerve roots occur due to narrowing of the foraminae. This narrowing occurs in cervical spondylosis because of the formation of abnormal osteophytes and ligamental calification. This compression causes neurological dysfunction and radiating pain in the nerve plexus.

"நூற்றியில் கருவியாகத்தாக காற்றில் குது" 

Neurological examination reveals paraesthesia in the affected dermatone. Gradual sensory loss in form of numbness occurs because of mural sheath compression and neurological dysfunction.

"முக்கியமான முதன்மைக் காற்றில் மாற்றம்" 

The vertebral artery commences from the first part of subclavian Artery and passes through the foramen tranversorium of the upper six cervical vertebrae. Oestophytes formed in cervical spondylosis compress
the vertebral Artery causing vertebrobasillar Artery insufficiency. The blood supply to the brain is decreased due to this insufficiency resulting in giddiness. The above line indicates this.

"செதையைத் வாருவதால் காளங்கள் பற்றியுள்ளதை சாத்துச் செய்துவிடும்"

This line means burning sensation in the eye. Coolness the eyes is maintained by tharpagam situated in the head. This tharpagam is one of the constituent in kaba thathu. In the course of the diseases the uyirthathus get deranged ultimately resulting in derangement of kabha thathu. This derangement cause burning sensation.

"சுவர்கள்தோலைச்சுற்றுச் செய்துவிடும்"

Abana vayu one of the constituent of vayu thathu is seated in the lower abdomen. It governs all the downward discharge of faeces, urine, semen, menstrual fluid and fetus. Due to derangement of abanan constipation is present (or) improper excretion takes place.

"அப்கணவை நூற்றனை வேளாற்றாக விளையாடும்"

In sagana vatham the pain is felt like scorpion bite. In early stage pain and rigidity is due to muscle spasm. Later ligamental calcification leads to neck stiffness.
MATERIALS AND METHODS

The Clinical study on Sagana vadham was carried out in the post graduate department of Sirappu Maruthuvam, Govt Siddha Medical College, Palayamkottai. In this study 20 patients were treated as in patients and the other 20 as outpatients. After discharge the patients were also followed as out patients.

Selection of the Patients:

The Patients were selected on the basis of the following clinical findings.

1. Pain, Stiffness and restricted movements in the neck
2. Radiating pain in the upper limbs
3. Tingling sensation and numbness in the upper limbs
4. Feeling of heaviness in the body and weakness of the limbs
5. Giddiness
6. Constipation
7. Mental depression
8. Burning sensation of eyes

The detailed history was taken from the patient about:

1. Occupation
2. Social economic status
3. Psychological condition
4. Diet and other habits
5. Trauma
6. Exposure to cold.
Diagnosis:

The diagnosis was made by following siddha diagnostic methods. Nilam, Kaalam, Poriyalaridhal, Pulanalarithal, Vinaadhal, Mukkutra Nilaigal, Udal Thathukal Nilai and Envagai Thervugal, and the diagnosis of Sagana Vadham was obtained which correlates with modern term cervical Spondylosis by the X-Ray findings.

Investigation:

The following investigations were done in all selected patients in the laboratory of Govt.Siddha Medical College, Palayamkottai.

Blood:

- Total WBC Count
- Differential WBC count
- Erythrocyte Sedimentation Rate
- Haemoglobin estimation
- Estimation of Sugar
- Estimation of Urea
- Estimation of Cholesterol.

Urine:

- Albumin
- Sugar
- Deposits

Radiological Investigations:

- X – Ray cervical spine
- AP – View
- Lateral View
- Oblique View
Treatment

Nilavagai Choornam 5gm at bedtime with hot water was given on the first day of treatment.

All the patients were treated with the following medicines

1. **Aayil Pattai Choornam**
   
   1-2gm thrice daily with hot water

2. **Kalappai Kizhangu Oil- 30ml**
   
   As external application

   All the patients were advised to dietary regimen (or) Pathiyam to avoid tamarind and salt

   Pranayamam and simple Yogasana were advised for a supportive therapy.

   The Bio - Chemical analysis was done in the department of Bio Chemistry and Pharmacological analysis was done in the pharmacological laboratory of Govt. Siddha Medical College, Palayamkottai
RESULTS AND OBSERVATION

For the clinical study 20 in patients were selected and treated in PG-III Sirappu Maruthuvam Department, GSMC hospital Palayamkottai. Results were observed with respect to the following criteria.

1. Sex
2. Age
3. Kalam
4. Thegi
5. Gunam
6. Religion
7. Thinai
8. Paruvakalam
9. Socio-Ecnomic Status
10. Predisposing Factors
11. Etiological Factors
12. Occupation
13. Clinical Presentation
14. Duration of Illness
15. Mukkutram
16. Udal Thathukkal
17. Envagai Thervugal
18. Pulse Reading
19. Neikkuri
20. Provacative Test
21. Number of Days Treated
22. Laboratory Investigations
23. Radiological Findings
24. Curative Effect
1. Sex distribution

Table 1: Illustrates sex distributions and its relative percentage

<table>
<thead>
<tr>
<th>S. No</th>
<th>Sex</th>
<th>In Patients (IP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No of Cases</td>
</tr>
<tr>
<td>1.</td>
<td>Male</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>Female</td>
<td>16</td>
</tr>
</tbody>
</table>

Out of 20 in patients, 20% were males and 80% were females.

2. Age distribution

Table 2: Illustrates the age distributions and its relative percentage

<table>
<thead>
<tr>
<th>S. No</th>
<th>Age group in years</th>
<th>In Patients (IP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of cases</td>
</tr>
<tr>
<td>1.</td>
<td>31-40</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>41-50</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>51-60</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>61-70</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>71-80</td>
<td>3</td>
</tr>
</tbody>
</table>

Among the 20 in patients, in the highest incidence was in the age between 51-60 (35%) lowest incidence was in the age between 31-40 (5%).
3. Kalam:

**Table 3: Illustrates the kalam**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Kalam</th>
<th>In Patients (IP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No of cases</td>
</tr>
<tr>
<td>1.</td>
<td>Vadha Kalam</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Pitha Kalam</td>
<td>17</td>
</tr>
<tr>
<td>3.</td>
<td>Kabha Kalam</td>
<td>3</td>
</tr>
</tbody>
</table>

Out of 20 In Patients,

- 85% of cases were in the pitha kalam
- 15% of cases were in the kabha kalam

4. Constitution of the Body

**Table 4: Illustrates Constitution of the body and its Relative percentage**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Constitution Of the body</th>
<th>In Patients (IP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of cases</td>
</tr>
<tr>
<td>1.</td>
<td>Vadha Thegi</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Pitha Tegi</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Kabha Thegi</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Thontha Thegi</td>
<td>20</td>
</tr>
</tbody>
</table>

In IP study, 100% of cases were in the Thontha thegi.
5. Gunam

Table 5: Illustrates Gunam and its relative percentage

<table>
<thead>
<tr>
<th>S. No</th>
<th>Gunam</th>
<th>In Patients (IP)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of cases</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Sathuvam</td>
<td>3</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Rajogunam</td>
<td>7</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Thamogunam</td>
<td>10</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

6. Religion Distribution

Table 6: Illustrates Religion Distribution and Its relative Percentage

<table>
<thead>
<tr>
<th>S. No</th>
<th>Gunam</th>
<th>In Patients (IP)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No of cases</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Hindu</td>
<td>19</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Christian</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Muslim</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

7. Thinai (The habitat of the patients)

Table 7: Illustrates the Thinai

<table>
<thead>
<tr>
<th>S. No</th>
<th>Thinai</th>
<th>In Patients (IP)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of cases</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Kurinji</td>
<td>-</td>
<td>-s</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Mullai</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Marutham</td>
<td>17</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Neithal</td>
<td>3</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Palai</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
The people who were living in Marutham land were more commonly affected by saganavatham. Out of twenty cases taken for discussion. 15 were from Marutham 75% 3 was from Neithal (15%) and 2 were from Kurinji (10%).

8. Paruva kalam

Table 8: Illustrates the parauva kalam and its relative percentage:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Paruva Kalam</th>
<th>Months</th>
<th>No. of Cases</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kar kalam</td>
<td>Aavani, Purattasi</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>(Aug.15 to Oct14)</td>
<td>(Aug.15 to Oct14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Koothir kalam</td>
<td>Iyppasi, Karthigai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Oct.15 to Dec.14)</td>
<td>(Oct.15 to Dec.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Munpani Kalam</td>
<td>Markazhi, Thai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Dec.15 to Feb.14)</td>
<td>(Dec.15 to Feb.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Pinpani Kalam</td>
<td>Masi, Panguni</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Feb.15 to Apr.14)</td>
<td>(Feb.15 to Apr.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Elavenil Kalam</td>
<td>Chithirai, Vaikasi</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>(Apr.15 to June.14)</td>
<td>(Apr.15 to June.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Muthuvenil Kalam</td>
<td>Aani, Aadi</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>(June 15 to Aug.14)</td>
<td>(June 15 to Aug.14)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Out of 20 patients 35% of them treated in llavenilkalam and 35% of them treated Kaarkaalam and 30% of them treated in Muthuvenilkalam.
9. Socio – Economic status

Table 9: Illustrates the socio-economic status

<table>
<thead>
<tr>
<th>S. No</th>
<th>Socio-economic Status</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rich</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Middle class</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>3.</td>
<td>Poor</td>
<td>14</td>
<td>70</td>
</tr>
</tbody>
</table>

In IP study 14 cases (70 %) were belonged to poor socio economic status. 6 cases ( 30 %) were belonged to middle class.

10. Distribution According to predisposing Factors:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Predisposing Factors</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Diabetes mellitus</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Hypertension</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

Some authors suggest that the history or past history of few disorders were predisposing factors for saganavatham. Hence Diabetes, Hypertension, Tuberculosis, Radiotherapy were noted in all 20 cases. Among them 2 patients (10%) were diabetic and 3 patients (15%) were hypertensive. But no history of Radiotherapy and Tuberculosis among the Twenty cases.

11. Distribution based on Etiological factors:

Aging was the common etiological factor for all cases. Apart from that other precipitating factors for all these twenty cases were analysed and noted 14 cases (70%) has positive occupation history and each 2
cases (10%) had the history of trauma and 4 cases (20%) had the exposure to cold respectively.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Precipitating Factors</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Exposure to Cold</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Occupation</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>3.</td>
<td>Trauma</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>Metabolic</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

12. Occupation:

Table 12: Illustrates occupation

<table>
<thead>
<tr>
<th>S. No</th>
<th>Occupation</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Beedi Workers</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>2.</td>
<td>Agricultural labours</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Tailoring</td>
<td>2</td>
<td>13.4</td>
</tr>
<tr>
<td>4.</td>
<td>Clerical work</td>
<td>1</td>
<td>6.6</td>
</tr>
<tr>
<td>5.</td>
<td>Tea masters and hotel workers</td>
<td>2</td>
<td>13.4</td>
</tr>
<tr>
<td>6.</td>
<td>Weight lifters</td>
<td>1</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Out of 20 in Patients,

40% were beedi workers
20% were agricultural labours
13.4% were tailors
13.4% Tea masters and hotel workers
6.6% were Clerical workers
6.6% were weight lifters
**13. Clinical Manifestations:**

Table 13: Illustrates the Clinical Manifestations

<table>
<thead>
<tr>
<th>S. No</th>
<th>Signs and Symptoms</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pain in the nape of neck</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Stiffness in the neck</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>3.</td>
<td>Radiating pain in the Upper limbs</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>4.</td>
<td>Headache</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Giddiness</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>6.</td>
<td>Tingling sensation</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>7.</td>
<td>Numbness in upper limb</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>8.</td>
<td>Constipation</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>9.</td>
<td>Feeling of heaviness of the body</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10.</td>
<td>Burning sensation of the eyes</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>11.</td>
<td>Weakness of the upper limbs</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>12.</td>
<td>Mental depression</td>
<td>9</td>
<td>45</td>
</tr>
</tbody>
</table>

**Other associated Signs and Symptoms**

<table>
<thead>
<tr>
<th></th>
<th>Signs and Symptoms</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Cough</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Loss of appetite</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>15</td>
<td>Other Joint pain (Hip, Knee, Ankle)</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>16</td>
<td>Fever</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>17</td>
<td>Chest Pain</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Epigastric pain</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Epilepsy</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
The signs and symptoms noted in Saganavatham patients are given in the above table.

Pain in the nape of neck and radiating pain in the upperlimbs were almost present in all the twenty cases. Among them each 12 patients had got stiffness of neck (60%), numbness in upperlimb. 16 (80%) patients have weakness of upperlimbs. Constipation was reported in 14 patients (70%). 4 (20%) patients have giddiness. 9 (45%) patients had mental depression respectively.

14. Distribution According to the duration of illness:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Duration of illness (Months)</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0-1</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>2.</td>
<td>1-3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3.</td>
<td>3-6</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>4.</td>
<td>6-12</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>5.</td>
<td>12-24</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>6.</td>
<td>24-36</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
### 15. Conditions of Mukkuttram

#### a. Disturbance in Vadha:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Disturbance In Vadha</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Piranan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Abanan</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>3.</td>
<td>Viyanan</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>4.</td>
<td>Udhanan</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>5.</td>
<td>Samanan</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>6.</td>
<td>Nagan</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>7.</td>
<td>Koorman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Kirukaran</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Dhevathathan</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>10.</td>
<td>Dhananjeyan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In all the 20 cases viyanan and samanan were affected (100%) Udhanan was deranged in 9 cases (45%) Naagan and Koorman were altered in 25% cases due to old age. Dhevathathan was deranged in 7 cases (35%) indicating lethargy and disturbed sleep.
b. Disturbances in Pitha:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Disturbances in Pitha</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Anar Pitham</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>2.</td>
<td>Ranjagam</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Prasagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Alosagam</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>5.</td>
<td>Sathagam</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

The five types of pitham were analysed in all 20 cases. Saathagapitham was altered in all cases (100%) evidenced as difficulty in handling their regular duties because of pain & stiffness in neck & upper limb. Anarpitham was affected in 5 cases (25%) indicating anorexia. Ranjagapitham was affected in 20% patients denoting low haemoglobin count.

c. Disturbances in Kabha:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Disturbances in Kabha</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Avalambagam</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Kilethagam</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>3.</td>
<td>Pothagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Tharpagam</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
<td>Santhigam</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

The five types of kabam were analysed in all twenty cases. Deranged santhigam was found in all 20 cases (100%) and altered tharpagam was noted in 5 cases (25%)
16. Involvement of Udal Thathukkal

Table 16: Illustrates the Involvement of Udal Thathukkal

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Udal Thathukkal</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Saram</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Senneer</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Oon</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>4.</td>
<td>Kozhuppu</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
<td>Enbu</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>6.</td>
<td>Moolai</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>7.</td>
<td>Sukkilam / Suronitham</td>
<td>Normal</td>
<td>Normal</td>
</tr>
</tbody>
</table>

Saaram, Enbu and Moolai were affected in all Twenty cases (100%). Seneer affected in 4 cases (20%). Oon, kozhuppu were deranged in each 5 cases (25%) respectively. Sukkilam were normal in 20 cases.

17. Condition of Envagai Thervugal

Table 17 Illustrates the conditions of Envagai Thervugal

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Disturbances in Kabha</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Naa</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>2.</td>
<td>Niram</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Mozhi</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Vizhi</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>5.</td>
<td>Malam</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>6.</td>
<td>Moothiram</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Sparisam</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>8.</td>
<td>Naadi (Thontha naadi)</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>
### Table 18: Pulse Reading (Naadi)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Parameters</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vatha pitham</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>2.</td>
<td>Pitha vatham</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>3.</td>
<td>Kaba vatham</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

### Table 19: Neikkuri Analysis

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Inference</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Spreading like snake</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>2.</td>
<td>Spreading like a ring</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Stands like a pearl</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>4.</td>
<td>Combination of ring and snake</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table 20: Distribution based on provocative test

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Clinical features</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Spurling test</td>
<td>Positive in 20 cases</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Lhermitte sign</td>
<td>Positive in 20 cases</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Phallen wrist flexion test</td>
<td>Positive in 15 cases</td>
<td>75</td>
</tr>
<tr>
<td>4</td>
<td>Elbow flexion test</td>
<td>Positive in 15 cases</td>
<td>75</td>
</tr>
<tr>
<td>5</td>
<td>Tinel’s sign</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>6</td>
<td>Adson’s test</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>7</td>
<td>Roo’s test</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>
Based on modern aspect, for the diagnostic purpose and to determine the differential diagnosis few provocative tests were done and noted in all 20 cases spurling test, Lhermmitte sign were positive in all cases (100%), Phallen wrist flexion test and Elbow flexion test were positive only in 15 cases (75%) Tinels sign, Adson’s Test, Roo’s test were negative in all cases.

**Table 21: Distribution According to the total number of days for treatment:**

<table>
<thead>
<tr>
<th>S.No</th>
<th>No. of days treatment</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 – 15</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>16 – 25</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>3</td>
<td>26 and above</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

Among the 20 cases, 65 % were treated for 16 – 25 days. 20 % were treated 1 -15 days and 15 % were treated for above 26 days respectively.

**22. Observations of other Clinical Laboratory Examinations:**

All the time of admission and discharge routine laboratory examination were done and values were recorded.

**Haematological studies:**

Among the 20 patients, 4 of them found as anaemic. Blood sugar was increase in 2 cases (10%), Cholesterol increase in 3 cases (15%) and urea were normal.

**WBC Count:**

Total count was found in between 8000 to 11000. In few cases the lymphocyte and neutrophil were little higher.
Erythrocyte sedimentation rate:

At the time of admission ESR was found in between 30 to 50 (half and one hour). During discharge it was reduced.

Urine analysis:

Urine sugar reported in 2 cases as they were known diabetic. They were treated with Mathumega chooranam in addition to trail drugs.

Table 23: Illustrates Radiological findings and its relative percentage

<table>
<thead>
<tr>
<th>S.No</th>
<th>Radiological Findings</th>
<th>No of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Narrowing of IVS</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td>2.</td>
<td>Osteophytic Changes</td>
<td>19</td>
<td>95</td>
</tr>
<tr>
<td>3.</td>
<td>Fusion of Osteophytes with adjacent vertebrae</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Loss of lordosis</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>5.</td>
<td>Excessive lordosis</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In IP study

85% of cases showed narrowing of I.V.S.

95% of IP cases showed osteophytic changes.

20% of IP cases showed loss of lordosis.
Table 24

Curative Effects

Clinical Cure:
- No longer any clinical manifestations
- Patient could work and live normally
- No recurrence after 6 months

Marked Effect:
- Marked reduction of manifestation
- Slight pain after movement

Improvement:
- Some improvement in the regional symptoms
- With relapse

Curative effect (Based on number of cases treated)

<table>
<thead>
<tr>
<th>S.No</th>
<th>No.of.Cases</th>
<th>Result</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>Clinical Cure</td>
<td>25%</td>
</tr>
<tr>
<td>2.</td>
<td>6</td>
<td>Marked Effect</td>
<td>30%</td>
</tr>
<tr>
<td>3.</td>
<td>9</td>
<td>Improvement</td>
<td>45%</td>
</tr>
</tbody>
</table>
DISCUSSION

Sagana Vatham, one among the 80 varieties of Vatha Noigal resembles in its clinical features with cervical spondylosis in modern medicine. The main clinical features of Sagana Vatham are pain in the neck, radiating pain in shoulder and upper arm, mental depression, giddiness, tingling sensation over the upper limbs. These coincide with cervical spondylosis in modern medicine.

Twenty cases were selected for admission according to the clinical features mentioned in Yugi Vaidya Chindhamani 800. Siddha method of diagnosis was carried out with the help of modern investigations the diagnosis was confirmed and treated with the trial drugs and clearly observed. The observations are discussed here under.

Age Distribution

This study shows highest incidence of saganavatham is above 50 years of age which was already explained by modern science that degeneration to aging is the important cause of cervical spondylosis.

This information is bestowed by our Siddhars as the wordings.

"நீண்ட்கால குடலாகம் வடிவ குண்டிலே சிந்தித்து விளையுமின் அடு வெளியும் பகிர்ந்து".

The target sites affected in cervical spondylosis are generally bones, muscles nerves, hairs, blood, urine, fat which are the components of appu and prithivi boothas (Appu + Prithivi = Kabam – responsible for destruction). Hence they began to undergo degeneration above fifty.
Apart from the view of degeneration, the age above 50 is the period of overwhelming mental and physical griefs and despair due to many factors. This was reported in majority of the 20 cases.

**Sex Distribution**

Majority affected sex is female 80%. The common cause for this may be entrapping of calcium from body above fifty years of age and from history their occupation may be one of the reasons for female dominance.

**Living Lands (Thinai)**

The incidence of saganavatham is highest in people from Marutham 85%.

Even though siddha literatures mention marutham as a disease free zone, most of the patients came from Marutha Nilam. This may be due to the altered lifestyle, environment and food habits.

**Quality and Character (Gunam) Distribution**

The patient 50% under this analysis bears Thamogunam, which was confessed by interrogation.

**Socio Economic Status**

70% of people reported the signs and symptoms of saganavatham were under the poverty line and this under poverty may indirectly responsible for the higher data through their occupation.

**Seasonal Distribution**

Out of twenty patients each 35% of patients came during Karkalam and Elavenil Kalam, 30% came during Muthuvenil Kalam.
**Precipitating Factors**

Already the author has explained that the aging is the common cause for saganavatham. Apart from that, occupation takes the major part 75% of the causative factor.

10% of cases with trauma history, reported acute onset of cervical radiculopathy. 15% of cases reported subacute onset (already existing pain exaggerated suddenly) of cervical radiculopathy due to the exposure of cold during journey and working in mist.

**Occupational References**

The major impacting occupation among 15 cases is Beedi rolling which is estimated as 20% (6 cases). The next coming up is tailoring which accounts 13.4% (2 cases). Only one patient 6.6% has a history of clerical work, who reported the signs and symptoms of saganavatham. Constant posterior bending by this three type of occupations leads to influence the symptoms.

Agricultural of weight bearing workers (loadman) influence the signs and symptoms of saganavatham. Yogi remarked this as "stackpathpaav" is one of the cause of vatha disease. This is repeatedly remarked by the modern text book of orthopaedic (author Gulgarni) as cervical spondylosis common in dock workers who carry 100kg weights on their shoulders.

**Clinical Manifestations**

Pain in the nape of the neck and in upperlimbs present in all twenty cases (100%). 70% of cases had constipation.
Derangement in Vatha

Viyanan, Samaanan were affected in all twenty cases (100%).

Disturbances in Pitha

Saathaga pitham was affected in all twenty cases (100%).

Derangement in Kaba

Santhigam was affected in all twenty cases (100%).

Eight Parameters in our System

(Envagai Thervugal)

By sparism, 25% cases showed muscle wasting. At the time of admission 14 patients (70%) were reported to have constipation. It was treated by purgative and laxative medicines.

In moothiram, Neerkuri and Neikuri were analysed. In 13s patients (65%) oil spread like snake and in 4 cases (20%) spread like ring, and in 3 patients (15%) stand like pearl.

Pulse reading (Naadi) was noted in all twenty cases. Vatha Pitham was observed in 15 (75%) of cases.

Clinical Laboratory Investigations

By laboratory investigations anaemia was found in 4 cases (20%). ESR was raised in early stage and after treatment it was reduced.

Treatment

The treatment was aimed to retain the deranged thoshas and providing relief from symptoms. Before treatment the patients were advised to take Nilavagai Chooranam-5gm with hot water during night for first day of treatment. The patient was asked to take rest from internal medicine and other activities on that day.
The author treated the patients with trail drugs Aayilpattai Choornam (internal) – 1gm tds with luke warm water and Kalappai Kizhangu oil (external). During treatment, the patients were advised to follow pathiyam (avoid tamarind, tubers, etc) and advised to avoid pillows. But all aspect of pathiyam could not be imposed in the IP ward due to practical difficulties.

SIRAPPU MARUTHUVAM TECHNIQUES [METHOD] APPLIED IN SAGANAVATHAM PATIENTS

a) Thokkanam

Among the twenty cases, 15 cases were treated additionally by thokkanam with Kalappai Kizhangu Oil once in three days regularly. These 15 patients showed a positive quick response of all symptoms and signs when compared with other 5 cases.

b) Asana

Few Asana procedures were explained and demonstrated by the author for all the majority of cases during their later days of treatment and advised to follow up regularly and asked to visit after a month. Among the asanas, Chakrasana and Bhujangasana were effective. Few patients consulted the author and gave positive response for Asana therapy.

c) Exercises

Among twenty cases, 12 patients were selected and asked to do simple exercises like turning neck side to side, forward and backward bending were effective. Among the 12 cases, 6 patients showed quick relief of pain when compared with non-exercise advised patients.
d) Pranayama

The author advised all twenty patients to do pranayama regularly in the future days.

Curative Effect:

On the basis of assessment of curative effect of the trial drugs, improvement effect was recorded in majority of cases 45%. 5% had 1-3 months illness, 15% had 3-6 months illness, 10% had 12-24 months illness, 15% had 6-12 months illness.

Clinical cure was observed in 25% of cases. Among them 10% had below one month duration of illness, 5% had 1-3 months illness, 10% had 3-6 months illness.

Marked effect was assessed in 30% of patients which consisting 5% with below one month duration of illness. 5% had 1-3 months illness, 15% had 6-12 months illness, 5% had 24-36 months illness.

No toxic or side effects were clinically observed in any cases.

Pharmacological studies done in Pharmacology department of Government Siddha Medical College Hospital, Palayamkottai revealed that Aayilpattai chooranam bears significant Analgesic, Acute anti inflammatory effect and chronic anti inflammatory action and Kalappai Kizhangu oil has significant acute anti inflammatory action.

Bio chemical analysis of drugs was done in the department of Biochemistry of Government Siddha Medical College Hospital, Palayamkottai. Aayilpattai Chooranam contains sulphate, chloride, ferrous iron, unsaturated compounds, reducing sugar, amino acids.
SUMMARY

Twenty cases with Saganavatham were diagnosed clinically based on Yugi 800 and admitted in the inpatient ward of post graduate department of Sirappu Maruthuvam, Government Siddha Medical College Hospital, Palayamkottai and treated by the trial medicine.

- Laboratory diagnosis of saganavatham was done by modern methods of investigations.
- The various siddha aspects of examination of the disease were carried out and were recorded in the proforma.
- The trial medicine chosen for both internal and external treatment were Aayilpattai Choornam – 1 gm tds with luke warm water for fifteen days as per the severity of the disease, Kalappai Kizhangu Oil (External).
- Before starting the treatment careful detailed history was carried out and recorded for the twenty selected cases.
- During the period of treatment all the patients were put under pathiyam (A specific dietary regimen).
- A periodical laboratory investigation was made for all the cases along with the radiological investigations.
- The observations made during the clinical study shows that the main internal drug Aayil Pattai Choornam is clinically effective.
- The action of external applicant in Kalappai Kizhangu Oil is also quite remarkable.
CONCLUSION

All Twenty patients were treated for this dissertation work with Aayil Pattai Chooranam 1 gm tds with luke warm water and Kalappai Kizhangu Oil (Externally)

The Result was observed as:

<table>
<thead>
<tr>
<th>Effect Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement Effect</td>
<td>45%</td>
</tr>
<tr>
<td>Clinical Cure</td>
<td>25%</td>
</tr>
<tr>
<td>Marked Effect</td>
<td>30%</td>
</tr>
</tbody>
</table>

This result of the clinical trial illustrates the fruitful effect of the drugs. Hence these drugs and methodology of the treatment will become one of the milestone in treating Saganavatha Patients in Future.
ANNEXURE – I

DRUG REVIEW

PREPARATION OF TRIAL DRUG:

PREPARATION OF TRIAL DRUG:

**Internal Medicine**

**Ingredients:**
- Mapy
- Gl
- Il
- R
- Uzk

**Formula:**
- 70 ml

**Preparation:**
- Mix the ingredients and prepare a solution in a volume of 3 to 4 litres of water.

**Dosage:**
- 1 to 2 times daily

**External Application**

**Ingredients:**
- Figs
- Gzh
- L
- Xkk

**Formula:**
- 198 ml

**Preparation:**
- Mix the ingredients and prepare a solution in a volume of 3 litres of water.

**Application:**
- Apply liberally to affected areas.
PROPERTIES OF THE HERBAL DRUGS:

Internal Medicine:

1. **Ayuvel**:

   - Common Name: Aya
   - Synonyms: Ayil, Avithal, Poothiyam, Aavil pungu
   - Botanical Name: Holoptelia Integrifolia
   - Family: Ulmaecea
   - Parts used: Stem bark

Characters

   - Suvai: Kaippu
   - Thanmai: veppam
   - Pirivu: Kaarppu

**CHEMICAL CONSTITUENTS:**

Stem bark contains friedelin, fredelin 3-β-ol, triterpenoid fatty acids, esters, Holoptelin. Heart wood contains βsitosterol, hederagenin.

Leaves contains hexocosananl β – Sitosterol, β – amyrin.

**Therapeutical Actions:**

   - Febrifuge, anti inflammatory, stomachic, laxative

**Therapeutical Effects:**

   - Disease of vatham, vomiting, TB
Uses:

- പുന്നവൈനീൻ പെണ്മൂർ കുറയ്ക്കുന്നതിന്
- പരാജയപ്പെടുന്നതിന്
- പുന്നവൈനീൻ പ്രതികരുന്നതിന് ഉപയോഗിക്കുന്നു

2. സംഖ്യാക്രമണം:

Synonyms: Putpakam, raktha putpika, Mukkuratai

Vernacular Name:

- Eng: Hog weed, pigweed
- Tamil: Mukkarattai keerai
- Sans: Punarnavam, Rakta Punarnavam

Botanical Name: Boerhaavia diffusa linn

- Family: Nyctaginaceae
- Parts used: Herb and roots

Characters:

- Suvai: Kaippu
- Thanmai: Veppam
- Pirivu: Karpu

CHEMICAL CONSTITUENTS:

Punarnavine 1 and 2, Roots contains alkaloids (0.05%), Hentriacontane, β-sitosterol, ursolic acid, Glycoproteins

Therapeutical actions:

- Diuretic & Anti – Inflammatory
- Roots – Analgesic, Laxative and Diuretic
Uses:
"துறைத்துண்டுகளுக்காக முகம்புடன் உள்ள என்னல்
சார்த்துப்பிட்டு செய்ய முறையாக என்றும் கூறும்"

3. கார்க்கைமுறை:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Charanai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>Sharrdai, Viruchigam</td>
</tr>
<tr>
<td>Botanical Name</td>
<td>Trianthema portulacastrum</td>
</tr>
<tr>
<td>Family</td>
<td>Aizoaceae</td>
</tr>
<tr>
<td>Parts used</td>
<td>Root</td>
</tr>
</tbody>
</table>

Characters:

<table>
<thead>
<tr>
<th>Suvai</th>
<th>Kaippu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thanmai</td>
<td>Veppam</td>
</tr>
<tr>
<td>Privu</td>
<td>Kaarpu</td>
</tr>
</tbody>
</table>

CHEMICAL CONSTITUENTS:

It contains alkaloid “Trianthemine (C_{32}, H_{46}, O_{6} N_{2}). It also contains ecdysterone (0.01g/kg) a Potential chemosterilant.

Therapeutical Actions:

Laxative, Diuretic, expectorant

4. கார்க்கைமுறை:

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>Arukkan, Navasuru, Nagaram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athagam, upakullam</td>
<td></td>
</tr>
</tbody>
</table>

Vernacular name:

<table>
<thead>
<tr>
<th>English</th>
<th>Dried ginger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel</td>
<td>sonti</td>
</tr>
<tr>
<td>San</td>
<td>Nagaram</td>
</tr>
</tbody>
</table>
Botanical Name : Zingiber officinale Rosc
Family : Zingiberaceae
Parts used : Tubers

Characters:

Suvai : Kaarppu
Thanmai : Veppam
Pirivu : Kaarppu

Chemical Constituents:
Heptane, octane, myrecene, limonene, β-phellandrene, gingedial, sesquiterpenes, zingiberol

Therapeutical Actions:
Stomachic, tonic, carminative

Uses:

5. சின்ன: Synonyms : Kallinai, kari, kayam, sarumapantham, Malaiyali

Vernacular name:

Eng : Black pepper
Tel : Miriyalu
San : Maricha
Kan : Menasu
**Botanical Name:** Piper nigrum linn

**Family:** Piperaceae

**Parts used:** Dried unripe fruit – (Black pepper)

**Characters:**

Suvaï : Kaippu, Kaarppu

Thanmai : Veppam

Pirivu : Kaarppu

**Chemical Constituents:**

Piperine, piperidine, chavicin – is a soluble pungent concrete resin

Hentracontan – 16, β – sistosterol – isolated from stems

**Therapeutical Actions:**

Anti vadha, Carminative, Antiperiodic resolvent

**Uses:**

"காய் வாதக்கும் குறைப்பு மருந்து கையில் இருக்கும் குறைப்பு"  

"சவாணை வாதங்கு மருந்து கையில் இருக்கும் குறைப்பு"  

"தனிக்கும் வாதங்கு மருந்து கையில் இருக்கும் குறைப்பு"

6. **Synonyms:** Lasunam, Kaayam, velvengayam.

**Vernacular Name:**

Eng : garlic

Mala : Vellulli

Sans : Lasuna
Botanical Name  : Allium Sativum

Family  : Lilliaceae

Parts used  : Bulb and oil

Characters:

Suvai  : Kaarppu
Thanmai  : Veppam
Pirivu  : Kaarppu

Chemical Constituents:

An acrid volatile oil which is active principle starch, mucilage, albumen, sugar, scordinin, D-galactar.

Therapeutical Actions:

Hot, stimulant, antirheumatic.

Uses:

Стмёвткмуётйкмэтёйтвтмёсмкмётёмтмкмеймкмкмётёмтмкмкмкмёй

Synonyms : Asamotham, Theepiyam

Vernacular Name:

Eng  : The Bishops weed
Mal  : Omam, Ayamodakam
Teb  : Omamu
Botanical Name:
Carum copticam benth and hook.F

Family : Umbelliferae

Parts used : Dried fruit

Characters:

Suvai : Kaarppu

Thanmai : Veppam

Pirivu : Kaarppu

Chemical Constituents:

Umbelliferone, glycercyl esters of saturated and unsaturated fatty acids, β – sitesteol.

Therapeutical Actions:

Anti spasmodic, sialogogue, anti septic.

Therapeutical Effects:

The seeds with camphor and coconut oil is used to relieve pain and swelling in rheumatism.

Externally it is applied to relieve neuralgic pain

Uses:

"சுவையின் பொடி வெப்பங்களுடன் தொண்டடைய பொடி
பொடி வெப்பங்களின் மாகம் - பொடி
பொடி வெப்பங்களின் மாகம் பொடிகளின் விளைவாக்கின
தொண்டடைய பொடி வெப்பங்களுடன்
- பொடி வெப்பங்கள் தொண்டடைய பொடி"
External Applications:

1. கார்பார்டிக் மீதும்:

Botanical Name: Gloriosa superba, linn

Synonyms: கார்பார்டிக் மீதும், மகாமூர்த்தி மீதும், கார்பார்டிக்

Vernacular Name:

- Eng : Superblily, Malabar glory lily
- Tel : Agndhikka
- Mal : vestoni
- Hind : Carihari

Family : Liliaceae

Habitat : This elegant climbing plant is common in bengal and in low jungles, throughout India, burma Ceylon.

Characters:

- Suvai : Kaippu
- Thanmai : Veppam
- Pirivu : Karppu

Parts used : Tuber (roots), Leaves and flowers

Chemical Constituents:

Seeds contains high level of colchicine, N – deacetylcolchicine, 2-demethyl colchicine are isolated from plant.

Fresh tubers contains β sitosteol, its glucoside, a longchain fatty acid. β and γ lumicolchicines.

Flowers contains luteolin, colchicine, 3-demethylcolchicine

Two resins, Tanin and Superbine, alkaloid gloriosine.
Therapeutical Actions:

- Tonic
- Antiperiodic
- Alterative
- Laxative
- Anti inflammatory
- Anthemirtic

- A compendium of Indian Medicinal Plant – Vol – IV

Uses:

"குறுக்குத் திகழ்வுகளுக்கு குணமான பிரிவுகள்
சிறுநீர் தவரும் தோற்றங்கள் - நீர்மபொருட்கள்
நீர்த்தாவு புயல் சிறுநீர் குணமான பிரிவுகள்
சுருக்கி குணம்பொருட்கள்”

- புதுச்சொல்லூர் தொல்லைகள்

2. Ботаническое имя:

Botanical Name: Azhadiracha Indica A. Juss

Characters:

- Suvai: Kaippu
- Thanmai: Veppam
- Pirivu: Kaarpu

Actions:

- Cholagogue
- Antiseptic
- Antipyretic
Uses:

"மருது மீது பிக்கும் மதிப்பு வெப்பமிகுதி நேர்விளக்கம்
கொன்றால் பாசனிக்குள் பாசனிக்குடன் -சுருக்கிக்காட்டு
தொகும் சட்டத்தை உருவத்தை நடைபெற்றுக்கொள்ளும்
வெப்ப நிலை மாதிரிக்காக்காது கிளையாற்றாட்டாண்டு வைத்து.”

இன்று தாழ்வுக்கான செய்திகளின் சேர்க்கை மாதிரிக்கையின் கொள்கை
தொடர்புக்காக இன்று செய்யும்.
ANNEXURE II

BIO – CHEMICAL ANALYSIS

BIO – CHEMICAL ANALYSIS OF AAYIL PATTAI CHOORANAM

PREPARATION OF THE EXTRACT

5gms of Aayilya Pattai Chooranam was weighed accurately and placed in a 250ml clean beaker. Then 50ml distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It was cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid is taken for analysis

Qualitative 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</td>
<td>No white precipitate is formed.</td>
<td>Absence of calcium.</td>
</tr>
<tr>
<td>2.</td>
<td>Test for sulphate:</td>
<td>A white precipitate is formed.</td>
<td>Indicates the presence of sulphate.</td>
</tr>
<tr>
<td>3.</td>
<td>Test for chloride</td>
<td>A white precipitate is formed.</td>
<td>Indicates the presence of chloride.</td>
</tr>
<tr>
<td></td>
<td><strong>Test for carbonate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>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><strong>Test for Starch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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><strong>Test for iron Ferric</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The extract is treated with concentrated glacial acetic 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><strong>Test of iron :</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Ferrous:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The extract is treated with concentrated Nitric acid and ammonium thyo cynate.</td>
<td>Blood red colour is formed.</td>
<td>Indicates the presence of ferrous iron.</td>
</tr>
<tr>
<td>8.</td>
<td><strong>Test for phosphate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The extract is treated with ammonium molybdate and concentrated nitric acid.</td>
<td>No yellow precipitate is formed.</td>
<td>Absence of phosphate.</td>
</tr>
<tr>
<td>9.</td>
<td><strong>Test for albumin</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The extract is treated with Esbach’s reagent.</td>
<td>No yellow precipitate is formed.</td>
<td>Absence of albumin.</td>
</tr>
<tr>
<td>10.</td>
<td><strong>Test for Tannic acid</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The extract is treated with ferric chloride reagent.</td>
<td>No Blue black precipitate is formed.</td>
<td>Absence of Tannic acid.</td>
</tr>
<tr>
<td>Test for unsaturation</td>
<td>Potassium permanganate solution is added to the extract.</td>
<td>It gets decolourised.</td>
<td>Indicates the Presence of unsaturated compound.</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------------------</td>
<td>----------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Test for the reducing sugar</td>
<td>5ml of benedict’s qualitative solution is taken in a test tube and allowed to boil for 2 mts and added 8-10 drops of the extract and again boil it for 2 mts.</td>
<td>Colour change occurs.</td>
<td>Indicates the Presence of reducing sugar.</td>
</tr>
<tr>
<td>Test for amino acid:</td>
<td>One or two drops of the extract is placed on a filter paper and dried it well. After drying, 1% ninhydrin is sprayed over the same and dried it well.</td>
<td>Violet colour is formed.</td>
<td>Indicates the Presence of Amino acid.</td>
</tr>
</tbody>
</table>

**Inference**

The given sample of “AYIL PATTAI CHOORANAM” contains Ferrous iron, Tannic acid, Reducing Sugar, Amino acid, and unsaturated compound.
ANNEXURE – III

PHARMACOLOGICAL ANALYSIS

ACUTE ANTI-INFLAMMATORY STUDIES ON AAYIL PATTAI CHOORNAM

Aim

To study the acute anti-inflammatory effect on Aayil Pattai Choornam

Preparation of trial medicine

1gm of the Aayil Pattai Choornam was taken and dissolved in 10ml of hot water. A dose of 1ml was given to each rat. This 1ml contains 100mg of the trial medicine.

Procedure

The anti-inflammatory activity of Aayil Pattai Choornam was studied in healthy albino rats weighing 100-150gms. Nine rats were collected and divided into three groups each containing three rats.

First group was kept controlled by giving distilled water of 2ml/100gm of body weight. The second group was given Ibuprofen as dose of 20mg/100gm of body weight. The third group received the trial medicine Aayil Pattai Choornam of 100mg/100gm of body weight.

Before administration of trial medicine, the hindpaw volume of all rats were measured. This was done by dipping the hindpaw upto tibiotarsal junction, into mercury plethysmography. While dipping the hindpaw, by pulling the Syringe piston, the level of mercury in the center
A small tube was made to coincide with red marking and reading was noted from the plethysmograph.

Soon after the measurement, the medicines were administered orally. One hour later, a subcutaneous injection of 0.1ml of 1% (W/V) carrageen in water was made into plantar surface of both hind paw of each rat.

Three hours after carrageenin injection, hindpaw volume was measured once again. The difference between the initial and final volume was calculated and compared.

This method is more suitable for studying the anti-inflammatory activity in acute inflammation. The values are given in the table.

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of Drug/Groups</th>
<th>Dose /100 gram body weight</th>
<th>Initial Reading average</th>
<th>Final reading average</th>
<th>Mean difference</th>
<th>Percentage inflammation</th>
<th>Percentage inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control (water)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Standard (Ibubrufen)</td>
<td>2 ml</td>
<td>0.55</td>
<td>1.4</td>
<td>0.85</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Aayil Pattai Chooranam</td>
<td>20 mg</td>
<td>0.55</td>
<td>0.85</td>
<td>0.3</td>
<td>35.2</td>
<td>64.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 mg</td>
<td>0.9</td>
<td>1.25</td>
<td>0.35</td>
<td>41.1</td>
<td></td>
</tr>
</tbody>
</table>

The drug **Aayil Pattai Chooranam** has got Significant Acute anti-inflammatory action.
To study the chronic anti-inflammatory activity of the medicine Aayil Pattai Chooranam in the rats by cotton pellets implantation (granuloma) methods.

**Preparation of the trial medicine:**

1gm of Aayil Pattai Chooranam was taken and dissolved in 10ml of hot water. A dose of 1ml was given to each rat. This 1ml contains 100mg of the trial medicine.

**Procedure:**

Cotton pellets each weighing 10mg were prepared and sterilised in the autoclave for about one hour under 5 pounds atmospheric pressure. Nine albino rats weighing 150-200gms were selected and divided into 3 groups each containing 3 rats. Each rat was anaesthetized with ether and cotton pellets were implanted subcutaneously in the groin two on each side.

From the day of implantation a group of animals received Aayil Pattai Chooranam in a dose of 100mg/100gm of body weight. The standard group of animals received ibuprofen in a dose of 20mg/100gm of body weight.

On the eighth day the rats were sacrificed and the pellets were removed, dried to concordant weight and weighed. They were put in an incubator at 60 -80\(^0\)c and then the weight of the granulation tissue was determined separately.
<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of Drug/ Groups</th>
<th>Dose /100 gram body weight</th>
<th>Pellet weight</th>
<th>Pellet weight of the Granuloma of drugs</th>
<th>Percentage of inflammation</th>
<th>Percentage of inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control (water)</td>
<td>1 ml</td>
<td>10 mg</td>
<td>250 mg</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Standard (Ibubrufen)</td>
<td>20 mg</td>
<td>10 mg</td>
<td>55 mg</td>
<td>22</td>
<td>78</td>
</tr>
<tr>
<td>3</td>
<td>Aayil Pattai Chooranam</td>
<td>100 mg</td>
<td>10 mg</td>
<td>99 mg</td>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

The drug **Aayil Pattai Chooranam** has got **Significant Chronic – anti-inflammatory action.**
ANALGESIC STUDY ON AAYIL PATTAI CHOORANAM

(In Albino rats by hot water bath method)

**Aim:**

To study the analgesic effect of Aayil Pattai Chooranam

**Preparation of the trial medicine:**

1gm of Aayil Pattai Chooranam was taken and dissolved in 10ml of the hot water. A dose of 1ml was given to each rat.

**Procedure:**

Three groups of healthy albino rats on both sexes were selected. Each group having 3 rats, weighing between 100 to 150gm. The hot water bath was maintained at the temperature of 55\(^{0}\)C.

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 taken more than 5sec for removal of its tail from hot water bath was excluded from the experiment.

First group was kept controled by giving distilled water of 1ml per 100mg of body weight.

The second group was given paracetamol 20 mg per 100mg of body weight.

The third group was given trail medicine.

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, standard and trial medicine groups were tabulated and compared.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Drug / Groups</th>
<th>Dose /100 gram body weight</th>
<th>Initial Reading</th>
<th>After Drug administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control Standard (Paracetamol)</td>
<td>2 ml 20 mg</td>
<td>2.5 sec</td>
<td>2.5 sec 2.5 sec 2.5 sec 2.5 sec</td>
</tr>
<tr>
<td>2</td>
<td>Aayil Pattai Chooranam</td>
<td>100 mg</td>
<td>2.5 sec</td>
<td>3.5 sec 3.0 sec 3.5 sec 3.5 sec</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>2.5 sec</td>
<td>5.0 sec 4.0 sec 5.0 sec 6.0 sec</td>
</tr>
</tbody>
</table>

The drug **Aayil Pattai Chooranam** has got **Significant Analgesic action**.
ACUTE ANTI-INFLAMMATORY STUDY ON
KALAPPAI KIZHANGU OIL
(Externally)

BY HINDPAW METHOD IN ALBINO RATS

Procedure:

Anti-inflammatory study of Kalappai Kizhangu Oil was studied in healthy albino rats.

Six rats were selected and divided into three groups. To the first group distilled water was given and kept as control. The second group was given the standard drug Ibuprofen at a dose of 20mg / 100 gm body weight. The third group was treated with the test drug externally. Before the application of the drug the hind paw volume of all rats was measured. This was done by dipping the hind paw upto the tibio dorsal junction in a mercury plethysmography. Subcutaneous injection of 0.1 ml of 1% w/v carrageenin in water was made into plantar surface of both the hind paw of each rat. Three hours after injection, the hind paw volume was measured once again. The difference between the initial and final volume would show the amount of inflammation.

Taking the volume in the control group as 100% of inflammation, the inflammatory or anti-inflammatory effect of the test group is calculated.
<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of Drug/Groups</th>
<th>Dose /100 gram body weight</th>
<th>Initial Reading average</th>
<th>Final reading average</th>
<th>Mean difference</th>
<th>Percentage inflammation</th>
<th>Percentage inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control (water)</td>
<td>2 ml</td>
<td>0.55</td>
<td>1.4</td>
<td>0.85</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Standard (Ibubrufen)</td>
<td>20 mg</td>
<td>0.55</td>
<td>0.85</td>
<td>0.3</td>
<td>35.2</td>
<td>64.8</td>
</tr>
<tr>
<td>3</td>
<td>Kalappai Kizhangu oil</td>
<td>1.0</td>
<td>1.25</td>
<td>0.25</td>
<td>0.25</td>
<td>29.4</td>
<td>70.6</td>
</tr>
</tbody>
</table>

The drug Kalappai Kizhangu oil has got **Significant Acute Anti-Inflammatory Action.**
### Out patients treated with Internal Medicine and External Application

<table>
<thead>
<tr>
<th>S. No</th>
<th>OP. No</th>
<th>Date</th>
<th>Age</th>
<th>Sex</th>
<th>P &amp; S</th>
<th>R</th>
<th>N</th>
<th>G &amp; H</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28155</td>
<td>29.04.08</td>
<td>45</td>
<td>F</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>clinical Cure</td>
</tr>
<tr>
<td>2</td>
<td>27947</td>
<td>28.04.08</td>
<td>38</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>Improvement</td>
</tr>
<tr>
<td>3</td>
<td>28664</td>
<td>30.04.08</td>
<td>45</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>Marked effect</td>
</tr>
<tr>
<td>4</td>
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<td>47</td>
<td>M</td>
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<td>+</td>
<td>-</td>
<td>-</td>
<td>clinical Cure</td>
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<td>5</td>
<td>32443</td>
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<td>45</td>
<td>F</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>Improvement</td>
</tr>
<tr>
<td>6</td>
<td>32134</td>
<td>21.05.08</td>
<td>37</td>
<td>F</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>Marked effect</td>
</tr>
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P & S = Pain and Stiffness of Neck,  
R = Radiating Pain  
N = Numbness of upper limbs,  
G & H = Giddiness and Headache  
(+) = Postive  
(-) = Negative
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D.C-Degenerative changes  
L- Ligaments  
O.L.&S.- Osteolytic and Sclerolytic Changes  
P&P-Pre&Para Vertebral Spaces.