ACKNOWLEDGEMENT

Many individuals have helped in bringing out this dissertation work. The author takes it as his pleasure to acknowledge those concerned.

I first of all express my elegance to the Lord Siva and 18 siddhars for all their many fold mercies.

I would take this moment to signify my sincere gratitude to the Vice Chancellor, Tamil Nadu Dr.M.G.R. Medical University, Chennai. The Special Commissioner, Joint Director, Directorate of Indian Medicine and Homeopathy, Chennai who allowed to do the dissertation with gay.

I sincerely thank to Dr. R. Devarajan M.D(s), Principal, Dr.S. Soundarajan, M.D(s), Vice Principal, Govt. Siddha Medical College, Palayamkottai. for permitting me to do this work.

I express my sincere thanks to Dr.R. Janarthanan M.D(s), Head of the Department, Post Graduate Department of Sirappu Maruthuvam, Govt. Siddha Medical College, Palayamkottai, his excellent guidance and encouragement in my study.

Words seem to be inadequate to express my Gratitude to Dr. K. Somasekaran B.Sc.,B.I.M,M.D(s), Former HOD, post graduate Department of Sirappu Maruthuvam, for his advice and support in every aspect of this work.

I wish to express my deep gratitude to Dr.S. Kaniaraja B.A, M.D(S) Lecturer, Post Graduate Department of Sirappu Maruthuvam for his memorable inspiration.

I sincerely thank to Dr. D. Rajasekar M.D(s), Asst. Lecturer, DR.K.Saibudeen M.D(s), Former Asst. Lecturer for their valuable guidance and encouragement in all aspect of my dissertation work from time to time.
I express my cordial thanks to Dr. A. Kumar M.D (S)., Head of the Aruvai Maruthuvam Department, Dr. R. Sankaranarayanan M.D (S)., and Dr. V. Muthukumar M.D (S)., Asst. Lecturers, Aruvai Maruthuvam Department for their kind help to do this study.

I express my sincere thanks to Dr. S. Ramaguru B.Sc., M.S (Ortho), Prof. of Orthopaedics, Tirunelveli Medical College, Palayamkottai, for his valuable guidance for this study.

I express my sincere thanks to Dr. S. Bagirathi M.B.B.S., Department of Clinical pathology, Govt Siddha Medical College, Palayamkottai for her guidance in doing laboratory studies.

I express my cardial thanks to Dr. V.S. Padma M.B.B.S., DMRD, Department of Radiology, Govt Siddha Medical College, Palayamkottai for her guidance and co-operation.

I express my thanks to Mr. M. Kalaivanan, M.Sc, Department of Pharmacology and other staff. I am also thankful to professor Mrs. N. Nagaprema, M.Sc, M.Phil, and other staff in Department of Biochemistry, Govt Siddha Medical College, Palayamkottai.

I express my thanks to Librarian Mrs. T. Poongodi, M.Sc (Lib. Science), for permitting me to utilize the college library for my dissertation work.

I sincerely thank my colleagues and other staff members who helped me during this whole study period.

I gladly acknowledge my brother Mr. T. RadhaKrishnan M.Com., HDCM., for his kindly help in doing this work.

My beloved thank to My Parents and My Friends.

I wish to thank Broad Band Net Café (BBNC) for their sincere and kind co-operation to complete this work.
INTRODUCTION

India, the land of "Unity in Diversity" popular not only for its tradition, heritage and culture but also famous for its own traditional system of medicine called "Indigenous System of Medicine". Indigenous system of medicine includes siddha, Ayurvedha, Unani Among these, siddha system of medicine is the ancient one, it was believed to be originated from Lord shiva, and then reached from Agasthiar to Siddhars. From, siddhars this system of medicine was gifted to mankind.

Siddhars, they are not only physicians, but also social reformers, saints solved the human problems by their supernatural power called siddhi one who achieved, siddhi is called 'Siddhar'. The ultimate aim of siddhars is to attain eternal bliss. For attaining eternal bliss human body is considered to be media. This media must be protected from degeneration, ageing and disease. So the siddhars followed specific type of life style and dietary style, which was also included in this system of medicine.

According to siddhars human body is constituted by five basic elements which also constituted the environment viz Nilam (Earth), Thee (Fire), Vayu (Air), Neer (Water) and Aahayam (Ether). The normal functioning body without being affected by any disease and of maintain sound wind which are called karpamuraigal.
"Medicine" is defined as one which removes distress and leads an individual to perfect happiness (heavenly bliss).

The medicament with roots and leaves of the herbs are initiated, if uncontrolled then parpam and chendoorams are to be used.

Among the various types of KEELVAYU disease, the Author has selected the "AZHAL KEELVAYU" for her research subject.

According to this study, "AZHAL KEELVAYU" is correlated with "Arthritis" mentioned in modern medicine.

Arthritis means ever increasing pain and stiffness with ever decreasing physical competence, bodily joy and ease. When more than one joint involved it is known as "Oligo Arthritis" and "Poly Arthritis".

Thorough knowledge of important aspects of this disease in siddha and modern concepts namely the aetiology, pathology, sympatomatology and biochemical mechanisms will be helpful to conduct the study with perfect understanding.
The Author has selected "NANNARIVER CHOORNAM" and "SANGANKUPPIVER ENNAI" as medication for research. The reason for choosing above medicines is their efficacy mentioned in siddha therapeutics and the easily available ingredients.

The Author believe that the dissertation work might of human body is based on homeostasis of three vital forces or “UYIR THATHUKKAL” called vatha, pitha, and kapha. Any derangement in this homeostasis leads to pathological condition called "Pini" or "Noi".

"வாத்தை மற்றும் தங்கணர் அதிகரிக்கும் இற்காத இவ்வை ஒன்றும் ஓய்க்கும்"

- சிற்றுருக்கள்

The Factors, which maintain constant homeostasis of these three humors are by six tastes (Aruvai), lifestyle dietary habits, etc.

"மன்றிச்சா வைவாசாரம் மாத்வாக்கு அறிந்து வார்டை காணிப்பத்தை கொள்ளின்"

- சிற்றுருக்கள்

Siddhars classified the diseases in to 4448 types. Siddhars the diseases by means of Envagai thervu, which includes Nadi etc, Neerkuri, and Neikuri, the "Precise diagnostic tool" of siddhars. The treatment aspect involves the neutralisation of affected humours.

"வைவாசாரம் வையும்"
"மார்த்தார் விகிதம் மருத்துவம்"
"நெப்பா அதிகரிக்கும் பாதுகாப்பு"”

- சிற்றுருக்கள்

By giving viresanam (Purgatives), Vatha Kutram is neutralized. By giving vamanam (emetics), pitha kutram is neutralised. Kapha kutram is neutralised by giving Anjana and Nasiyam (application of medicine in the eyes as well as nose). The selection of medicines was based on suvai, veerium, and
vibagam, related to diseased condition.

The advantage and unique features of siddha medicine is the removal of the root cause of the disease and effect, perfect remedy for mind and soul. Siddhars have enumerated ways that are to be followed to maintain the arise new horizons in this field especially in the treatment of

“AZHAL KEEL VAYU”

"அழகு கேல் வாயு குண்டு கோவை முக்கோணங்கள் நிறுவட்டக் குறிமை செய்து வரும்".

- சீதேஷ்யான்

When patient, doctor, pharmacist and nurse all act in co-ordination the disease will be cured.

**Sirappu Maruthuvam:**

Sirappu Maruthuvam is a branch of medicine which deals with the bodily disorders and to increase the longevity of human lifespan by preventing diseases. It relieves mental tension and depression and gives peace.

This is achieved by following techniques.

1. Yoga and kayakalpam
2. Rejuvenation Therapy.
3. Muppu
4. Varmam, thokkanam and enbu murivu
5. Kirigai and Kanma Noi
6. Dermatological disorders.
AIM AND OBJECTIVES

The disease “Azhal Keel Vayu” is a major ailment of the elderly. This produces pain and discomfort to the patients. The purpose of author’s work is to elucidate a good medicine from ancient Siddha literatures and to create hope and faith in their treatment. Their being a preliminary endeavour by the author, as if it would be a helping hand to the sufferers. With this view this dissertation subject was undertaken.

1. To prove the efficacy of our Siddha Medicine to the world.
2. To study the clinical cause of the disease “Azhal Keel Vayu” with keen observation on the Aetiology, Pathology, Diagnosis, Prognosis, Complications and the Treatment by making use of Siddha aspect.
3. To expose the unique diagnostic methods mentioned by Siddhars, to know the disease “Azhal Keel Vayu” alters the normal condition under the topic Mukkutram, Poripulangal, Ezhu Udal Kattukkal and Envagai thervugal.
4. To know the extent of correlation of Aetiology, Classification, Signs and Symptoms of Azhal Keel Vayu in Siddha aspect with Osteo arthritis in Modern medicine.
5. To have an idea about the incidence of the disease with age, sex, socio-economic status and climatic conditions.
6. To have a detailed clinical investigations.
7. To have a clinical trial on Azhal Keel Vayu with the medicines named NANNARIVER CHOORNAM as internal medicine and SANGANKUPPI VER ENNAI as external medicine.
8. To evaluate the Bio-chemical and Pharmacological effects of trial medicine.
9. To use modern parameters to confirm the diagnosis and prognosis of the disease.

10. To insist Thokkanam (Massage) and Asanas along with medicines to achieve the good results, which are the salient features of Sirappu Maruthuvam.
SIDDHA LITERATURE

Siddhars spiritual scientists explored and explained the reality of nature and its relationship to man by their yogic awareness. According to siddha philosophy, man is nothing but a miniature world containing the five basic elements.

Universe originally consisted of atoms which contributed to the five basic elements (Pancha boothas) namely, earth, water, fire, air and ether which correspond to the five senses of the human body and they were the fundamentals of all human body and all corporal things.

Panchaboothas are the foundations for Thridosha (Vatham, Pitham and Kabham) which are the pillars that support our body structure.

Any alterations in the level of thridosha effects the normal functions of the body. This is obvious from the verses.

The normal values of the Thridosha are in the ratio Vatham, Pitham and Kabham 1:1/2:1/4

-  கௌர்வாகரம்.
Alterations in this ratio, produces disease. The signs and symptoms are produced according to the particular deranged dosha.

**KEEL VAYU**

**Synonyms:**

Keel vayu, mottuvali, santhuvali, mudakkuvatham, ama vatham, mega soolai.

The term Keelvayu is mentioned in the text Siddha maruthuvam according to Sabapathy manuscript. It is denoted as ‘santhu vatham in the literature Yugi Vaidya Sinthamani. In Yakobu Vidya Sinthamani it is mentioned as “Mudakku vatha soolai”. In Thanvantri Vaidya Kaviyam it is said as mudakku vatham”.

Keel vayu is the general term that includes all kinds of joint diseases. The word “keel” means “Joint” and “Vayu” means “Vatham”.

The principal deranged factor among thriddhosa is the vatham and so called as keel vayu.

Restriction of movements and in some cases even immobility of the joint can occur. So it is called as “mudakku vatham”.

From the above text it is clear that vatha diseases are 1482.
EYAL – (DEFINITION)

Keel vayu is a vatha disease characterized by pain and swelling of the joints, stiffness of the muscles and joints with tenderness, frequently associated with fever, anorexia and insomnia. It may be accompanied by emaciation, anaemia and restriction of joint movements and in some cases even immobility may occur.

மாற்றுமையான: 

“காலாம் வாரத்து கால்பாலம்பார்க்கும்
மிதக்கும் மாற்றத்தாக நீப்புருத்து
சால்தில்லை சாரமாக்கவும் வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
நயர்வாய்க்கால் வினைக்கும் வெற்றிகரும்
சால்தில்லை வெற்றிகரும் வினைக்கும்
நாயமிகுத் கல்வியுடைய வாக்குத்தொணை.”

“காலாச்சங்க கால்பாலிடி சமைய்ப்புற்றிப்
சேரகாலம் நிறைவுசெய்யும் காலம்பானது
சால்தில்லை மாற்றாக வெற்றிகரும்
சால்தில்லை வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்
பாயிமாக மாற்றாக வெற்றிகரும்.

- புதுக்கோட்டையில் சிற்றகையான்
மாநிலமாக:

"நாற்கோயில் குருத்த முன்னர் ராகவிய குருத்தாக ராகை
அப்பொழுது நாற்கோயில் குருத்தரை முன்னர் ராகை
நம்பிக்கையில் பாணிகுளத்தை முன்னர்
குறைந்த பக்காக குருத்தைத் தோன்றாது
என்று கூறல் பற்றிய பெண் குருத்தை
நாற்கோயில் பக்காக குருத்தை பின்னர் ராகை
நாற்கோயில் பக்காக குருத்தை
னாற்கோயில் பக்காக குருத்தை பின்னர் ராகை.

'னாற்கோயில் பக்காக குருத்தை பின்னர் ராகை
பாணிகுளத்தை பாணிகுளத்தை பின்னர் ராகை
என்று பற்றிய பெண் குருத்தை
நாற்கோயில் பக்காக குருத்தை பின்னர் ராகை
நாற்கோயில் பக்காக குருத்தை

- நாற்கோயில் குருத்தை

மண்டலியால் குறைந்தவை:

"மண்டலியால் குறைந்தவை என்பது பாணிகுளத்தை பாணிகுளத்தை
பாணிகுளத்தை என்பது
என்று பற்றிய பெண் குருத்தை
நாற்கோயில் பக்காக குருத்தை பின்னர் ராகை
நாற்கோயில் பக்காக குருத்தை

"மண்டலியால் குறைந்தவை என்பது பாணிகுளத்தை
பாணிகுளத்தை என்பது
என்று பற்றிய பெண் குருத்தை
நாற்கோயில் பக்காக குருத்தை

10
“வாங்கு தற்போது ஒரு விளக்கத் தேசிய தொழில்நுட்ப விளம்பரிசையும் அனைத்தும் தானியான குலத்தின் விளக்கத்தில் நேர்முறையான நிர்வாகத்தை மேலும் முதலிலவே
மதனையல்லாத செயல்வேற்றம் நடத்தும் மற்றும் மக்களிடம்.”


மாதுரையார் சோதனை:

“வாங்கு தற்போது ஒரு விளக்கத் தேசிய தொழில்நுட்ப விளம்பரிசையும் அனைத்தும் தானியான குலத்தின் விளக்கத்தில் நேர்முறையான நேர்வாகத்தை
செயல்வேற்றம் நடத்தும் மற்றும் மக்களிடம்
மதனையல்லாத செயல்வேற்றம் நடத்தும் மற்றும் மக்களிடம்”

- அக்டோபர் 2000

மாதுரை குறிப்பிட்டு கூறும் (மாதுரையார்)

“உதவிகள் கல்யாணத்திற்கு பெரியத்தையாக
நிர்வாகம் குறித்து எதிர்ப்பு மற்றும்
பொருளாதாரம் பெரியமையாக வேளாண்மைத்தை
சேர்கிறார் பெயர் முதல்வராக மற்றும்
சுற்றுச்சூழலுக்கு குறித்து எதிர்ப்பு
சேர்கிறார் பெயர் முதல்வராக மற்றும்
மாதுரை குறிப்பிட்டுவராக மற்றும்
மாதுரை குறிப்பிட்டு வராக மற்றும்”

- அக்டோபர் 2000

மாதுரை மாதுரையார் கூறும்:

“மாதுரை மாதுரையார் கூறும் விளக்கம்:
பாராட்டும் முதல்வராக நேர்வாக
அனைத்தும் முதல்வராக நேர்வாக
அனைத்தின் முதல்வராக நேர்வாக
பொருளாதாரம் பெரியமையாக வேளாண்மைத்தை
சேர்கிறார் பெயர் முதல்வராக மற்றும்
சுற்றுச்சூழலுக்கு குறித்து எதிர்ப்பு
சேர்கிறார் பெயர் முதல்வராக மற்றும்”

- மாதுரை மாதுரையார் மக்களிடம்
வாணங்கி பொக்கும்:

“ஒருவன் கூட்டு விளக்கம் பூமிய
செங்குத்துப் பக்தியுடன் தமிழ்ப்
சுருக்கத்து விளக்கம் பார்வையுடன்
சமநிலை வலையுடன் விளக்கம் பார்வை
நெஞ்சாலா ரகசி மின்னையுடன் விளக்கம்
நீரக்காட்டு தன்னிடையில் பிள்ளை விளக்கம்
சுருக்கத்து ரகசியுடன் முன்னையுடன்
சிற்றுணில் குறிப்பிட்டு நடைபெறும்.”

“ஒருவர் மாக்களக் கலைக்குட்பட்டு
அப்படித் திருத்தம் வந்து விளக்கம்
பூமியுடன் குறுக்கும் கூட்டும்
செங்குத்து பக்தியுடன் தமிழ்ப்
சுருக்கத்து விளக்கம் பார்வையுடன்
சமநிலை வலையுடன் விளக்கம் பார்வை
நெஞ்சாலா ரகசி மின்னையுடன் விளக்கம்
நீரக்காட்டு தன்னிடையில் பிள்ளை விளக்கம்
சுருக்கத்து ரகசியுடன் முன்னையுடன்
சிற்றுணில் குறிப்பிட்டு நடைபெறும்.”

“பார்வை திருத்தம் பார்வையுடன்
பூமியுடன் குறுக்கும் கூட்டும் செங்குத்து பக்தியுடன்
சுருக்கத்து விளக்கம் பார்வையுடன்
சமநிலை வலையுடன் விளக்கம் பார்வை
நெஞ்சாலா ரகசி மின்னையுடன் விளக்கம்
நீரக்காட்டு தன்னிடையில் பிள்ளை விளக்கம்
சுருக்கத்து ரகசி மின்னையுடன் விளக்கம்
சிற்றுணில் குறிப்பிட்டு நடைபெறும்.”
PINI URPATHHI KIRAMAM (AETIOLOGY)

In siddha system the main cause for this keel vayu is derangement of thrithathu. The derangement occurs under various conditions. They are given below in various headings.

- Physical factor
- Mental factor
- Factor of pitha megam
- Factor of ama dhosam

I. Physical Factor:

"தங்கியால் ஆபிருகியால் தூய்மை காப்பு
உடலாலாம் வித்தியாக்கியவுள்ள உடலாலாம்
சுலபசால் ஆரியம் பாதுகாப்பு
உடலால் விகர்ப்பு விரைவுகாட்டு
பங்கன்றால் பக்காய் பிணயமிகு
பசவிகள் மிகவும் மருந்தியல்
தீவியால் சாய்மை விளக்கியாகை
ஒருவையும் வைணவத்தின் விளக்கியாகை".

- சுந்தரேஸ்வரேஸ்வரம்
Intake of food item which are excess in bitter, astringent and pungent tastes intake of old cooked food items, drinking rain water, sleeping during day time and awakening at night, undue starving, strain due to excessive weight lifting and sexual perversion.

"பாதையான வாரம்பு வியாதிகுறிப்பிட்டியால்
பல்கார் பெருந்துறையால் அத்தனை நீயைய
தாழ்த்திய இலங்கை புக்கிப்படியில்
நூற்றாண்டுகளுக்கும் பாதியன் பொழுங்கு
தாழ்த்திய குப்பை குனி தீர்த்தக்கண்டு
திரு வரண்டிய நிரூபம் சுமாரக் குனகண்டே
தாழ்த்திய புதுக்குரியாம் தேசுக்கிளை
தேவதனாய் தலைக்காலம் குனகண்டே”
- புதுத்திருக்காளர்

Indulging in the sexual act during vitiation of vatha, walking for a long distance, exposing to dampness and cold and harmful combinations like taking excessive curd after eating fruits, vegetables and tubers causes toxic factors which affect bones and muscles.

According to Siddha Maruthuvam Text:

“அந்தக் கொம்பிகுற்றிய மொனிகைக் குந்தியா கோள்வா
அந்தக் கொம்பிகுற்றிய பொன்னைல் கல்வா
கருத்தக் காங்கிய கிளைநடுற்போன் பொல்லா பொன்னைக்
கருத்தக் குந்தியா ரூபங்கள் குந்தியா செய்க நீடியா பொன்னைக்
- புதுத்திருக்காளர்

Ahara and Vihara (errors of diet and habits) that give rise to vatha vitiation (ie.) excessive intake of certain fruits and roots tend to increase vayu.

Excessive intakes of cold substances or exposure to severe cold, staying in high hills are liable to increase kapham. More sexual indulgence that gives rise to meganoi may also produce keelvayu.
According to Pararaja Sekaram:

“According to Pararaja Sekaram:’njhopy; ngWifg;Gf; fhHj;jy; JtHj;jy; tpQ;RfpDQ;NrhWk;
gioajhk; tuF kw;iwg; ige;jpizaUe;jpdhYk;
vopy; ngwg; gfYwq;fp ,utpdpYwq;fhjyhYk;
kio epfH FoypdhNy thjq;Nfh gpf;Fq;fhNz”

Intake of foods rich in bitter, pungent and astringent tastes, Day time sleep instead of routine night sleep.

“Intake of foods rich in bitter, pungent and astringent tastes, Day time sleep instead of routine night sleep.

“Over eating, undue starving, high sexual tendency, will lead to increased vatham.

"Over eating, undue starving, high sexual tendency, will lead to increased vatham.

Anxiety, tension, inadequate rest, stress, exposure to chill air may also increase the vatham.

Irregular diet pattern, excessive intake of water, exposure to cold air, over intake of sour tasted food stuffs.

In Theraiyar Vagadam:

“In Theraiyar Vagadam:’nta;apypy; elf;ifahYk; kpfj;jz;zPH Fbf;ifahYk;
nra;apio kfspdiur; NrHe;jDgtpf;ifahYk;
ingaNd cz;ikahYk; ghfw;fha; jpd;ifahYk;
ijaNy thjNuhfk; rdpf;Fnkd; wwpe;J nfhs;Ns”

- NjiuaH thflk;
Excessive walking in hot sun, excessive intake of water, over sexual indulgence, intake of bitter gourd etc, may play a role to disturb the normal functions of vatham.

Ahara and vihara (errors of diet and habits) that give rise to vatha vitiation ie excessive intake of certain fruits and roots tends to increase vayu.

Excessive intake of cold substances or exposure to severe cold, exposure to rain, fog or mist, cool breeze, staying in high hills – all those are liable to increase kabha. On these two essential causes namely vatha and kabha prakobam keelvayu in said to develop.

Further it is said that excessive sexual indulgence that give rise meganoi may also produce keel vayu. It may also develop by hereditary causes.

External Causes:

Environmental Factor:

```
அங்கமாக்க கருவைவை நியமிக்கினும்
அதிரிக்க சுரிய காற்று விளக்கு
ஆர்கனூந் பெண்கள் தண்டிவைக்கும்
ஏனைய மன்னு வராமான் காணிக்கினும்
பாசதை விகிதையம் கருவைவை
```

- புனித சீகாரசீ

The vatha disease will be precipitated in the months from Aani to Karthikai, (From June to December)

Internal Causes:

Astrological Causes:

In Manimanthira Vaidhya Sekaram,

```
“நாகேசுரோம் பெருந்தள்ள துவாரவையும்
குறிக்கார் நூற்றவையும் கிளையும் பாண்டிகேற்றும்
ஸ்ரீேஸ் புத்தாண்டைம் மிளமுறையாக நிரந்தரிக்கும்
```

16
Astrology says that keelpidippu is produced by planets power and position at certain period. So, if vatha is predominant, the disease rheumatism will occur. The vitiated vatham gradually disturbs and deranges the functions of vatham, pitham, kapham, Ezhu udalkattugal and manifest the joint disease.

**Vatha Kanma Varalaru:**

It attributes the following psychosocial factors such as removing the bark of living trees breaking the legs of the animals cutting the trees in the living branches and removing leaves.

**2. Mental Factors:**

- அக்கிரமிப்பை கூறும் வரலாறு-300
Apart from physical factors some other mental factors caused the derangement of gunas. The deranged gunas tend to vitiate the doshas and produce the disease.

3. Pithamegam as Causes of Keelvayu

According to Agasthiyar vaidhya Kaandam – 600 Pithamegam is said as an important factor for the causation of mega soolai. In this condition megam, the coordination of vatha, pitha, and kaba has broken down. Megam increases pitha and so excessive heat in felt from head to apanan. By this pithamegam all the ten vayus get deranged and so the disease is produced.

4. Ama Dosham:

After taking a diet, if amasayam is not properly digested, the improper digestive residue is called ama. An another school of thought says that due to impairment of the Agni, the annarasa is not properly formed in the amasaya and this state is called as ama.

When there is impairment of Agni, undigested food becomes serious toxic condition and causes amadhosha. This primary offending factor ama after provoking the vatha, travels through suitable channels in the body and settle in the joint, where the santhiga kapha resides and antagonizes the functions of vatha and kapha, resulting in pain, swelling, tenderness, crepitation and restricted movements at time.

The main factors concerned in the production of ama are mandagni. Which alters the normal secretion of digestive juice.

Dietic alterations and emotional stress that contribute to the formation of ama are:

1. Intake of heavy indigestible foods.
2. Intake of certain food materials which are incompatible to one another.
3. Consumption of raw and uncooked materials.
4. Intake of highly cooled or freeze particles.

Irrigating food, capable of causing inflammation of the stomach and intestine (or) distension of the abdomen.

**NOI ENN (CLASSIFICATION):**

Classification of keelvayu is based on tridosha theory.

According to this classification keel vayu is classified into 10 types.

They are

- Valikeelvayu
- Azhal keelvayu
- Iyya keelvayu
- Vali azhal keelvayu
- Vali iyya keelvayu
- Azhal vali keelvayu
- Azhal iyyakeelvayu
- Iyya vali keelvayu
- Iyya azhal keelvayu
- Mukkutra keelvayu

**AZHAL KEEL VAYU**

In Siddha literature Azhal Keel Vayu comes under the topic of Vatha disease. Keel vayu is the general term that includes all kinds of joint disease (Locomotor System).

**Description of the Nomenclature.**

\[
\text{Azhal Keel Vayu} = \text{Azhal} + \text{Keel} + \text{Vayu}
\]

- Azhal : Pitham
- Keel : Joint
- Vayu : Vatham.
Initially the joint in affected by the vitiated vatham, kabham and pitham is accompanied later. Also this is a disease of pitha kalam (middle 1/3 rd of the life space).

**Signs and Symptoms:**

"பிற்புக் கையின் வடிவில் சுருக்கக் கையின் ஒளில் விளைந்தது
சிறந்தமாக காண்பெற்று வரும்
சுற்று கூற்றுக் காலன் போது கலாண்டத்தை குறிக்கிறது
இடைநிலை பிரிவேற்று காலந்து பயன்படுத்தவேண்டும்"

- சாத்ய குறுப்பு

It is characterized by swelling of joints associated with severe pain and pyrexia. Since it is not quickly responding to medicine the prolonged medical care is said to be essential. As pitha increases, kapha in the joint decrease and hence dryness occur. So during flexion of the joint crepitation sound is produced.

நேர்ப்புக்கு நோய் - கரையற்றப் பொருளே.
EXPLANATIONS ABOUT THE THREE DOSHAS:

VATHA:

The term vatha denotes vayu, dryness, pain flatulence and lightness.

I. Location of Vatha:

"நர்மையான வாத்துக்கு கிளைப்பியேறு
நர்மையான வாத்துக்கு வாச்சூறை”

- முருகி முனிகி

The Vatha is located in the hip, below the abdomen, moolatharam and sexual organs.

It is also said that Vatha is settled in various places including bones, joints, nerves, vessels, hair follicles, muscles and it excretes sperm, urine and stool.

II. Functions of Vatha:

The important functions of vatha are respiration, voiding of excreta, stimulate the body and soul, refreshes and proper harmony of the seven thathus.

III. Effect of vitiated vatha:

Vague pain, exquisite pain, extreme dryness, palpitation, dislocation of the joints, disfunctioning of the sexual organs, constipation, dysuria, excessive thirst, severe pain in long bones, difficulty in flexion and extension of the limbs, dark complexion and emaciation are the main ill effects of the vitiated Vatha.

Types of Vatha:

Though the Vatha is one, according to the functions and location it is classified into ten. They are.

1. **Piranau**: It is located in between the heart and nose. It is mainly responsible for respiration, and it is necessary for proper digestion and utilization of the food material.
2. **Abanan:** It is located in the rectum, lower abdomen, urinary bladder, sexual organs, and thighs. It carries the digested nutrients to the concerned areas. Its main function is excretion of urine, feecal matter, semen and ovum.

3. **Viyanan:** Though it is present in the whole body, it is chiefly located in the heart. From the skin it spreads through the nerves and blood vessels to various organs and helps in flexion and extension. It is responsible for the sensation of the skin.

4. **Udhanan:** It is located in the chest, neck, nose and umbilicus. It is responsible for speech, complexion of the skin, stability and good thinking.

5. **Samanan:** It is mainly located in the intestines. It is responsible for proper digestion and it carries the digested nutrients to each and every organ.

6. **Nagan:** It is responsible for intelligence. Its functions are blinking of eyelids and goozing of hair.

7. **Koorman:** It is responsible for eyesight. Its functions are yawning, are secretion of tears.

8. **Kirukaran:** It is responsible for appetite and salivation. It produces cough and sneeze.

9. **Devathathan:** It is responsible for the feeling of tiredness, angry and immoral behaviours.

10. **Thananjeyan:** It is present in the nose and produces a generalized swelling of the body disappears only after the third day of death, after opening of the skull.

    In case of Azhal Keelvayu, among the vathas, Viyanan and Samanan were affected in all patients. Secondly Abanan, Udhanan, Kirugaran and Devathathan were affected in most patients.
PITHA

The term pitha denotes gastric juice, bile, energy, heat and anger etc.

Pitha (Heat) in the human organism is heat as it possesses all the characteristics of the external fire, such as burning like boiling and heating etc. It produces the internal heat necessary to maintain the integrity of the human body and any increase or decrease in this produces a simultaneous action in the organism. The chief function of bile lies in metamorphosing the chyle to a protoplasmic substance like the sperm in men and the ovum in women. It corresponds to metabolism or cell sub-division. Heat may be said to include both bile and metabolism of tissues as well as the body heat that is the product of the latter. It is also viewed by some that pitha is the name for the heat confined the liquid bile, the principle agent in digestion. The origin of bile is in the liver. In the heat, bile brings about the relation of one’s desire; in the eyes the catching of the lubricating substances that are applied to the skin. It is blue in its normal colour and yellowish in its deranged condition; and it turns into an alid when deranged or vitiated. Pitha (Heat) in its normal state remains in the lymph, chyle, blood and saliva but chief lying in the stomach. It gives sight to the eyes, beauty to the skin and cheerfulness to the mind. Its derangement causes sleeplessness, indigestion, red boils, jaundice, cirrhosis, ulcers, catarrh, dropsy, haemorrhage, acidity, eructation, delirium, perspiration, thirst, bitter taste in the mouth, burning sensation in the body especially palms and soles etc.

Head, heart, bladder, abdomen, umbilicus, stomach, saliva, sweat, blood, eyes and skin are the sites of pitha. The important functions of pitha are appetite, thirst, digestion, sensation of taste, eyesight and intelligence. Excessive heat in the body, improper digestion, excessive sweat, giddiness, syncope and immoral behaviours are some of the ill effects of vitiated pitha.
I. Location of Pitha:

"विषाणु को विंडक्ष के सिरों में आकस्मिक रूप से उत्पन्न होकर
व्यायाम व विशाल प्रक्षेप होता है।"

- भ्रूण भ्राती

Pitha is located in Head, heart, bladder, abdomen, umbilicus, stomach and also saliva, sweat, blood, eyes and skin are the sites of pitha.

II. Functions of Pitha:

The important functions of Pitha are appetite, thirst, digestion, sensation of taste, eyesight and intelligence.

III. Effects of Vitiated Pitha:

Excessive heat in the body, improper digestion, excessive sweating, giddiness, syncope and immoral behaviours are same of the ill effects of vitiated Pitha.

Types of Pitha:

According to the function and location, Pitha is classified into five types. They are.

1. Anar Pitham:

It is located in the stomach and intestines and responsible for proper digestion.

2. Ranjaga Pitham:

It is located in the intestine and responsible for the colour of the blood.

3. Sadhaga Pitham:

It is located in the heart and controls the functions of the body.

4. Alosagam:

It is located in the eyes and responsible for proper sight.

5. Prasagam:

It is located in the skin and responsible for complexion.

In case of Azhal keelvayu, Sathagam were affected in all patients.

Among the pithas Anarpitham and Ranjagam were affected most of the patients.
KAPHA:

Kapha (phlegm) supplies the body with moisture even as pitha furnishes it with heat and imparts stability and weight to the body. It adds to the strength of the body, increases the firmness of the limbs and keeps them united, preventing their disunion. It helps digestion by moisturing and disintegrating food with its humid essence. It imparts to the tongue the power of taste and helps sense-organ like the eyes, ears and the nose in performance of their respective functions. Its derangement causes excess of thirst, dull appetite, throwing out of phlegm in cough, goiter, urticaria etc. Meals taken before digestion, day – sleep, taking sweets, molasses etc. generally aggravate phlegm.

The important functions of kapha are maintaining the viscosity and proper functioning of the joints. Pain in the long bones, dysfunction of the joints, improper digestion, excessive sleep and inhibition of understanding capacity are the effects of vitiated kapha.

I. Location of Kapha:

The Kapha is located in the tongue, nose, chest, blood, lipids, bone marrow, bones, nerves, brain, large intestines, eyes and joints.

II. Functions of Kapha:

The important functions of Kapha are maintaining the friction and viscosity and proper functioning of the joints.

III. Effects of vitiated Kapha:

Pain in the long bones, dysfunction of the joints, improper digestion, excessive sleep and inhibition of understanding capacity.
Types of Kapha:

There are five types of Kapha. They are,

1. **Avalambagam:**

   It is located in the lungs and it controls the other four kaphas.

2. **Kilethagam:**

   It is located in the stomach and it is responsible for the proper digestion.

3. **Podhagam:**

   It is located in the tongue and helps to feel the sensation of taste.

4. **Tharpagam:**

   It is present in the head and keeps the eyes cool.

5. **Santhigam:**

   It is present in the joint and responsible for proper functioning of the joints.

   In case of Azhal Keelvayu, among the Kaphas – Avalambagam, Santhigam was affected in all patients and Kilethagam was affected in most patients.

**NOI NADAL (PATHOLOGY)**

**Thridosha Theory:**

The doshas viz, vayu, pitha, and kaba constitute the tripod on which Siddha stands. To understand this theory perfectly and correctly is by itself a long and arduous study.

The subject being a very complicated one, it can not be explained within the compass of a few pages. Also it has been defined by different experts in different ways but the basic principles to which they all point to are the same.

The theory of vayu, pitha and kaba begins where modern physiology ends; for, it endeavours to explain all the physiological processes as also the principles which guide them.

Vatha comprehends all the phenomena which come under the functions of central and sympathetic nervous systems. Pitha signifies the functions of
thermogenesis or heat production and metabolism comprehending in its scope the process of digestion, colouration of blood and formation of various secretions and excretions which are either the means or the ends of tissue combustion.

Kabha signifies the functions of thermotaxis or heat regulation and secondarily formation of the various preservative fluids (e.g) mucus, synovia etc.

Vatha, Pitha and kabha occur in two forms.

1. **An Invisible or Essential form.**

   It mainly guides the physiological processes pertaining to them naturally.

2. **A Crude or Visible Form**

   These are the products of the invisible process

   The relation between the two forms is very close so that the derangement of the essential form of one principle gives rise at once to increased or morbid secretions and excretions of that principle. The failure to recognize the difference between these two forms of the principles has given rise to the erroneous rendering.

   Siddhars trace the process of development of Dhosa derangement the abnormality of Dhathu equilibrium through the following stages.

1. **Accumulation and Excitation (Thannilai valarchi):**

   This is the state where the dosha accumulates in a particular part as stagnant dosha. When the stagnant dosha has accumulated and permeated a structure, there is excitement from aversion towards similar and attraction towards contraries.

   This is known as prakobam.

2. **Spreading (Piranilai Valarchi)**

   This is the stage which the excited dosha extends to another part. When the excited dosha having extended to another part it becomes located and causing beginings of specific disease of that structure.
In case of keel vayu owing to intrinsic and extrinsic causes, seasonal conditions of severe cold and changes on earth, vatha increases and joins with kaba and produces disturbances to the normal function of the Abanan and Viyanan. Owing to the addition of kaba with vatha vitiation there is swelling, pain, sometimes fluid accumulation and immobility etc in the joints.

Depending upon the vitiation of vatha and kaba, Rasa and Raktha dhathus are first affected. As such there may be anorexia subsequent anaemia and sobai. When the disease takes a longer course other dhathus may also deteriorate one by one.

The result of vatha and kaba derangement is mentioned as follows.

"அறிவுடைமாறு காலக்கிளை தயை
அரியான் விழாப்பாரும் கூம்பு
என்றால் வெளியடை விளக்கம் நிறந்து
என்றால் கூலையில் அரியு கூை
காலக்கிளை அரியான் நிறந்திருப்போம்."

- கரமாரி குருமை

**KUGARANA MAATRAM (PATHOGENESIS):**

The derangement of panjapootha in pithakeelvayu 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>New bone growth</td>
</tr>
<tr>
<td>2.</td>
<td>Neer</td>
<td>↓</td>
<td>Diminished synovial fluid</td>
</tr>
<tr>
<td>3.</td>
<td>Thee</td>
<td>↑</td>
<td>Destruction of articular cartilage</td>
</tr>
<tr>
<td>4.</td>
<td>Vayu</td>
<td>↑↑</td>
<td>Swelling and pain</td>
</tr>
<tr>
<td>5.</td>
<td>Aagayam</td>
<td>↓↓</td>
<td>Reduction in joint space</td>
</tr>
</tbody>
</table>
THE COURSE OF THE AZHAL KEELVAYU

KURIGUNAM (CLINICAL FEATURES)

First there will be blocking of nostrils, watering of the nose, hoarseness of voice, light fever, pain in the extremities, stabbing and excruciating pain in the affected joints, difficulty in moving the joints, disinclination for food, tastelessness and lassitude etc.

Next depending upon the course the disease takes we will be able to diagnose the disease correctly according to the signs and symptoms. We will then be able to declare the exact classification of keelvayu. Each variety has got its own peculiar characteristic signs and symptoms.
NILAM [Geographical distribution]

The living places are divided on the basis of the natural geographical features into five distinct types known as “Thinai”. They are “Kurinchi”, “Mullai”, “Marutham”, “Neithal” and “Palai”.

2. Mullai : Forests
3. Neithal : Sea and seashore
4. Marutham : Fields
Kurinchi Nilam:
Inhabitant of this thinai frequently suffers from shivering, fever leading to
depletion of blood, enlargement of liver and spleen. Increase of kapham.

Mullai Nilam:
Inhabitants of this thinai suffer from pitha disorders and also from
disorders due to vatha aggravation and liver enlargement.

Neithal Nilam:
Inhabitants of this thinai suffer for vatha disorders and also suffer from
excessive flatulence, enlargements of liver, obesity etc.

Marutha Nilam:
Inhabitants of this thinai are free from all disorders because all the three
thosas are always kept in proper proportion. This is an ideal place for a healthy
life.

Palai Nilam:
Inhabitants of this Thinai Suffer from disorders due to Vatha, Pitha, Kapha
elements.

Geographical distribution plays a vital role in altering the Thridoshas.

In case of Azhal Keelvayu, most of the patients had inhabitants of Marutha
Nilam and few patients belonged to Palai Nilam.

UDAL KATTUGAL:
Seven physical constituents. They are the following.

1. Saaram: (Chyle)
It is responsible for growth and development. It keeps the individual in
good spirit and it nourishes the blood.

2. Chenneer: (Blood)
Blood imparts colour to the body and nourishes the muscle responsible for
the ability, intellect of the individual.
3. **Oon: (Muscle)**

   It gives shape to the body according to the requirement for the physical activity, nourishes fat and gives plumpness.

4. **Kozhuppu: (Fat)**

   It helps in lubricating the different organs and maintains oily matter of the body.

5. **Enbu: (Bone)**

   Supports all the system and responsible for the posture and movement of the body.

   It is affected in all the twenty patients of Azhal Keelvagu.

6. **Moolai: (Marrow)**

   It fills the bone cavity. Nourishes semen, imparts strength, endurance and shining appearance.

7. **Sukkilam or Suonitham: (Sperm and Ovum)**

   It is responsible for reproduction.

   Among the seven Udal Kattugal Saaram, Chenneer, Oon and Kozhuppu were affected in most of the patients of Azhal Keelvayu.

**Kanmenthriyam**

1. Vai : To speak and eat
2. Kal : To walk
3. Kai : To take and give
4. Eruvaai : To excrete

   In case of AZHAL KEEL VAYU Kal, Kai, Eruvai were affected in most of the patients.
Udal Vanmai

Body immunity is of three kinds.

1. Iyarkai Vanmai:

   Natural immunity of the body caused by mukkunam by birth.

2. Kala Vanmai:

   Growing of the body and strength according to the age.

3. Cheyarkai Vanmai:

   Improving the health by giving valuable food and medicines.

   Diet, Physical exercise and Age play a vital role in “AZHAL KEEL VAYU”. So, Cheryaki Vanmai of an individual is affected.

KALANIZHAIGALIN MUKKUTRAM

<table>
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Vatham vitiates during Mutuvenil i.e, during summer, the environment is hot and it leads to dryness, similarly the body is affected by excessive heat and loses its energy through perspiration and the digestion is impaired.

So, in AZHAL KEEL VAYU the disease show its exacerbation during Muthuvenil Kalam.

PINIYARI MURAIMAI – (DIAGNOSIS)

Piniyari muraimai is the methodology of diagnosing the disease in siddha science which is based on the following three main principles.

- Poriyal arithal
- Pulanal arithal
- Vinathal.
Porigal are considered as the five sensory organs of perception namely nose, tongue, eye, skin and ear.

The pulangal are functions of sensory organs. They are smell, taste, touch, vision and hearing. Physicians pori and pulan are used as the tools for examining the pori and pulan of the patient.

Vinathal is gathering the information regarding the history of the disease, clinical features etc. from the patient or his immediate relatives who are taking care of him when the patient is not in a condition to speak or the patient is a child.

The above principles correspond to the methodology of inspection, palpation, percussion and interrogation of modern medicine in arriving at a clinical diagnosis of the disease.

Siddhars have developed a unique method of diagnosing the disease by “En vagai thervugal”.

The Siddhar Thaeran mentioned it as follows.

"நகூ சம்பகிய நகரிய நோய்கற்று அன்பு குறிக்குறியம் தெர்கல்வதும்"

- சோகியா

The Siddhar Agasthiar also explained it as follows.

"நூர்கூற்றோறு நாற்கூற்றோறு சிற்றோறு தொக்கோறு வரையத்து"

- அருகியவர் சம்பகிய நோய்கற்று தெர்கல்வா 400

Hence the diagnosis is made by the following

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

Naadi is the vitiating element of the body which is of three types viz Vatha, Pitha, and kaba. For examination of naadi of male patient his right hand is preferable and of female her left hand is preferable. Therefore physician will use his left hand for naadi examination of the male patient and use his right hand for female patients.

During naadi examination Vatha is felt by the tip of index finger, Pitha is felt by the tip of the middle finger and Kabha is felt by the tip of the ring finger.

These three naadis are formed as follows:

Edakalai + Abanan = Vatha
Pingalai + Piranan = Pitha
Suzhumunai + Samanan = Kaba

The ratio between Vatha, Pitha and Kabha is 4:2:1. In pithakeelvayu the following types of naadi are seen commonly.

(ie) When Vatha is vitiated there is pain in the joints of hands and legs, retension of urine and constipation, shivering and fever with body pain and excessive sweating may also present.

(ie) When Vatha is vitiated there is pain in the joints of hands and legs, retension of urine and constipation, shivering and fever with body pain and excessive sweating may also present.
(ie) When Kabha and Pitha are vitiated excruciating pain in bone will occur.

"만약 귀환의 공급에 과도한 영향을 받는
고유의 신경을 무 msm 등을 모델로써 악영한 결과들"

- 아수리시

(ie) When Kabha and Vatha are vitiated pain and restricted movement will occur.

"비활동적인 외부의 상태를 더욱 강화한,
적절한 부작용의 영향에 의해
지속적으로 불안정한 상태를 보고,
바람직한 내부의 불안정한 상태를 보고,
비활동적인 상태를 보고"

- 아수리시

When both pitha and vatha vitiated pricking pain occurs in both upper and lower extremities and also around the nape of the neck.

"귀환의 공급의 주요 영향을 보고
달리의 안정의 영향을 보고
지속적으로 불안정한 상태를 보고"

- 아수리시

Vitiation of vatha and pitha leads to the formation of joint pain

"귀환의 공급의 주요 영향을 보고
달리의 안정의 영향을 보고"

- 아수리시

When vatha gets vitiation it causes restriction of movements in lower exterminities.

Naa:

In vatha diseases tongue may be in dark colour. In pitha diseases it will turn into yellow colour. In Kabha diseases it will be turned into white colour.

In pitha keelvayu it will seen as dried one. White coated tongue may also be seen.
Niram:
In diseased condition the colour of the affected part and also the general colour of the body may be altered according to the severity of the diseases.
In pitha keelvayu the affected joint will be seen red in colour.

Mozhi:
Speech will be affected in vatha diseases when piranan, uthanan, kirugaran and devathathan are disturbed.
In pithakeelvayu speech will not be affected.

Vizhi:
Normaly vizhi will be affected in old age. In certain diseases like mathumegam and kuruthi azhal vizhi will be affected in the middle age.
In pithakeelvayu which is the disease of 4th decade vizhi will begin to loose its accuracy and clarity.

Malam:
Constipation will increase the vatha. Purgation will decrease the vatha.
Malam may be affected more or less in pitha keelvayu.

Moothiram:
The waste materials are excreted through urine from the body.
Moothiram is affected mainly in mathumegam, Vellai, vettai etc.
In pitha keelvayu alone there will be no specific change in neerkuri.
But in neikuri the appropriate findings may be seen according to the derangement of muthodham and yakkai elakkanam.

Sparisam:
The abnormal increased sparisam is clinically called as vali (pain)
In pithakeelvayu sparisam is affected and there by production of pain in the affected area that is the joints. It is the main clinical symptom of this disease.
Azhal Keel Vayu in differentiated from other types of keel vayu as follows.

1. Vazhi Azhal Keel Vayu:

"Vazhi Azhal Keel Vayu have the symptoms of ajeeranam (Indigestion), aeppam (Eructation), and vayiru eraichal (Abdominal Discomfort). This disease occurs due to excessive intake of food which increases vatha and pitha (Eg. Mutton, Egg, Tuber and Sour) and frequent intake of liquors. Laziness may also produce this disease.

2. Azhal vali keelvayu:

It is characterised by pain and swelling of the joint associated with bitter taste, vomiting, fainting, bleeding from the gums.

3. Azhal Iya keelvayu:

"Azhal Iya keelvayu: has the symptoms of attack from pitta. It is caused by improper diet, improper digestion and improper absorption of food. Pitta increases and it causes the symptoms of burning.

- Kavadi Sathish
It is characterised by pain and swelling of the joint associated with vomiting, fainting, hyperpyrexia, headache and palpitation.

4. Santhu Vatham:

“It is characterized by body pain, all joints pain, not able to walk normally, deleriousness and excess salivation and dryness.

PARIHARA MURAI FOR AZHAL KEEL VAYU:

“So in siddha, treatment is not only for removal of the diseases but for the prevention and improving the body condition after removal of disease. This is called as Kappu or Neekkam or Niraippu.

In neekkam the following principles must be noted.

“so it is essential to know the disease and the cause for the disease before treating the patient. So also the nature of the patient the degree of illness, and the season and time of the occurance of symptoms must be noted.
**Line of Treatment:**

It includes

1. To regularize the vitiated vatha by administrating purgatives or laxatives
2. Internal medicines and if necessary external medicines must be given to normalize the affected udalthaathus.
3. Special therapeutic measures such as yogasanas, thokkanam, and ottadam to hasten the prognosis.
4. Proper diet habits should be advised.

**Muthoda Samanilai:**

This is the first step in the management of disease in siddha system of medicine. Here vatha is abnormal (ie) elevated from its normal level. It leads to elevation of pitha and decrease of kaba.

The Vatha, Pitha and Kaba are observed in the body as follows.

Vatha - Lukewarm
Pitha - Hot
Kaba - Cold

The normal ratio of these three thathus is as follows

Vatha : Pitha : Kabha
1 : ½ : ¼

or

4 : 2 : 1

Purgation is best for neutralizing vitiated vatha. That is why Vellai ennai 10 ml at morning is given in the first day to every patient who are affected by this vatha disease.
Kappu (Prevention)

To prevent Azhal keel vayu,

1. Control the body weight by diet and exercise.
2. Modify the nature of work which gives stress to a particular joint (e.g.)
   Avoid prolonged standing and long distance walking.
3. Avoid taking excess sour, astringent and bitter tasted foods.
4. To follow the “Noi Anuga Vithi” described as follows.

தொண்டிலாங்கி அய்து வாய்ப்பாடுகள்:

1. நீண்டுச் சுவாசம், பொருட்பாட்டு வகைகள் கொண்டு வணிகம்.
2. வருஞ்சை நோக்குத் திருச்செய்யாமல் பெரும் வளர்வு வாய்ப்பாடு.
   (பெரும் வெளியெச் செல்வு, வருஞ்சை தீயாய்வு)
3. நீண்டுச் சுவாசம் கொண்டு வளர்வு வாய்ப்பாடு கழிக்க.
4. மேலும் பின்புறப்பாடு வளர்வு அருகிக் கழிக்க.
5. தீயாய்வு கொண்டு பெரும் வளர்வு வாய்ப்பாடு கழிக்க.
6. மேலும் பின்புறப்பாடு வளர்வு வாய்ப்பாடு கழிக்க.
7. கொண்டிருக்கும் குரங்கு கட்டத்துச் சுருக்கம் பெரும் அதிரச்சி போப்பட்டு கழிக்க.
8. பெரும் வளர்வு வாய்ப்பாடு கழிக்க.
9. வளர்வு வாய்ப்பாடு கொண்டு குரங்கு சுருக்கம் பெரும் அதிரச்சி.
10.பெரும் வளர்வு வாய்ப்பாடு கழிக்க.
11. கொண்டிருக்கும் குரங்கு வளர்வு வாய்ப்பாடு கழிக்க.
12. குரங்கு குரங்கு வளர்வு வாய்ப்பாடு கழிக்க.
13. மேலும் பின்புறப்பாடு வளர்வு வாய்ப்பாடு கழிக்க.
14. மழை, கொண்டிருக்கும் குரங்கு சுருக்கம் பெரும் அதிரச்சி.
15. பெரும் வளர்வு வாய்ப்பாடு கழிக்க. 
16. மருத்துவப் பராமோதிகளின் நிலை மாற்றம், தோற்றம், குணமுடையதற்கு முன்னே முழுமையான பாக்கம்.
17. எனவெனும், முழுமையான, பசை, பிரிவுகள் அமித்தக்கால, அவசரத்தக்கால, குறைந்தச் சான்றிதழாய முறையும் தன்மையை கட்டுப்பாடு. (இல்லாமல் அந்தப்பாடுகளை)
18. முறையே முழுமையான, முழுமையான முழுமையான முறையே கட்டுப்பாடு.
19. சுருக்கமாக செய்த குறைந்தச் சான்றிதழாய முறையே.
20. முறையே முழுமையான, முழுமையான முழுமையான முறையே கட்டுப்பாடு.

என்னை இன்று காணம்

1. போற்று முருகன் எனும் நிலை மாற்றம் திறமை காரணம் பெயர்ந்தது.
   (சமாதியின் வேறு)
2. முருகன் முருகன் எனும் நிலை மாற்றம் காரணம் தோற்றம் கிளையாக விளங்கியது அல்லது அறிக்கை பெயர்ந்தது.
3. குறைந்தச் சான்றிதழாய (முறை) எனுமுகம் காரணம் செய்யப்பட்டது பெயர்ந்தது.
4. 45 முருகன் எனுமுகம் கிளையாக மருத்துவக் காரணத்துக்காக பெயர்ந்தது.
   (சமாதியின் கிளையாக விளங்கியது)
5. 4 முருகன் எனுமுகம் பெயர்ந்தது மருத்துவக் காரணத்துக்காக பெயர்ந்தது.
6. குறைந்தச் சான்றிதழாய (முறை) எனுமுகம் கிளையாக மருத்துவக் காரணத்துக்காக பெயர்ந்தது.
7. வேறுபட்டு விளங்கியத்துக்காக மண்டப வேறுபட்டு வேறுபட்டு.
8. முறையே கிளையாக பெயர்ந்தது முருகன் முருகன் முறையே கிளையாக பெயர்ந்தது.
9. பொய்க் குறைந்தச் சான்றிதழாய முறையே முறையே கிளையாக பெயர்ந்தது.

NEEKAM (TREATMENT):

"ஆதியே காணும் பாதுகாப்பு பாதுகாப்பு பாதுகாப்பு பாதுகாப்பு
மூழுமை இருந்து உள்ள குடும்பங்களை
குறைந்தச் சான்றிதழாய பெயர்ந்த வேறுபட்டு"
Since the Siddha system of medicine is based on Mukkutra theory the treatment is mainly aimed in bringing the three dhoshas into its equilibrium state.

Since Azhal keelvayu is one of the vatha diseases, the deranged vatha the affect the Pitha also.

"அழ்வகீல வாய்ந்தக் கிளை" 

According to the “Siddha literatures” vitiated vatha may be suppressed by giving purgatives.

But in the Azhal keel vayu pitha become excess, so the synovial fluid, get dried; so in the joint the proximal and distal bones get friction and ulceration occur. Due to ulceration and erosion both bones get union. Hence ankylosis of the joint occurs, so movements of the joint restricted and atrophy of muscles occur. Thus the joint lost its function.

**Kanma Neekam:**

"அக்துக்கையில் குழுக்கள் குளித்து குழுக்கள் பித்துக்கள் குழுக்கள் பித்துக்கள்
கடிந்த பகவகள் குளித்து குழுக்கள்
சாமுதநீண்டு மாற்று மாற்று பத்தட்டு பத்தட்டு
புதிய வரி முழுக்கிப்பிட்டு குழுக்கள்
புதிய வரி முழுக்கிப்பிட்டு குழுக்கள்

- அக்துக்கையில் குழுக்கள் பித்துக்கள் 300.

Agasthiar in his kanma kandam - 300 prescribed some specific expletory methods to get rid of the manifestation of the post misdeeds. Those are implanting fruitful trees establishing garden, laying road and pathway, digging wells and ponds for public use, constructing temples, donating ornaments to poor children must be done.
Treatment of Azhal keel vayu in the text “Siddha Maruthuvam”

Purgative:

The following purgative may be given firstly to balance the deranged Azhal.

Thrikahyth kudineer. 30ml to 60ml during the morning. It may be given weekly two to three times.

Then to regulate the vatha, vatha kesari thailam or kazharchi thailam may be given in small quantity.

Internal Medicine:

1. Vanga chunnam – 65mg
   Sirungi parpam – 65mg
   Pavala parpam – 65mg.

2. Kalamega narayana chenduram – 65mg
   Pavala parpam 65mg
   Muthu parpam – 65mg.

3. Poorna Chandrothayam 65mg
   Muthu parpam – 65mg
   Sirungi Parpam – 65mg.

The duration of internal medicine for vatha disease:

"அருட்ம் கிளிகும் கோடா காண்டு பற்றுக்கொள்
மேல்புறப்பாரம் சக்தியை கவித்துக்கொள்
சான்று பெண்முறு தெய்வ பூமாலை முன்பை
சான்று வைக்கும் வானில் குனிக்கு கதைப்பை
முடவுண்டு மேம்பாற்றுவது ஏற்றினால்
வெளியில் கர்ணக்குத்து மேலெய் தர்க்கத்தையும்
அருட்ம் முறையை முறையே செய்கிறது.
முக்கியப்பட்ட விளையாட்டு நாட்சார்ப்பை"
According to the above verse 82 days are necessary to treat vatha disease, by that relapse is prevented.

**External Medicine:**

1. Ulunthu thilam – Bandaged with the oil is best
2. Vallari Nei

**Fomentation:**

Fomentation with the hot water dipped, squeezed cloth will give good relief. If it is done in night it will reduce the morning stiffness.

Fomentation with heated fresh primai (Bacopa monnieri) gives relief from pain and swelling.

Like that fomentation with the leaf of erukku (calotropis gigantia) with lime fruit pieces will give good relief from swelling and pain.

**Sareera Sanjalam:**

It is a method to move the joints in their normal directions for 20 to 30 times and 2 to 3 times daily.

**Diet:**

Easily digestable foods are good. Vegetables and soups of chest bone and joints bones of the goat are good. Meat of the goat and flesh of birds like “Kadai” “Gowdari” are may be given. Avoid fish, is necessary young prawn may be fried with brinjal or beans.

**Diet restrictions,**

"புதியானது விலைத் காண்பது
புதியானது மடுக்கு".

Excess sour astringent tasted foods increase Vatha dhosha. So avoid such tasted food are necessary.
Niraivu (Restoration)

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

After treatment effort should be taken to clear the residual effects of the disease, to bring back the body condition of the patient to normal, this treated as Niraivu. Patient should also be mentioned to adhere to the preventive methods.

For Azhal keel vayu patients advice to avoid stress in the affected joints is a must. So prolonged walking and standing for long time should be avoided.

To follow all the preventive methods mentioned in the topic ‘Kappu’ will give good result to the patients.

புதிய (Dietary restrictions)

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"முதல் காயில் பிடித்திருவாம் கும்பரனால் கதை

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மேல் மாரையும் குருக்கிளாங்கள் பதவீராம் முறுப்பிட்டு

திரு பரிசை காய் புதியபுதியபுதியபுதியபுதியபுதியபுதியபுதியபுதிய

- நிற்கு புதியபுதியபுதியபுதியபுதியபுதியபுதியபுதிய

கழித்து குள்ளா, குள்ளாரச புராணிகள், கனட், களவை, சப்தநாமன, மாமாநாமன,

பெரும், கலை என்பின் புராணிகள், என்றோர், பும்பழியல், பொலவன, பும்பழியல், பொலவன, பும்பழியல், பொலவன, பும்பழியல்

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என்னரக்

முதல் காயில் பிடித்திருவாம் பிடித்திருவாம் என்னரக்

என்னரக் பிடித்திருவாம் பிடித்திருவாம்

நிற்கு புதியபுதியபுதியபுதியபுதியபுதியபுதிய
Massage therapy can soothe pain, relax stiff muscles, and reduce the swelling that accompanies arthritis. Massage and gentle stretching help maintain a joint’s range of motion.

In osteoarthritis, gentle massage can help ease the pain. Start by putting a little vegetable oil or massage oil on your fingertips. Then work slowly around the affected joint, making small, gentle circles with your fingertips. It’s best to avoid massage directly on the joint; stay just above and below it with your fingertips. Work on the area around the joint for three to five minutes each day.

Massage is believed to be beneficial effects in several ways. Besides being physically and emotionally relaxing, massage improves blood and lymph circulation, reduces nerve irritation and brings fresh oxygen and other nutrients to the affected tissues. Massage may also cause the body to produce fewer stress hormones like cortisol and norepinephrine (formerly adrenalin), and may also increase the body’s production of pain-killing endorphins and the mood-altering hormone serotonin.

Yoga Therapy:

Yoga is a science of consciousness. It is an integrated system of techniques by which we develop our hidden potentials to the fullest. Our qualities of love, joy, security, confidence, discrimination, intelligence, intuition, higher abilities and
awareness, expand as we practice yoga. This is the fundamental aim and use of this ancient system.

A great number of people suffering from various diseases achieved permanent cure through yoga therapy within a period of two to three months from diabetes, arthritis, asthma, gastrointestinal disorders, nervous tension and various other diseases.

**Arthritis – In Yogic Treatment:**

2. Pranayamam.
3. Hot water fomentation. Take bath in hot water in winter.
4. Do general massage with mustard oil on joints.

**Diet:**

- Eat Orange, apple or any fruit except banana, germinated gram, chapatti and green vegetables. In lunch and dinner take salad, chapattis, green vegetable, saag etc.
- Drink 10 glasses of water during the day. Avoid curd, fried food, cold drinks, rice, potato etc.
- Garlic soup be taken with meals. Rub lemon juice over the affected part.
- Drink the juice of amala with honey
- Eat basan with ghee. Don’t use salt in it.
- Lie down and do cycling exercise with legs and hands.
- Take soaked resins, black resin/guava at 8am
- Take carrot juice at 11 am
- Take carrot juice at 3 pm
- Take salad, boiled vegetables/fruit at 6pm
- Diet plays an important role in the disease.
Other Treatment:

- Avoid milk, coffee, sweat meats, gram flour, maida, preparations and greasy food.
- Application of ghee in navel in clockwise direction with right thumb is useful.
- Apply ginger juice / garlic juice / castor oil / glycerine on the major joints like knee / elbow / ankle/ wrist a useful.
- Take lemon juice
- Apply apple pulp on the affected joints. Take apples also.
- Burn some garlic cloves in castor oil store in a bottle. Apply at the site of pain.
- Have positive attitude.
- Fasting is the best panacea to reduce this disease. In the beginning drink 3 litre hot water mixed with 5 lemon. In case of fever take fresh fruits, vegetable juice and salad for a weak swelling, hardness and joint pain will be removed. Start sprouts, boiled vegetables and come on Roti, Dalia and balance diet.

ASANAS:

1. Padmasanam (Lotus Posture)

   Folding the legs in a manner where soles of both the feet are turned up like the petals of a lotus flower, straighten your spine.
   
   **Rhythm** : Normal breathing
   **Duration** : 10 minutes

   **Benefits:**
   
   Preserves normal elasticity and especially helps all the important muscles, ligaments and tendons of the lower extremities.

2. Vajrasanam: (The Adamant pose)

   In kneeling position with upturned feet, place buttocks in cavity formed by keeping the heels apart and maintain spine erect.
   
   **Rhythm** : Normal breathing
   **Duration** : 5-7 minutes
**Benefits:**

Correct posture, better flexion of ankle and feet, relaxation of thigh muscles, good fixity, helps digestion and breathing, gives relief in back ache, mental conditioning preparatory step to meditation.

**3. Gomukhasanam: (Cow-head pose)**

Try to clasp the fingers of both hands behind shoulder blades, sitting with both legs bent in a manner where knees are overlapping.

- Rhythm: Normal breathing
- Duration: 5-7 minutes

**Benefits:**

Tones of the muscles, tendons and ligaments of the knees, relieves back ache.
MODERN ASPECT

JOINTS:

The place of union or junction between two or more bones of the skeleton is termed as a JOINT.

Normal structures:

The joints are of two types - disarthrodial or synovial joints with a joint cavity and synesthrodial or non synovial joints without a joint cavity.

Most of the disease of joints affects disarthrodial or synovial joints. In disarthrodial joints, the ends of two bones are held together by joint capsule, ligaments and tendons inserted at the outer surface of the capsule. The articular surfaces of bones are covered by hyaline cartilage which is thicker in weight-bearing areas than in non-weight bearing areas. Few exceptions the temporo-mandibular joints and those involving the clavicle are between the ends or other circumscribed surfaces of endochondral bones.

The joint space is lined by synovial membrane or synovium which forms synovial fluid that lubricates the joint during movement.
The capsule is lined by synovial membrane which also covers all intrarticular surfaces except those in compression contact during activity. These include non articulating osseous surfaces, tendons and ligament partly or fully with in the fibrous capsule as in the shoulder and knee.

Articular surfaces mostly formed by a special variety of cartilage which has a wear – resistant, low frictional and lubricated surface, slightly compressible and elastic and thus ideally constructed for easy movement over a similar surface but also able to absorb large forces of compression and here generated gravity and muscular power.

**Synovial Membrane:**

Synovial membrane lines non-articular areas in synovial joints, bursae, tendon sheaths, all regions where movement occurs between opposed surfaces. Egg-albumin (Synovial) secreted and absorbed by the membrane. It lines fibrous capsule and covers exposed osseous surfaces, intracapsular ligaments and tendons. The synovial membrane is composed of inner layer 1-4 cell thick synoviocytes and outer layer of loose vascular connective tissue. On electron microscopy, two types of synoviocytes are distinguished type A and type B. Type A synoviocytes are more numerous and are related to macrophages and produce degradative enzymes, while type B synthesis and hyaluronic acid.

**Synovial Fluid:**

Synovial fluid is a clear, light yellow, viscous fluid, which serves to lubricate the articular surfaces of the joints.

It is a dialysate of the blood plasma with mucin and hyaluronic acid added to the secretions from the synovial cells.

The main functions of the synovial fluid are lubrication and nourishment of the articular cartilages, disc, lubrication and reduction of erosin.

Analysis of the synovial fluid is helpful in diagnosing various types of arthritis by changes in its viscosity, cell content and biochemical feature.
Approximate Amounts and Ranges of Substances in Synovial Fluid.
(Text book of Biochemistry West / Todd / Mason / Vam Breggen)

1. Protein - 2.89/100g
   Albumin - 1.99/100g
   Globulin - 0.9/100g
   Fibrinogen - Nil
2. Aminoacid - Nil
3. Total lipid - Nil
4. Cholesterol - Nil
   Fatty acid - Nil
5. Creatinine - Nil
   Urea - Nil
6. Glucose - 65-90mg/100g
7. Sodium - 310mg/100g
8. Potassium - 310mg/100g
9. Calcium - 10mg/100g
10. Chlorides - 3.28mg/100g
   Phosphorous inorganic - Nil
   CO₂ content (vol %) - Nil
   \(P_H\) - 7.29 - 7.49
   Water - 96.6 g / 100g.

The Synovial Cavities:

The joints cavities and the bursae are known as SYNOVIAL CAVITIES. The synovial cavities contain large amounts of mucopolysaccharides much more than normally present in the interstitial fluid. The origin is not known through presumably it is secreted by the surrounding connective tissue cells.
In the synovial cavities excess, proteins are likely to collect in the potential spaces and these must be returned to the circulatory system through the lymphatics, otherwise the space swells.

**Fatty Pads:**

These are present in some synovial joints. These fatty deposits are situated between the synovial membrane and capsule or between the capsule and the bone. Eg. Knee Joint.

**Ligament:**

In the large joints they are formed from capsule as a specialized part of the capsule. Eg. Ligaments of the knee joint.

**Bursae:**

They facilitate movements. They may be continuous with the joint cavity eg. suprapatellar bursae of knee joints.

**Articular Disc:**

These may be fibrocartilaginous pads they divide the joint cavity into two compartments.

**Articular cartilage:**

The ends of the bones in synovial joints are covered with a layer of articular cartilage. This avascular tissue that consists of cartilage cells (Chondrocytes) embedded in a thick matrix of proteoglycans, water, type II collagen and smaller amount of other proteins.

The most wide spread type of cartilage is hyaline cartilage which covers the articular surface of bones. Articular cartilage is a smooth glistening resilient of a hyaline cartilage. Articular cartilage distributes load across joints minimizing the peak stresses on subchondral bone.
Composition of Articular Cartilage:

Fibrous Components:
Collagen accounts for more than half the dry weight of adult human articular cartilage.

Water:
The water content of the articular cartilage constitutes approximately 75% of the net weight.

The Ground Substance:
1. Protein Polysaccharide Complexes (PPC)
2. Glycosaminoglycans (GAG)
   Chondroitin sulphate 45-75%  Keratan sulphate 50%

Extracellular lipid:
Lipid constitutes about 1% of the net weight.

Zones of articular cartilage:
1. Superficial layer (tangential zone)
   Makes up 10% of cartilage
   Two Sub Zones
   a. Fibrilar sheet – most superficial layer
      Clear film consisting of a sheet of small fibrils with little polysaccharide and no cells.
   b. Cellular layer with flattened chondrocytes:
      Flat chondrocytes and collagen fibers are arranged tangentially to the articular surface.
      Thinnest layer, with the highest content of collagen and the lowest concentration of proteoglycans.
      Collagen (type IX) is arranged at right angles to adjacent bundles and parallel to the articular surface.
Subsequently has greatest ability to resist shear stresses and serves as a gliding surface for joint.

May also function to limit passage of large molecules between synovial fluid and cartilage.

Superficial zone is the first to show changes of osteoarthritis.

2. Transitional layer:

This zone involves transition between the shearing forces of superficial layer to compression forces in the cartilage layers.

- composed almost entirely of proteoglycans
- Spherical chondrocytes
- Less strongly bound.

3. Deep radial layer:

- Largest part of the articular cartilage
- It distributes loads and resists compression
- Collagen fibres and chondrocytes are perpendicular to subchondral plate

4. Calcified cartilage layer

- Contains the tidemark layer
- Tidemark is basophilic line which straddles the boundary between calcified and uncalcified cartilage.
- Separate hyaline cartilage from subchondral bone.
- Type X collagen is present mainly in the calcified cartilage layer and in hypertrophic zone of the growth plate.
ANATOMY OF KNEE JOINT

The knee joint is the largest and most complex joint of the body. The complexity is the result of fusion of three joints in one. It is formed by fusion of the lateral femorotibial, medial femorotibial and femoropatellar joints. Thus the knee joint is formed by condyles of femur, condyles of tibia and patella. The structures are briefly discussed here.

LIGAMENTUM PATELLAE:

Origin: Apex of the patella, upper half of tuberosity of the tibia.

It is the degenerated tendon of insertion of quadriceps femoris. It is separated from the synovial membrane of knee joint by the infrapatellar pad of fat.

MEDIAL TIBIAL COLLATERAL LIGAMENT:

Origin: Medial epicondyle femur, medial margin and the adjoining medial surface of the tibia.

It is the degenerated tendon of insertion of adductor magnes muscle.

LATERAL FIBULAR COLLATERAL LIGAMENT:

Origin: Lateral epicondyle of femur, head of fibula closed to the styloid process.

Laterally, it contains the degenerated origin of the peroneus longus muscle.

OBLIQUE POPLITEAL LIGAMENT:

This is an expansion of insertion of semi-membranous muscle.

ARCUATE POPLITEAL LIGAMENT:

This is a Y-shaped posterior expansion from the short lateral ligament.

CRUCIATE LIGAMENT:

These fibrous bands are intracapsular but extra synovial structures. The anterior and posterior cruciate ligaments cross each other within the joint cavity.
from intercondylar notch of femur to the intercondylar eminence of tibia to maintain anteroposterior stability of the knee joint.

**SEMILUNAR CARTILAGES:**

There are two fibrocartilagenious crescentric shaped discs called menisci (medial meniscus and lateral meniscus), which deepen the articular surfaces of the condyles of tibia. They stabilize the joint by preventing lateral displacement of bones. Compositional changes occur with ageing and degeneration within the menisci; these reduce the ability to resist tensional forces.

**Functions:**

1. To make the tibial articular surfaces more concave and wider
2. To absorb the shocks received by the joint
3. To fill up the dead space with in the joint cavity during movements.
4. To spread the synovial fluid evenly on the articular surface.
5. They also have a sensory function. These menisci are not covered with synovial membrane.

**TRANSVERSE LIGAMENT:**

This fibrous tissue connects anterior ends of medial and lateral semilunar cartilages.

**SYNOVIAL MEMBRANE:**

This lines the inner surface of the capsule except posteriorly where it is reflected towards by the cruciate ligaments. The membrane enters the joint on either sides of the cruciate ligaments and ends of the menisci and making them intracapsular but extra synovial structures. In front, it is prolonged upwards as the supra-patellar bursa.
FIBROUS ARTICULAR CAPSULE:

This capsule is very thin and is deficient anteriorly, where it is replaced by quadriceps femoris, the patella and the ligamentum patellae. The Synovial membrane of the joint extends above the patella through this opening and the extension is called as supra patellar bursa.

BURSAE AROUND THE KNEE:

As many as 13 bursae have been described around the knee; four in anterior, four in lateral and five in medial.

BLOOD SUPPLY:

The knee is supplied by the anastamosis around it. The chief sources are;
- Five genicular branches of popliteal artery
- The descending genicular branch of the femoral artery
- The descending branch of the lateral circumflex femoral artery
- Two recurrent branches of anterior tibial artery
- The circumflex fibular branch of posterior tibial artery

NERVE SUPPLY:

- Femoral nerve
- Genicular branches of common peroneal nerve
- Genicular branches of tibial nerve
- Descending genicular branch of posterior division of the obturator nerve.

Classification of Joint Disease:

Infective Arthritis (Bacterial, Viral, Parasite)

Acute Infection:

1. Acute pyogenic Arthritis
2. Acute Gonococcal Arthritis
3. Acute Rheumatic Arthritis
4. Small pox Arthritis
**Chronic Infection:**

1. Non specific
   a. pyogenic arthritis

2. Specific
   a. Tubercular arthritis
   b. Syphilitic arthritis
   c. Gonococcal arthritis

3. Parasitic Infestation:
   a. Guinea worm arthritis

**II. Rheumatoid Arthropathy:**

**Rheumatoid Arthritis:**

1. Rheumatoid arthritis (RA) Adult
2. Juvenile Rheumatoid arthritis

**Sero Negative Spondylo Arthropathy:**

1. Ankylosing spondylitis
2. Reiter’s disease
3. Psoriatic Arthritis

**III. Degenerative Arthritis (Osteoarthritis, Osteo Arthrosis, Hypertrophic arthritis)**

<table>
<thead>
<tr>
<th>Generalised</th>
<th>Localised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary to previous trauma</td>
<td>Secondary to structural abnormality</td>
</tr>
<tr>
<td>Secondary to RA</td>
<td>Cause unknown</td>
</tr>
</tbody>
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**IV Neuropathic Arthropathy:**

Tabes – Charcots’s Arthropathy
Syringomyelia
Leprosy
Diabetes Mellitus
V. *Metabolic Arthritis:*
  Alkaptonurine Arthritis
  Gout

VI. *Arthritis in systemic disorder:*
  Allergic arthritis
  Haemophilic arthritis

VII. *Miscellaneous Joints:*
  Vilo – nodular synovitis
  Synovial chondromatosis

VIII. *Neoplasms of Joints:*
  (Cyst, Xanthoma, Haemangioma, Giant cell tumour, synovioma)

IX. *Traumatic arthritis:*
  Direct trauma
  Indirect trauma (Secondary to postural strain)
OSTEO ARTHRITIS

IDIOPATHIC

LOCALISED OA
1. Hands: Heberden’s and Bouchard’s (Nodal)
   Erosive interphalangeal Arthritis (Non nodal)
   Carpel - 1st Metaarpel
2. Feet: Hallux valgus, Hallus rigidus, Contracted toes,
   Tolonovascular
4. Hip: Eccentric (Superior), Concentric (axial, medial), Diffuse (coxae semilunaris)
5. Spine: Apophysial joints, Inter vertebral joints (disks), Spondylolisthesis (osteophytes),
   Ligamentous (hyperastasis)
6. Single sites: Gleno humoral, Acromio clavicular, Tibo talar, Sacroiliac, Temporomandibular

GENERALISED OA
Include three or more areas listed in localized OA

Trauma

Congenital or Developmental

Metabolic
1. Osteorosis
2. Hemochromatosis
3. Wilson’s disease
4. Gout's disease

Calcium deposition Disease
1. Calcium pyrophosphate deposition, Apatite arthropathy

Endocrine
1. Acromegaly
2. Hyperparathyroidism
3. Diabetes 4. Obesity
5. Hypothyroidism

Bone and joint disease

Localised Disease
1. Congenital hip dislocation
2. Slipped Ephysys

Mechanical Factors
1. Unequal lower extremity
2. Valgus, Varus Deformity
3. Hyper mobility syndrome

Bone Dysplasias
1. Epiphyseal
2. Spodyloepiphysial dysplasia

Localized Fracture,
Avascular necrosis, Infection, Gout

Diffuse
1. RA, 2 Paget’s disease, 3 osteopetrosis
4. Osteochondritis

SECONDARY

Endemic
1. Kashin - Beck
2. Mseleni

Miscellaneous
1. Frostbite,
2. Caisson disease,
3. Hemoglobinopathies

Neuropathic
OSTEOARTHRITIS

Synonym:
Osteo arthrosis, degenerative arthritis, chondromalacia arthritis, hypertrophic arthritis, Arthritis deformans, post traumatic arthritis.

These terms are used to refer degenerative joint disease Osteoarthritis.

Definition:
Osteoarthritis is currently used to define an idiopathic, slowly progressive disease of diarthrodial (synovial) joints occurring late in life and characterized pathologically by focal degeneration of articular cartilage, subchondral bone thickening (sclerosis) marginal osteochondral outgrowths (osteophytes) and joint deformity.

Principle site of Osteoarthritis:
Osteoarthritis preferentially targets only certain small and large joints, the knee and hip are the principal sites of significant disability. Knee osteoarthritis is more prevalent than hip OA.

Etiology:
It is caused due to wear and tear. If a joint were never put under stress, it would never become osteoarthritis. Hence the relatively lightly stressed joints of the upper limb are in general less proving to osteoarthritis than the heavily stressed joints of the lower limb.

Predisposing factor:
1. Age
   <45 years - had 2% OA.
   45-64 years - 30%
   > 65 years - 68%

Men and women are equally affected. The disease is more severe and more generalized in women.
**Hereditary:**

An epidemiologic study suggests that OA is an articular expression of a generalized constitutional condition resulting from inherited metabolic abnormalities.

**Obesity (increase mechanical stress):**

Plays a larger role in the etiology of the most serious cases of knee OA. It mainly affects the weight bearing joints. It affects generalized pattern more typical in women than men.

**Areas of involvements**

In women, a more generalized involvement is usual in the distal interphalangeal joints and first carpometacarpal joints are often affected. Men, the hips are commonly involved.

**Major trauma and repetitive joint use:**

Anterior cruciate ligament injury, meniscus damage (also menisectomy), articular cartilage damage leads to knee OA.

Trimalleolar fracture will certainly develop ankle OA.

**Occupation:**

Hip OA common in farmer.

Elbow OA in jack hammer operator.

Hand OA in cotton mill workers.

**Sports activities:**

Ankle OA common in ballet dancers.

Elbow OA, OA of shoulders in baseball pitchers.

Metacarpophalangeal joint OA in prize fighters.

Knee OA in footballer.

Prolonged standing, bending, walking long distances over rough ground, lifting and moving heavy objects appear to increase the high risk of hip OA.
Development deformities:

Anatomical abnormalities of the knee and hip that are present at birth or that develop during childhood may result in accelerated is premature OA. These abnormalities include genuvarum, genuvalgum, congenital hip subluxation, slipped capital femoral epiphysis and acetabular dysplasia.

Prior Inflammatory Joint Disease:

Rheumatoid arthritis and septic arthritis many progress to OA.

Nutritional Deficiencies:

Low Vitamin D and Vitamin C intake is associated with increased risk of knee OA progression.

Metabolic and Endocrine Disorder:

Acromegaly notably affects cartilage.

Somatotropin stimulates chondrocytes, resulting in accleration and intensification of metabolic activity. As ages advance, somatotropin deficiency becomes pronounced and in chondrocytes regressive changes and reduced metabolic activity ensue.

Diabetes show progressive abnormalities of chondrocytes and diabetics are uniquely susceptible to OA.

Chemical Injury:

Systemically or locally administered chemical agents affect the viability and metabolic activity of articular cartilage chondrocytes (eq. steroids)

Repeated Intra Synovial Haemorrhage:

In patients with defective clotting factors, repeated haemorrhage can lead to damage to articular cartilage and to subchondral bone structures. Iron and pigment in matrix may alter the physical and chemical properties of cartilage, or the chondrocytes engulf large quantities of iron pigment within their cytoplasm perhaps causing lysosomal release of degradative enzymes.

It has been show that the prostoglandin concentration is diminished and synthetic activities of the chondrocyte are depressed.


**Arthritis:**

Arthritis can occur as a result of an imbalance between mineralocorticoids and glucocorticoids.

**Heritable Metabolic Causer:**

Eg. Alkaptonuria, Hemochromatosis, Wilson disease

**Hemoglobinopathies:**

Eg. Sickle cell disease, Thalassemia.

**Neuropathic Disorder Leading to a Charcot Joint**

Eg. Syringomyelia, Tabes Dorsalis, Diabetes.

**Disorders of Bone**

Eg. Paget Disease, Avascular Necrosis.

**Classification**

Primary OA.

Secondary OA.

**Primary OA:**

No previous pathology

It is due to wear and tears changes occurring in old age in which weight bearing joints like hips and knees are commonly affected.

**Secondary OA:**

Secondary to some previous pathology

It is due to an abnormal wear and tear in a joint caused by mechanical incongruity of the articular surfaces.

This incongruity may be the result of a preceding fracture involving the articular surface or partial destruction or deformity due to a previous disease.

**a) Group I Crystal Deposition Type:**

Hyperparathyroidism

Haemochromatosis

Wilson’s disease
Gout
Oxalosis
Calcium pyrophosphate deposition disease
Calcium phosphate deposition disease.

b) Group II Necrosis or abnormality in the subchondral bone
   Post traumatic OA
   Aseptic necrosis
   Leg – perthes disease
   Paget’s disease
   Steroid arthropathy

c) Group III Abnormal joint laxity
   Eclers Danlos syndrome
   Osteogensis imperfacta

d) Group IV abnormal cartilage growth or function
   Acromegaly
   Achondroplasia
   Spondylo epiphyseal dysplasias
   Multiple epiphyseal dysplasias
   Congenital hip dysplasia
   Mucopolysaccharidoses,
   Ochronosis.
   Diabetes mellitus.

e) Group V synovial destructive of cartilage and bone
   Post inflammatory OA
   Post infection OA
   Haemophilic arthropathy
**PATHOLOGY**

The cardinal features are:

- Progressive cartilage destruction
- Sub articular cyst formation
- Sclerosis of the surrounding bone
- Osteophyte formation
- Capsular fibrosis
- Joint mice or loose bodies

The weight bearing joints such as hips, knee and vertebrae are most commonly involved but interphalangeal joints of fingers may also be affected.

Initially the cartilaginous and bony changes are confined to one part of the joint, the most heavily loaded part. There is softening and flaking or fibrillation, of the normally smooth and glistening cartilage. The term chondromalacic (Greek cartilage-softening) seems apt for this stage of the disease, but it is used only for the patellar articular surface where it features are one of the cause of anterior knee pain in young people.

With progressive disintegration of cartilage, the underlying bone becomes exposed and some of the areas may be polished, or burnished, to ivory like smoothness. Sometimes small tufts of fibro cartilage may be seen growing out of bony surface. At a distance from the damaged area the articular cartilage looks relatively normal, but at the edges of the joint there are bony excrescence covered by thin blush cartilage the osteophytes.

When the sub articular bone is cut through, this additional features come to light. Beneath the damaged cartilage the bone is dense and sclerotic. Often with in the area of subchondral sclerosis, and immediately subadjacent to the surface, are one or more cysts containing thick gelatinous material.

The joint capsule usually shows thickening and fibrosis, sometimes to extraordinary degree. The synovial lining, as a rule, looks only mildly
inflamed; at the same times, however, it is thick and red and covered by villi.

The histological appearance varies considerably, according to the degree of destruction. Early on, the cartilage shows small irregularities or splits in the surface, while in the deeper layers there is patching loss of metachromasia obviously corresponding to the depletion of matrix proteoglycans. Most striking however, is the increased cellularity and the appearance of clusters or clones of chondrocytes-20 or more to a patch. In later stages, the clefts become more extensive and in some areas cartilage is lost to the point where the underlying bone is completely denuded.

The subchondral bone is thickened and may show marked osteoplastic activity especially in the deeper aspect of any cyst. The cyst itself contains amorphous material; its origin is mysterious; it could arise from stress disintegration of small trabeculae from focal areas of osteonecrosis or from the forceful pumping of synovial fluid through cracks in the subchondral bone plate. As in all types of arthritis small areas of osteonecrosis are quite common. The osteophytes are seen to arise from the edge of the articular surface as bony outgrowth covered by hyaline cartilage.

The capsule and synovium are often thickened but cellular activity is slight however, some times there is marked inflammation or fibrosis of the capsular tissues.

A feature of osteoarthritis, which is difficult to appreciate from the morbid anatomy, is the marked vascularity and venous congestion of the subchondral bone.

This may be shown in angiographic studies and the demonstration of increased intraosseous pressure. It is also apparent from the intense activity around osteoarthritic joints on radionuclide scanning.
PATHOPHYSIOLOGY

STEPS IN ARTICULAR CARTILAGE BREAKDOWN IN OA

Repeated physical stresses

Surface collagen fatigue failure.

Slight cellular proliferation and matrix proteoglycan production. Collagen production.

+ 

Death of chondrocytes

Further cell damage

Release of cathepsins

Breakup and loss of proteoglycan and water

Loss of resiliency of cartilage

Fissures and fragmentation

External forces accelerate the catabolic effects of the chondrocytes and disrupt the cartilaginous matrix.

Enzymatic destruction increase cartilage degradation, which is accompanied by decreased proteoglycans and collagen synthesis. Changes in the proteoglycans render the cartilage less resistant to compressive forces in the joint and more susceptible to the effects of stress. Glycosaminoglycans are modified qualitatively and they become shorter as the cartilage ages. The concentration of type 6 keratan sulphate increase during aging, to the detriment of type 4 keratan sulphate.
The change in proteoglycans reduce the capacity of the molecules to retain water, which alters the biochemical properties of the cartilage. The decreased strength of the cartilage is compounded by adverse alterations of the collagen. Elevated levels of collagen degradation place excessive stresses on the remaining fibers, eventually leading to mechanical failure. The diminished elastic return and reduced contact area of the cartilage, coupled with the cyclic nature of joint loading, causes the situation to worsen over time.

Articular cartilage has an important role in distributing and dissipating the forces associated with joint loading. When it loses its integrity their forces are increasingly concentrated in the subchondral bone. This result in focal trabecular degeneration and cyst formation, as well as increased vascularity and reactive sclerosis in the zone of maximal loading.

Microscopically, flaking and fibrillations develop along the normally smooth articular cartilage surface. The loss of cartilage results in the loss of the joint space. Progressive erosion of the damaged cartilage occurs until the underlying bone is exposed. Bone denuded of its protective cartilage continues to articulate with the opposing surface. Eventually, the increasing stresses exceed the biomechanical yield of the strength of the bone. The subchondral bone responds with vascular invasion and increased cellularity becoming thickened and dense (eburnation) at areas of pressure.

Furthermore, the traumatized subchondral bone may undergo cystic degeneration, due to either osseous necrosis secondary to chronic impaction or the intrusion of synovial fluid. At nonpressure areas along the articular margin, vascularization of subchondral marrow, ossesous metaplasia of synovial connective tissue, and ossifying cartilaginous protrusions lead to irregular outgrowth of new bone (osteophytes). Fragmentation of these osteophytes or of the articular cartilage itself results in intra-articular loose bodies (joint mice).
Clinical Features:

Patients usually present after middle age. Joint involvement follows several different patterns; symptoms centre either weight bearing joints (Hip or Knee) or the interphalangeal joints (Especially in women) or on any joint that has suffered a previous application (Eg, congenital dysplasia, osteonecrosis or intra-articular fracture). A family is common in patients with polyarticular osteoarthritis.

Pain is the usual presenting symptom it is often quite wide spread, or it may be experienced at a distant site-for example, pain in the knee from osteoarthritis referred to the hip. It usually starts insidiously and increases slowly over months of years. It is aggravated by exertion and relieved by rest although with time relief is less and less completes. The pain is worst in bed at night, when the patient has difficulty finding at any position of comfort.

Causes of Pain:

Since articular cartilage is aneural, the joint pain in OA must arise from other structures.

- Due to stretching of nerve endings in the periosteum covering osteophytes.
- May arise from micro fractures in subchondral bone.
- From medullary hypertension caused by distortion of blood flow by thickened subchondral trabeculae.
- Stretching of joint capsule due to joint instability.
- Muscle spasm.
- Synovitis.

Palpation may reveal some warmth over the joint.

Periarticular muscle atrophy may be due to disease or due to reflex inhibition of muscle contraction.

In the advanced stages of OA, there may be gross deformity, bony hypertrophy subluxation and marked loss of joint motion.
## Causes of Pain in the Joints in Patients with OA:

<table>
<thead>
<tr>
<th>Source</th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synovium</td>
<td>Inflammation</td>
</tr>
<tr>
<td>Subchondral bone</td>
<td>Medullary Hypertension, Micro fractures.</td>
</tr>
<tr>
<td>Osteophyte</td>
<td>Stretching of periosteal Nerve endings.</td>
</tr>
<tr>
<td>Ligaments</td>
<td>Stretch.</td>
</tr>
<tr>
<td>Capsule</td>
<td>Inflammation, Distention.</td>
</tr>
<tr>
<td>Muscle</td>
<td>Spasm.</td>
</tr>
</tbody>
</table>

**Stiffness** is common: characteristically it occurs after periods of inactivity but with time it becomes constant and progressive.

**Swelling** may be intermittent (suggesting an effusion) or continuous with capsular thickening or large osteophytes.

**Deformity** may result from capsular contracture or joint instability but beware; it may have preceded and contributed to the onset of osteo arthritis.

**Loss of function** though not most dramatic, is often the most distressing symptom. A limp, difficulty in climbing stairs, restriction of walking distance, or progressive inability to perform everyday tasks or enjoy recreation may eventually drive the patient to seek help.

Typically, the symptoms of osteo arthritis follow an intermittent course with periods of remission sometimes lasting for moths.

Although the patient complaints of only one or two joints, examination may show that others are affected in varying degrees.
Swelling and deformity may be obvious in peripheral joints at the hip, deformity is usually marked by postural adjustments of the pelvis and spine. In long standing cases, there is muscle wasting. Tell-tale scars denote previous abnormalities. Local tenderness is common and in superficial joint fluid, synovial thickening or osteophytes may be felt.

Movement is always restricted, but is often painless within the permitted range; it may be accompanied by crepitus. Some movements are more curtailed than others; thus at the hip extension, abduction and internal rotation are usually the most severely limited.

In the late stages joint instability may occur for any of three reasons” loss of cartilage and bone; asymmetrical capsular contracture; and muscle weakness.

**OA at specific joint sites:**

**Erosive OA:**

Distal and /or proximal interphalangeal joints of the hands are most prominently affected. Erosive OA tends to be more destructive than typical nodal OA.

**Nodal generalized OA**

It is characterized by

- Polyarticular – interphalangeal joint (IPJ) OA
- Heberdens (± Bouchards) node
- Marked female preponderance
- Peak onset in middle age
- Good functional outcome for hands
- Predisposition to OA at other joint (especially at knee)
- Strong genetic predisposition.
**Age Group:**

Middle age women in forties or fifties.

**Symptoms:**

Pain, stiffness and swelling of one or few fingers IPJs.

Gradually over many months, more finger IPJs (distal > proximal) are recruited. Affected joints develop posterolateral swellings each side of the extensor tendon. They slowly enlarge and harden to become Heberden’s (distal IPJ) and Bouchard’s (proximal IPJ) node.

Typically each joint goes through a phase of episodic symptoms (1-5 years). While the node evolves and OA develops in the underlying IPJ.

Once fully established, however symptoms usually subside and hand function often remains relatively unimpaired. Affected IPJs often show characteristic lateral deviation reflecting the asymmetric focal cartilage loss of OA.

Involvement of first, carpometacarpal joint is also common. At this site marked osteophyte and subluxation may result in “thumb base squaring”. Thumb base OA occasionally causes more chronic symptoms and functional impairment than IPJ OA.

People who develop nodal OA are at increased risk of subsequently developing OA at other sites generalized OA especially at the knee.

Nodal generalized OA has a very strong genetic predisposition. Daughters of a affected mother has one in three chance of developing nodal OA. Nodal OA with multiple nodes and symptom onset in middle age. Others have a prolonged symptom phase and overt IPJ inflammation and IPJ instability in some fingers, with subchondral erosion on radiograph.
Thumb Base:

The second most frequent area of involvement of OA is the thumb base. Swelling, tenderness, and crepitus on movement of the joint are typical. Osteophytes may lead to a “squared” appearance of the thumb base.

The Hip:

Congenital or developmental defects (Eg. Acetabular dysplasia, slipped capital epiphysis) may be implicated in as many as 80 percent of cases of hip OA.

The Knee:

Main targets

i. Patello femoral compartment

ii. Medial tibiofemoral compartment

Trauma is important risk factor in men and is unilateral OA. In women OA is bilateral and symmetrical.

OA on the medial compartment may result in a varus, (bow-leg) deformity; in the lateral compartment it may produce a valgus (knock-knee) deformity. A positive “shrug” sign (pain when the patella is compressed manually against the femur during quadriceps contraction) may be a sign of patellofemoral OA.

Chondromalacia patellae, which is also characterized by anterior knee pain and a positive shrug sign, is a syndrome of patellofemoral pain, often bilateral, in teenagers and young adults. It is more common in females than in males. It may be caused by a variety of factors (e.g., abnormal quadriceps angle, patella alta, trauma). Although exploration of the knee may reveal softening and fibrillation of cartilage on the posterior aspect of the patella, this change is usually not progressive; chondromalacia patellae is usually not a precursor of OA.
**Symptoms:**

Knee OA pain is localised to the anterior and medial aspect of the knee and upper tibia.

Patello – femoral pain is worse in when they up and down stairs or inclines.

Posterior knee pain suggests a complicating popliteal cyst.

**Functional difficulties:**

Prolonged walking, rising from a chair, getting in and out of a car, or bending to put on shoes and socks.

**Local examination findings:**

- A jerky asymmetric antalgic gait – less time weight – bearing on the painful side.
- A varus, less commonly valgus and or fixed flexion deformity.
- Joint – line and or periarticular tenderness (secondary anserine bursitis and medial ligament enthesopathy are common, giving tenderness of the upper medial tibia).
- Weakness and wasting of the quadriceps muscle.
- Restricted flexion/extension with coarse crepitus.
- Bony swelling around the joint line.

It is at knee there is predisposition of calcium pyrophosphate dihydrate (CPPD) crystal deposition in OA, Crystal deposition results in over inflammatory component stiffness effusions and superadded acute attacks of synovitis.

These crystal deposition causes more radiographic progression and a worse clinical outcome.

OA of the knee may involve the medial or lateral femorotibial compartment and/or the patellofemoral compartment.
The Spine:

Degenerative disease of the spine can involve the apophyseal joint, intervertebral discs, and/or paraspinal ligaments. Symptoms of spinal OA include localized pain and stiffness. Nerve root compression by an osteophyte blocking a neural foramen, prolapse of a degenerated disc, or subluxation of an apophyseal joint may cause radicular pain and motor weakness.

**YOUNG – ONSET OA**

- <45 years of age
- Single joint
- Previous overt trauma

**Causes of young onset OA ie below 45 years**

**Mono – arthritis**

- Previous trauma
- Localised instability

**Pauci – articular or Poly articular**

- Prior joint disease (Juvenile idiopathic arthritis)
- Metabolic or Endocrine disease
- Late avascular necrosis
- Neuropathic joints
- Endemic OA.

**Imaging:**

**Radiological Appearances of OA**

1) **Joint Space Narrowing**

The width of the joint space seen radiologically is due to the radiolucent cartilage. Joint space narrowing is due to cartilage destruction often occurs in areas of excess weight bearing.
2) Joint Space Remodeling

Joint narrowing due to cartilage destruction and is followed by loss of underlying bone in stressed areas and formation of new bone and cartilage in nonstressed areas and at joint margins.

It is due to.

i. Stress induced new bone formation

ii. Trabecular collapse

iii. Flattening and sclerosis

3) New Bone Formation:

New bone found in areas of low stress at the joint margin leads to formation of -peripheral osteophytes or within the joint central osteophytes.

4) Loose Bodies:

It is formed by detachment of osteophytes or crumbling of articular surfaces or ossification of cartilage debris.

When OA results in pain and immobility, osteoporosis and soft tissue wasting may result secondarily.

Knee OA - Radiological Appearances

The bone commonly involved in OA is patella. Joint space narrowing, osteophytosis and articular irregularity can be seen at the patellofemoral compartment on the lateral and skyline views.

The lateral view also shows a scalloped defect of the anterior distal femur.

Spiking of tibial spines and osteophytes on the articular margins. Joint space narrowing affecting one or other compartments results in valgus or varus deformity, best seen in AP views, with gross buttressing osteophytes on the side of narrowing. Varus deformity is more common due to medial meniscus abnormality.
CT & MR1 findings

Osteophytes, erosions, and cysts are demonstrated well in C.T. investigation.

MRI Cartilage loss and subcartilagenous bone edema, cyst and necrosis are will demonstrated.

Loose bodies in the joint space and effusion are well demonstrated
Osteophytes are well shown.

Capsular thickening and plicae and extracapsular changes in collateral ligament and tendons are all probably better seen than by any other means.

Laboratory Findings:

No laboratory studies are diagnostic for OA, but specific laboratory testing may help in identifying one of the underlying causes of secondary OA. Because primary OA is not systemic, the erythrocyte sedimentation rate, serum chemistry determinations, blood counts, and urine analysis are normal. Analysis of synovial fluid reveals mild leukocytosis (<2000 white blood cells per microlitre), with a predominance of mononuclear cells. Synovial fluid analysis is of particular value in excluding other conditions, such as calcium pyrophosphate dehydrates (CPPD) deposition disease, gout, or septic arthritis.

Complications:

1. Capsular herniation: OA of the knee is sometimes associated with a marked effusion and herniation of the posterior capsule (Baker’s cyst).
2. Loosebodies: Cartilage and bone fragments may give rise to loose bodies, resulting in episodes of locking.
3. Rotator cuff dysfunction: OA of the acromio clavicular joint may cause rotator cuff impingement, tendonitis or cuff puncture.
4. Spinal stenosis: Long standing hypertrophic OA of the lumbar apophyseal joints may rise to acquire spinal stenosis.

5. Spondylolisthesis: In patients over 60 years of age, destructive OA of the apophyseal joints may result in severe segmental instability and spondylolisthesis (degenerative spondylolisthesis) which almost always occurs at L4, L5.

Clinical variants:

1. Monoarticular and pauciarticular OA:
   
   Underlying abnormality acetabular dysplasia, old perthe’s disease or slipped epiphysis, a previous fracture or damage to ligments or menisci.

2. Polyarticular OA:

   Pain, swelling and stiffness of the finger joints the first carpometocarpal and big toe metatarsophalangeal joints or the knees and lumbar facet joints may be affected.

   Long standing cases, osteophytes and soft tissue swelling produce a characteristic knobbly appearance of the distal inter phalangeal joints (Heberden’s node) and less often the proximal interphalangeal joints (Bouchard’s nodes).

3. Endemic OA:

   OA occasionally occurs as endemic disorder affecting entire communities. It may either due to some environmental factor peculiar to that region or to an underlying generalized dysplasia in a genetically isolated community.

4. Neuropathic joint disease (Charcot’s disease):

   The most destructive arthroplasty is that associated with lack of pain sensibility and position sense.
Differential Diagnosis of OA:

1. **Avascular Necrosis:**

   Idiopathic necrosis causes joint pain and local effusion. Early on the diagnosis is made by MRI. Once bone destruction occurs the X-ray changes can be mistaken for those of OA; The cardinal distinguishing features is that in osteonecrosis is the ‘point space’ (articular cartilage) is preserved in face of progressive bone collapse and deformity.

2. **Inflammatory Arthropathies:**

   RA, Ankylosing spondylitis and Reiter’s disease may start in one or two large joints. X-rays show a predominantly atrophic or erosive arthritis.

3. **Polyarthritis of the Fingers:**

   Polyarthritis OA may be confused with other disorders which affect the finger joints. ‘Nodal OA’ affects predominantly the distal joints, “Rheumatoid Arthritis” the proximal joints and “Psoriatic arthritis” is a purely destructive arthropathy and there are no inter phalangeal nodes. Tophaceous gout may cause knobbly fingers, but the knobs are tophi, not osteophytes.

**PROGNOSIS**

The prognosis in osteoarthritis is governed by the three factors.

1. The cause of the condition.
2. The joint affected.
3. The state of the cartilage.

**Management:**

The management of OA depends upon the joint involved, the stage of the disorder, the severity of the symptom, the age of the patient and his or her functional needs.
TREATMENT FOR OSTEO ARTHRITIS

In planning treatment, three observations should be borne in mind.

1. **Symptoms** characteristically wax and wane and pain may subside spontaneously for a long period.

2. Some forms of Osteo arthritis (e.g. Herberden's nodes) actually become less painful with the passage of time and the patient may need no more than reassurance and a prescription for pain killers.

3. At the other extreme, the recognition (from serial X-rays) that the patient has a rapidly progressive type of Osteo arthritis may warrant an early move to reconstructive surgery before bone loss comprises the outcome of any operation.

**Early Treatment:**

**Aims of Treatment**

1. To control pain

2. To prevent further strain or damage to affected joints.

3. To improve movements

4. To improve muscle power

5. To maintain or improve functional independence

6. To reduce load

7. Modify daily activities.

**Conservative Treatment:**

1. **Pain Relief:** Analgesics and non-steroidal anti-inflammatory agents may control pain for many years. Cut overmedication with powerful anti-inflammatory drugs must be avoided there is some evidence that it may accelerate articular destruction. Measures to provide local warmth usually
give only short-lived relief. Rest periods and modification of activities may be necessary.

**Rest:** The involved joints are rested to reduce compression and shear stresses and allow the synovial inflammation to subside.

2. **Range of motion:** The joint is moved through a full range of motion several times daily to prevent capsular contraction.

3. **Load reduction:** Protecting the joint from excessive load may slow down the rate of cartilage loss. Measures such as weight reduction for obese patients, wearing shock-absorbing shoes, avoiding activities like climbing stairs and using a walking stick will pay excellent dividends.

4. **Traction:** Traction is used slowing the acute inflammatory phase, particularly of a weight bearing joint. To separate the joint surfaces and to stretch the contracted capsule until the inflammation subsides.

5. **Physical therapy:** Moist heat is followed by massage and range of motion exercises, both passive and active. Painful Heberden’s nodes are aided by plain hot water soaks or paraffin applications.

6. **Cold:** The application of cold is often more effective than heat. Ice packs or ice techniques are useful.

7. **Body mechanics:** Good body mechanics is aided by eliminating faulty posture, applying shoe supports, and performing graduated exercises of all joints.

8. **Orthopaedic appliances:** A removable plaster splint secures rest and permits daily physical therapy. An ordinary elastic bandage applied around the affected joint restricts the extremes of motion while permitting a little use.

9. **Ultra sound:** This is indicated when pain is centered on periarticular soft tissues.
10. **X-ray therapy:** This is supposedly acts by reducing inflammation and minimizing scar tissue formation.

11. **Warm, Dry climate.**

12. **Metallization:** A programme of exercise is important. Early on, pain is felt mainly at the extremes of movement, and so increasing the range (by exercise or gentle manipulation) reduces capsular strain.

13. **Intermediate:** If symptoms and signs increase then at some joint (chiefly the hip and knee) realignment osteotomy should be considered. It must be done while the joint is still stable and mobile and X-rays show that a major part of the joint space is preserved.

   Pain relief is often dramatic and is ascribed to 1) Vascular decompression of the subchondral bone and 2) Redistribution of loading forces towards less damaged parts of the joint. After femoral astronomy, fibro cartilage may grow to cover exposed bone.

14. **Late:** Progressive joint destruction, with increasing pain, instability and deformity (particularly of one of the weight bearing joints), usually requires reconstructive surgery- Arthrodesis is indicated if the stiffness is acceptable and neighbouring joints are not likely to be prejudiced. With arthroplasty timing is essential. Too early, and the odds against a durable result lengthen in proportion to the demands of strenuous activity and time; to late, and bone destruction, deformity, stiffness and muscle atrophy make the operation more difficulty and the result more unpredictable. In neuropathic joint disease the underlying condition may need treatment but the affected joint cannot recover. They should be stabilized by external splint (eg. Caliper or brace) operation is seldom advised.
MANAGEMENT OF KNEE OSTEO ARTHRITIS:

Active exercises concentrating on establishing full extension of the joint are important.

STRENGTHENING OF MUSCLES:

Quadriceps muscles particularly vastus medialis, on which strengthening be concentrated. This can be achieved by using progressive resistance on land in water.

GAIT RE-EDUCATION:

The gait should be analysed and corrected as required. Walking aids may be needed and the patient should be trained in their correct use. If both the knees are affected two sticks will be needed and the patient taught to use them as a normal four point gait pattern; if only one knee is affected then a single stick used in the opposite hand is sufficient.

Gait re-education includes management of stairs, slopes, standing to sitting and bed to chair transfers. Postural awareness needs to be stimulated and the patient encouraged assuming a more efficient posture.

In severe cases it may be necessary to provide some form of orthosis. If external splintage is used particular attention must be paid to the maintenance of the quadriceps muscle strength.

Other Useful Approaches in the management of Osteo Arthritis of Hip and Knee joints.

Simple changes around the home and daily activities causes dramatic improvement in the symptomatology of osteo arthritis. The following are some of the measures.

1. Use of higher chair which require less effort to get in and get out should be considered.
2. Patients are advised to climb the stairs leading the good leg taking one stair leading with the bad leg, again taking one stair at a time.

3. To reduce the force acting across, the injured joint, the patient is advised to use a walking stick which acts as a third limb.

4. Foot wear with hard soles and high heels should be avoided.

5. Reduction in overweight helps to reduce the load on the joints.

6. General advice when standing.
   - Keep as upright as possible as this helps to put equal weight on both the legs.
   - Avoid sitting on a low or soft chair.
   - To avoid uneven and rough ground or surfaces while walking.

Exercises in the Management of OA of Hip and Knee.

Aims:
- To increase the range of movements.
- To increase stability and shock absorption.
- To prevent deformity.
- To improve posture.
- To reduce pain and stiffness.

Rules:
- Build up the exercises gradually.
- Avoid rough ground while exercising.
- To take warm baths before starting the exercises.
- To perform the exercises 20 times, each twice a day and later four times a day.
Exercises Lying on the Back:

1. **Pelvic Tilt**: Tighten the thigh and buttock muscles, pushing the knees flat, hold for a count of five and then relax.

2. **Pelvic Lift**: Bend both the knees up, push on the feet and lift, hold for a count of five and then relax.

3. **Leg Stretch**: Push one leg along the floor as though you are trying to make it longer than the other hold for a count of five and then repeat with the other leg.

4. **Alternate Leg Raising**: Keeping the knees straight, lift alternate legs six inches from the ground.

Exercises lying on your side, with the Painful Hip up:

1. **Side Leg Raising**: Keep the top leg straight and lift it up as high as possible, hold for a count of five and then relax.

2. **Knee and Hip Flexion**: Bend the hip and knee of the top leg forwards, and hold for a count of five. Then straighten the leg and stretch backwards as far as it will go, hold for a count of five, then relax.

Exercises in Sitting Posture:

1. **Knee Together, Feet Apart**: Keep the knees together and move the feet apart, hold for a count of five then relax.

2. **Feet Together, Knees Apart**: Keep the ankles together and move the knees apart, then relax.

Exercises in Standing Posture:

1. **Standing Leg Swing**: Hold into a table or chair with one hand, swing one leg forward and backward. Try to get the backwards swing as wide as possible.

2. **Standing Side Leg Swing**: Hold on to a chair with both hands. Swing the leg out as far as it will go and then in. The outward swing is the hardest part and the leg should be allowed to fall back under muscular control.
MATERIALS AND METHODS

The study of Azhal Keel vayu was carried out during the year 2006 - 2009 at Post Graduate Department of Sirappu Maruthuvam, Government Siddha Medical College and Hospital, Palayamkottai.

The cases were selected from the Post-graduate out patient department (Sirappu-Maruthuvam) according to the signs and symptoms mentioned in the siddha literature.

Selection of the Cases:

Certain criteria were followed for the selection of the patients for admission.

Selection Criteria:

1. Affection of any one of the major joints with or without swelling.
2. Marked stiffness of the joint.
3. Restricted movements.
4. Crepitation present in the affected joints.

According to the above criteria Fifty five Cases were treated. Among them Thirty Cases were admitted for this study from both sexes of various age groups and Twenty Five Cases were treated as out patients. Priority for admission was given according to the clinical findings. The most of the signs and symptoms of Azhal Keel vayu correlated with the osteoarthritis in modern system of medicine. Conducting all necessary investigations in siddha as well as modern medicine were made to firm the diagnosis.

In siddha system the following aspects were taken into consideration.

1. Mukkutra Nilaigal
2. Ennvagai thervugal
3. Udal Kattugalin Nilaigal
4. Neerkuri, Neikuri
5. Paruva Kaalangal
6. Thinaigal

The following investigations were done in Modern medicine aspect.

HAEMATOLOGICAL INVESTIGATIONS:

a) Total WBC count.
b) Differential WBC Count.
c) Erythrocyte Sedimentation Rate.
d) Haemoglobin percentage.
e) Blood sugar.
f) Blood urea.
g) Serum cholesterol.

URINE ANALYSIS:

a) Albumin.
b) Sugar.
c) Deposits.

STOOLS EXAMINATIONS:

a) Ova.
b) Cyst.
c) Occult blood.

SPECIAL INVESTIGATIONS:

X-ray of the affected joint.

Selection of the drugs:

Selections of the drugs were made after the in-depth study of various siddha literatures.

The test drugs:

Nannariver Choornam (internal)
Sangan kuppi ver ennai (external)
NANNARIVER CHOORNAM: 1gm three times a day with white sugar for internal use.

SANGAN KUPPI VER ENNAI:

This oil was given only for external use on the affected joints.

The day before the study started, Vellai Ennai – 15ml was given at early morning as a mild purgative to all the patients.

The drugs selected for the study were subjected to the Pharmacological and Bio-chemical analysis.

Pharmacological analysis was done at the Department of Pharmacology, and Bio-chemical analysis was done at the Department of Biochemistry, Govt. Siddha Medical College, Palayamkottai.

All the patients admitted for the study were given uniformly regular hospital diet.

During discharge all the patients were advised to attend the out patient Department of Sirappu Maruthuvam, Post-Graduate Govt. Siddha Medical College Hospital, Palayamkottai for the further follow-up.
RESULTS

![Bar chart showing percentage results for Remarkable, Moderate, and No progress categories. The chart indicates a significant percentage in the Remarkable category, moderate in the Moderate category, and a lower percentage in the No progress category.](image-url)
RESULTS AND OBSERVATIONS

Results were observed with respect to the following criteria:

1. Sex distribution
2. Age distribution
3. Kaalam
4. Paruva Kaalam
5. Thinai
6. Duration of the illness
7. Socio-economic status
8. Occupational status
9. Diet references
10. Precipitating factors
11. Prevalent sites
12. Clinical features
13. Mode of onset
14. Thridosa theory
15. Udal Kattugal
16. Ennvagai thervugal
17. Nei Kuri
18. Yakkai Ellakkanam
19. Gunam reference
20. Result

1. SEX DISTRIBUTION:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Sex</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Male</td>
<td>7</td>
<td>35%</td>
</tr>
<tr>
<td>2.</td>
<td>Female</td>
<td>13</td>
<td>65%</td>
</tr>
</tbody>
</table>

Among 20 cases, 7 were males and 13 were females.
2. AGE DISTRIBUTION:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Age</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>21-30</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>31-40</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>41-50</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>4.</td>
<td>51-60</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>5.</td>
<td>61-70</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td>6.</td>
<td>71 and above</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Most of the cases were above the age group of 60. No one was reported below the age group of 40 during the study.

3. KAALAM:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Kaalam</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vatham (0-33yrs)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Pitham (34-66yrs)</td>
<td>17</td>
<td>85%</td>
</tr>
<tr>
<td>3.</td>
<td>Kapham (67-100yrs)</td>
<td>3</td>
<td>15%</td>
</tr>
</tbody>
</table>

Most of the cases 85% were in Pitha Kaalam and the rest were reported in Kapha Kaalam.

No cases were reported in Vatha Kaalam.
4. PARUVA KAALAM:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Paruvakaalam</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kaar</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>(Aavani, Purattasi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Aug16-Oct15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Koothir</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>(Iypasi, Karthigai)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oct16-Dec15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Munpani</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Margali, Thai)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Dec16-Feb15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Pinpani</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Masi, Pankuni)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Feb16-Apr15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Elavenil</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>(Chithirai, Vaikasi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Apr16-June15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Muthuvenil</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>(Aani, Aadi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(June16-Aug15)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The maximum incidence of Azhal Keelvayu was during the Elavenil Kaalam. No cases were reported in Munpani and Pinpani Kaalam.
5. THINAI (PLACE):

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Thinai</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kurinji (Hill area)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Mullai (Forest area)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Marutham (Fertile area)</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>4.</td>
<td>Neithal (Coastal area)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Paalai (Desert area)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Among the 20 cases, all the cases were belonged to Marutha nilam. It does not correlate with siddha literature.

6. DURATION OF THE DISEASE SUFFERINGS:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Duration (Months)</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0-3</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>2.</td>
<td>3-6</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>3.</td>
<td>6-12</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>4.</td>
<td>12-24</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>5.</td>
<td>24-36</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>6.</td>
<td>36 and above</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Among the 20 cases, most of them had the duration of the illness 3 months and above.
7. 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>Poor</td>
<td>14</td>
<td>70%</td>
</tr>
<tr>
<td>2.</td>
<td>Middle class</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>3.</td>
<td>Rich</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

According to this study 70% of the cases were poor socio-economic status, 30% cases were from middle class families.

8. OCCUPATIONAL STATUS:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Nature of Work</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agriculturist</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td>2.</td>
<td>Manual labour</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>3.</td>
<td>House Wife</td>
<td>7</td>
<td>35%</td>
</tr>
</tbody>
</table>

Occupational status shows agriculturists and house wife’s were more affected.

9. DIET REFERENCE:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Diet Habit</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vegetarian</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>2.</td>
<td>Mixed diet</td>
<td>14</td>
<td>70%</td>
</tr>
</tbody>
</table>

30% cases were Vegetarian diet, 70% cases were mixed diet.
10. TABLE SHOWING PRECIPITATING FACTORS:

<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>3</td>
<td>15%</td>
</tr>
<tr>
<td>2.</td>
<td>Over use of the joint</td>
<td>11</td>
<td>55%</td>
</tr>
<tr>
<td>3.</td>
<td>Over Weight</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>4.</td>
<td>Trauma</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Among the 20 patients 3 (15%) of them showed exposure to cold as a precipitating factor and 11 of them (55%) had the history of over use of the joint. 5 of them (25%) were over weight and 1 of them (5%) were Trauma.

11. TABLE SHOWING PREVALENCE OF THE JOINT AFFECTION:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Affected joint</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Knee (Both)</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Ankle (Both)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Shoulder</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>4.</td>
<td>Hip</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Among the 20 patients in the In-patients ward all the 20 cases (100%) had affection of the Knee joints. Shoulder and Hip each one case (5%) had affected.
12. TABLE SHOWING CLINICAL FEATURES:

<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, tenderness</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Swelling</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>3.</td>
<td>Morning stiffness</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>4.</td>
<td>Crepitations</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>5.</td>
<td>Local heat</td>
<td>9</td>
<td>45%</td>
</tr>
<tr>
<td>6.</td>
<td>Constipation</td>
<td>15</td>
<td>75%</td>
</tr>
<tr>
<td>7.</td>
<td>Loss of appetite</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>8.</td>
<td>Temperature</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>9.</td>
<td>Limited Movements</td>
<td>18</td>
<td>90%</td>
</tr>
</tbody>
</table>

Among the twenty cases all of them had pain, tenderness, morning stiffness and crepitation. 75% of the patients had constipation and highly painful limited movements.
Measurement of swelling at joint line (Knee) in cm

<table>
<thead>
<tr>
<th>S.No</th>
<th>Patient Name</th>
<th>Age/Sex</th>
<th>IP No</th>
<th>Before Treatment</th>
<th>After Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Right</td>
<td>Left</td>
</tr>
<tr>
<td>1</td>
<td>Dhasan</td>
<td>55/M</td>
<td>1072</td>
<td>35</td>
<td>33</td>
</tr>
<tr>
<td>2</td>
<td>Pappammal</td>
<td>45/F</td>
<td>1240</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>3</td>
<td>Peatchiammal</td>
<td>63/F</td>
<td>1287</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>Thenammal</td>
<td>55/F</td>
<td>1297</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>5</td>
<td>Shanmugam</td>
<td>64/M</td>
<td>1313</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>6</td>
<td>Rathinam</td>
<td>60/F</td>
<td>1401</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>Sumathi</td>
<td>65/F</td>
<td>1581</td>
<td>45</td>
<td>43</td>
</tr>
<tr>
<td>8</td>
<td>Isakhi</td>
<td>70/M</td>
<td>2025</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>9</td>
<td>Pappathi</td>
<td>72/F</td>
<td>2751</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>10</td>
<td>Kaliammal</td>
<td>42/F</td>
<td>2803</td>
<td>36</td>
<td>33</td>
</tr>
</tbody>
</table>

Radiological Findings:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Findings</th>
<th>NO of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joint Space narrowing</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>Inter condylar notch prominence</td>
<td>9</td>
<td>45%</td>
</tr>
<tr>
<td>3</td>
<td>Osteophytes</td>
<td>16</td>
<td>80%</td>
</tr>
<tr>
<td>4</td>
<td>Subchondral Sclerosis</td>
<td>14</td>
<td>70%</td>
</tr>
<tr>
<td>5</td>
<td>Osteoporosis</td>
<td>15</td>
<td>75%</td>
</tr>
<tr>
<td>6</td>
<td>Deformity</td>
<td>4</td>
<td>20%</td>
</tr>
</tbody>
</table>

Joint Space narrowed in all cases (100%), Osteophytes present in 16 cases (80%), Osteoporosis present in 15 cases (75%), deformity present in 4 cases (20%), Subchondral sclerosis present in 14 cases (70%). Intercondylar notch prominence present in 9 cases (45%).
b) Tenderness at joint line (Knee)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Patient Name</th>
<th>Age / Sex</th>
<th>IP.No</th>
<th>Before Treatment in Grades</th>
<th>After Treatment in Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dhasan</td>
<td>55/M</td>
<td>1072</td>
<td>II</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>Muppidathi</td>
<td>50/M</td>
<td>1230</td>
<td>I</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>Pappammal</td>
<td>45/F</td>
<td>1240</td>
<td>II</td>
<td>Nil</td>
</tr>
<tr>
<td>4</td>
<td>Petchiammal</td>
<td>63/F</td>
<td>1287</td>
<td>III</td>
<td>II</td>
</tr>
<tr>
<td>5</td>
<td>Thenammal</td>
<td>55/F</td>
<td>1297</td>
<td>I</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>Shanmugam</td>
<td>64/M</td>
<td>1313</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>7</td>
<td>Padmavathi</td>
<td>56/F</td>
<td>1323</td>
<td>I</td>
<td>Nil</td>
</tr>
<tr>
<td>8</td>
<td>Rathinam</td>
<td>60/F</td>
<td>1401</td>
<td>II</td>
<td>I</td>
</tr>
<tr>
<td>9</td>
<td>Sumathi</td>
<td>65/F</td>
<td>1581</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>10</td>
<td>Esakhiyammal</td>
<td>63/F</td>
<td>1596</td>
<td>II</td>
<td>I</td>
</tr>
<tr>
<td>11</td>
<td>Muthammal</td>
<td>60/F</td>
<td>1600</td>
<td>II</td>
<td>Nil</td>
</tr>
<tr>
<td>12</td>
<td>Chidampparathamal</td>
<td>55/F</td>
<td>1601</td>
<td>I</td>
<td>Nil</td>
</tr>
<tr>
<td>13</td>
<td>Vanitha</td>
<td>50/F</td>
<td>1632</td>
<td>II</td>
<td>I</td>
</tr>
<tr>
<td>14</td>
<td>Esakhi</td>
<td>70/M</td>
<td>2025</td>
<td>III</td>
<td>II</td>
</tr>
<tr>
<td>15</td>
<td>Saroja</td>
<td>45/F</td>
<td>2205</td>
<td>I</td>
<td>Nil</td>
</tr>
<tr>
<td>16</td>
<td>Iyappan</td>
<td>55/M</td>
<td>2231</td>
<td>I</td>
<td>Nil</td>
</tr>
<tr>
<td>17</td>
<td>Latheep</td>
<td>65/M</td>
<td>2276</td>
<td>III</td>
<td>II</td>
</tr>
<tr>
<td>18</td>
<td>Subbiah</td>
<td>70/M</td>
<td>2290</td>
<td>III</td>
<td>II</td>
</tr>
<tr>
<td>19</td>
<td>Pappathi</td>
<td>72/F</td>
<td>2751</td>
<td>III</td>
<td>II</td>
</tr>
<tr>
<td>20</td>
<td>Kalliyammal</td>
<td>42/F</td>
<td>2803</td>
<td>I</td>
<td>Nil</td>
</tr>
</tbody>
</table>

Assessment of joint tenderness

Grade I : The patient says the joint is tender
Grade II : The patient winces
Grade III : The patient winces and withdraws the affected part
Grade IV : The patient will not allow the joint to be touched.
### Body Mass Index of in Patients

BMI = Weight in kg/(Height in meters)²

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Name</th>
<th>IP NO</th>
<th>Age</th>
<th>Sex</th>
<th>Wt in kg</th>
<th>Ht in m</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dhasan</td>
<td>1072</td>
<td>55</td>
<td>M</td>
<td>55</td>
<td>1.6</td>
<td>20.6</td>
</tr>
<tr>
<td>2</td>
<td>Muppidathi</td>
<td>1230</td>
<td>50</td>
<td>M</td>
<td>65</td>
<td>1.72</td>
<td>23.2</td>
</tr>
<tr>
<td>3</td>
<td>Pappammal</td>
<td>1240</td>
<td>45</td>
<td>F</td>
<td>69</td>
<td>1.6</td>
<td>26.9</td>
</tr>
<tr>
<td>4</td>
<td>Petchiammal</td>
<td>1287</td>
<td>63</td>
<td>F</td>
<td>58</td>
<td>1.51</td>
<td>24.1</td>
</tr>
<tr>
<td>5</td>
<td>Thenammal</td>
<td>1297</td>
<td>55</td>
<td>F</td>
<td>53</td>
<td>1.55</td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>Shanmugam</td>
<td>1313</td>
<td>64</td>
<td>M</td>
<td>66</td>
<td>1.7</td>
<td>25.2</td>
</tr>
<tr>
<td>7</td>
<td>Padmavathi</td>
<td>1323</td>
<td>56</td>
<td>F</td>
<td>61</td>
<td>1.56</td>
<td>26.7</td>
</tr>
<tr>
<td>8</td>
<td>Rathinam</td>
<td>1401</td>
<td>60</td>
<td>F</td>
<td>65</td>
<td>1.5</td>
<td>26.7</td>
</tr>
<tr>
<td>9</td>
<td>Sumathi</td>
<td>1581</td>
<td>65</td>
<td>F</td>
<td>62</td>
<td>1.49</td>
<td>26.9</td>
</tr>
<tr>
<td>10</td>
<td>Eshakiammal</td>
<td>1596</td>
<td>63</td>
<td>F</td>
<td>51</td>
<td>1.5</td>
<td>22.6</td>
</tr>
<tr>
<td>11</td>
<td>Muthammal</td>
<td>1600</td>
<td>60</td>
<td>F</td>
<td>56</td>
<td>1.52</td>
<td>24.8</td>
</tr>
<tr>
<td>12</td>
<td>Chidampparathammal</td>
<td>1601</td>
<td>55</td>
<td>F</td>
<td>52</td>
<td>1.6</td>
<td>21.6</td>
</tr>
<tr>
<td>13</td>
<td>Vanitha</td>
<td>1632</td>
<td>50</td>
<td>F</td>
<td>68</td>
<td>1.58</td>
<td>27.3</td>
</tr>
<tr>
<td>14</td>
<td>Eshaki</td>
<td>2025</td>
<td>70</td>
<td>M</td>
<td>62</td>
<td>1.66</td>
<td>22.5</td>
</tr>
<tr>
<td>15</td>
<td>Saroja</td>
<td>2205</td>
<td>45</td>
<td>F</td>
<td>52</td>
<td>1.52</td>
<td>22.6</td>
</tr>
<tr>
<td>16</td>
<td>Iyyappan</td>
<td>2231</td>
<td>55</td>
<td>M</td>
<td>57</td>
<td>1.64</td>
<td>21</td>
</tr>
<tr>
<td>17</td>
<td>Latheep</td>
<td>2276</td>
<td>65</td>
<td>M</td>
<td>68</td>
<td>1.75</td>
<td>22.1</td>
</tr>
<tr>
<td>18</td>
<td>Subbiah</td>
<td>2290</td>
<td>70</td>
<td>M</td>
<td>60</td>
<td>1.64</td>
<td>2.3</td>
</tr>
<tr>
<td>19</td>
<td>Pappathi</td>
<td>2751</td>
<td>72</td>
<td>F</td>
<td>52</td>
<td>1.58</td>
<td>21.6</td>
</tr>
<tr>
<td>20</td>
<td>Kaliammal</td>
<td>2803</td>
<td>42</td>
<td>F</td>
<td>53</td>
<td>1.55</td>
<td>22.4</td>
</tr>
</tbody>
</table>

**Normal BMI**
- In Males 20 to 24.9
- In Females 18 to 24.9

**Overweight**
- 25 to 29.9

**Obesity**
- More than 30.
13. ONSET OF DISEASE:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Mode of onset</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sudden</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Gradual</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

According to this study, 100% of cases were reported gradual onset of disease.

14. DISTRIBUTION OF THRIDOSA:

a. Table showing the derangement of vatham:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Vatham</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pranan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Abanan</td>
<td>15</td>
<td>75%</td>
</tr>
<tr>
<td>3.</td>
<td>Viyanan</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>4.</td>
<td>Uthanan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Samanan</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>6.</td>
<td>Naagan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Koorman</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>8.</td>
<td>Kirukaran</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9.</td>
<td>Devathathan</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>10.</td>
<td>Dhananjeyan</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Both Viyanan and Samanan were affected in all the twenty cases (100%).
Abanan was affected in 15 cases (75%).
Devathathan was affected in 10 cases (50%).
Koorman was affected in 5 cases (25%).
b. Table showing the derangement of Pitham:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Pitham</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Analapitham</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>2.</td>
<td>Ranjagam</td>
<td>7</td>
<td>35%</td>
</tr>
<tr>
<td>3.</td>
<td>Saathagam</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>4.</td>
<td>Prasagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Alosagam</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Saathagam was affected in 20 cases (100%)

Analapitham was affected in 10 cases (50%).

Ranjagam was affected in 7 cases (35%).

c. Table Showing the Derangement of Kapham:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Kapham</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>10</td>
<td>50%</td>
</tr>
<tr>
<td>3.</td>
<td>Pothagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Tharpagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Santhigam</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

In all the 20 cases (100%) Avalambagam and Santhigam were affected.

Kilethagam was affected in 10 cases (50%).
15. TABLE SHOWING THE CONDITION OF UDAL KATTUGAL:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Udal Kattugal</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Saaram</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Senneer</td>
<td>7</td>
<td>35%</td>
</tr>
<tr>
<td>3.</td>
<td>Oon</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>4.</td>
<td>Kozhuppu</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Enbu</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>6.</td>
<td>Moolai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Venneer/Suronitham</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In all the cases Saaram and Enbu were affected (100%).

Senneer was affected in 7 cases (35%).

Oon was affected in 5 cases (25%).

16. ENNVAGAI THERVUGAL:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Ennvagai thervugal</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Naadi</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Sparisam</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>3.</td>
<td>Naa</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>4.</td>
<td>Niram</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Mozhi</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Vizhi</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>7.</td>
<td>Malam</td>
<td>15</td>
<td>75%</td>
</tr>
<tr>
<td>8.</td>
<td>Moothiram</td>
<td>3</td>
<td>15%</td>
</tr>
</tbody>
</table>

Naadi was affected in all the cases, 12 cases (60%) were Pitha vatha Naadi, 4 cases (20%) were Vathapitha naadi, 4 cases (20%) were vatha naadi. Sparisam was affected in 20 cases (100%).

Naa was affected in 12 cases (60%), Vizhi was affected in 5 cases (25%). Malam was affected in 15 cases (75%) and Moothiram was affected in 3 cases (15%).
17. NEIKURI:

Among the 20 cases, the Neikuri result was observed as follows:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Neikuri</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Spreading like a snake</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>2.</td>
<td>Spreading like a ring</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>3.</td>
<td>Spreading like a pearl</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Combined of ring and snake</td>
<td>10</td>
<td>50%</td>
</tr>
</tbody>
</table>

18. YAKKAI ELLAKKANAM (PHYSICAL CONSTITUTION):

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Yakkai Ellakkanam</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vatha udal</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>2.</td>
<td>Pitha udal</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>3.</td>
<td>Kapha udal</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>4.</td>
<td>Thontha udal</td>
<td>12</td>
<td>60%</td>
</tr>
</tbody>
</table>

Among the 20 cases, the majority were of Thontha udal.

19. GUNAM (QUALITY AND CHARACTERS):

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Gunam</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sathuva Gunam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Rajo Gunam</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>3.</td>
<td>Thamo Gunam</td>
<td>14</td>
<td>70%</td>
</tr>
</tbody>
</table>

Most of the cases had Thamo gunam.
20. RESULTS:

ASSESSMENT OF EFFECT OF THERAPHY

Remarkable Effect

No longer any clinical manifestations.
Patient could work and live normally
No recurrence after some months.

Moderate Effect

Marked reduction of manifestations.
Slight pain after movement

Poor Effect

Slight reduction in the clinical manifestation
With relapse

<table>
<thead>
<tr>
<th>Effect of therapy</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarkable</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>Moderate</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td>No progress</td>
<td>2</td>
<td>10%</td>
</tr>
</tbody>
</table>

Observation:

70% of the cases showed good prognosis clinically. The results were based on the clinical improvements, the author had tried not only medicines but also recommended yoga therapy.
DISCUSSION

Azhal Keel vayu is one of the major bony joint problems i.e. really the movable joints affected which makes the elder people most troublesome especially. The disease Azhal Keel vayu as explained in Siddha system of medicine has got close resemblance with that of osteoarthritis of modern system of medicines in conservation as well as clinical importance.

The drugs used to treat this disease were Nannariver Choornam internally and Sangan kuppi ver ennai externally. This study is a trial to throw light the role of the drugs in all aspects in the management of the disease.

Thirty cases of Azhal Keel vayu were admitted in the In-patient ward who was diagnosed clinically on the basis of signs and symptoms described in the text “Siddha Maruthuvam”. The clinical diagnosis was made confirmed by means of other siddha aspects of examinations. Out of twenty five cases, in the out-patient ward, twenty were selected for this study.

Sex Distribution:

Among the twenty cases, 7 (35%) were male and 13(65%) were female patients. It shows that females are more affected than males.

Age Distribution:

According to this study most of the patients were above the age of 50. Only 4 (20%) were reported in between the age group of 40 to 50.

No one was reported below the age of 40 during the study.

This confirms the degenerative process of this disease.

Prevalence of Affecting the Joints:

In Azhal Keelvayu the hallmark is involvements of articular joints. The involvement of the ailment was mostly found out in the knee joints.
**Duration of the Illness:**

According to this study the duration of the illness varied from 3 months to 3 years. Naturally, this disease is a chronic one unless any history of trauma. Because, this disease as already told, a slow, progressive disorder most probably encouraging degenerative condition.

**Socio-economic Status:**

Among the 20 cases were selected for this study, 14 cases (70%) were poor class and only 6 cases (30%) were middle class family.

**Diet Reference:**

According to this study 14 cases (70%) had mixed diet habits.

**Occupation Status:**

According to this study, the 8 cases (40%) were agriculturists.

**Precipitating Factors:**

According to this study exposure to cold, excessive use of the knee joint and obesity were played major roles.

**Clinical Manifestation:**

Among the twenty cases, all of them had pain, tenderness, morning stiffness, crepitation etc, most of them were reported with mild swelling, slightly restricted movements, loss of appetite and habitual constipation.

**Paruva Kaalam:**

In the disease of keel vayu, being a vadha disease according to many siddha literatures, vadham gets vitiiated in munpani kaalam. Here the higher incidence of the disease was in the same above mentioned Elavenil Kalam (8 cases) next to that is Muthuvenil Kalam (5 cases), Kaar Kalam (5 cases), Koothir Kalam (2 cases) and there is no cases in Munpani and Pinpani Kalam.

**Thinai:**

In this study it was observed that all of the cases were from Marutha Nilam.
**Disturbance in Vatham:**

In the twenty cases, in all of them (100%) Viyanan and Samanan were affected. Abanan was affected in 15 (75%) cases. Devathathan was affected in 10 cases (50%). Koorman was affected in 6 cases (30%).

**Disturbance in Pitham:**

Saathaga Pitham was affected in all cases. Ranjaga Pitha was affected in 35% cases. Anal Pitham was affected in 50% cases.

**Disturbance in Kapham:**

According to this study Avalambagam and Santhiga Kapham was affected in all the cases (100%). Kilethagam was affected in 10 (50%) cases.

**Udal Kattugal:**

Among the Seven Udal Kattugal, Saaram and Enbu were affected in all cases. Senneer was affected in 7 (35%). Oon was affected in 5 cases (25%).

**Gunam:**

According to this study, 14 cases (70%) had Thamo gunam and 6 cases had Rajo gunam.

**Yakkai Ellakkanam:**

Among the 20 cases, majority 60% of them had Thontha Udal, 20% of them had vatha Udal, 15% of them had Pitha Udal and 5% of them had Kabha Udal.

**Ennvagai thervugal:**

According to this study, in Ennvagai thervugal, Naadi was affected in all the cases (100%), Naa was affected in 12 cases (60%). Sparism was affected in 20 cases (100%). Vizhi was affected in 6 cases (30%). Malam was affected in 15 cases (75%) and Moothiram was affected in 3 cases (15%).

**Neikuri:**

Among the 20 cases, 75% of the cases showed Vatha pitha neer. Remaining 25% showed Pitha vadha kalappu neer.
Laboratory Investigation:

The available laboratory investigations were done in the Govt. Siddha Medical College, Palayamkottai. Routine examination of blood, urine and stools were done during the admission and discharge. Examination of urine and stools showed no abnormalities. In the blood 7 (35%) of the cases had decreased Hb%, Blood sugar, Blood urea, Serum cholesterol were also done in Bio-chemistry department, Government Siddha Medical College, Palayamkottai. All the shown values have been recorded in the Investigation table. In all the cases X-rays showed osteophytic changes and marginal erosion.

Results:

Among the 20 cases, 10 cases (50%) showed good relief, 8 cases (40%) showed moderate relief. And 2 cases (10%) showed No progress only. The results were based on the clinical improvements.
SUMMARY

1. Fifty Five cases of Azhal Keelvayu, diagnosed clinically. Out of them Thirty Cases were admitted in the in-patient PG Sirappu Maruthuvam Ward, Govt. Siddha Medical College Hospital, Palayamkottai were observed for clinical diagnosis, lab diagnosis and treatment by the trial medicines. Out of them Twenty Cases were selected for study. Twenty Five Cases were treated as out patients.

2. Clinical diagnosis of Azhal Keel vayu was done on the basis of clinical features described in the siddha text books.

3. Laboratory diagnosis of Azhal Keelvayu was done by modern methods of examination in the Govt. Siddha Medical College Hospital, Palayamkottai.

4. The various siddha aspects of examination of the disease were carried out and recorded in a proforma.

5. The trial medicines chosen for both internal and external treatment and the management of Azhal Keelavayu
   - Nannariver Choornam as per the severity of the complaints, the dosage was given 1 gm three times a day with white sugar for fifteen days and above.
   - Sangan kuppi ver ennai (Externally).

6. Before starting the treatment, careful detailed history was carried out and recorded from the twenty selected patients.

7. During the period of treatment, all the patients were put under strict pathiyam-a specific dietary regimen.
8. The observation made during the clinical study shows that the main drug **Nannariver Choornam (Internally)** is clinically effective. It has moderate analgesic action and significant anti-inflammatory action.

9. The action of **Sangan kuppi ver ennai (Externally)** over the affected joint was also clinically effective. It has significant anti-inflammatory action.

10. A periodical laboratory investigation were made for all the case for blood, urine and motion test etc., along with radiological reports.

11. Since Azhal Keel vayu is a chronic disease, it required minimum treatment for twenty days, treated both internally and externally to minimize the severe pain, tenderness and Swelling, but also slight disappearance of the crepitation.
CONCLUSION

All the twenty patients, selected for this Study were treated with **Nannariver Choornam** (Internal 1gm tds with white sugar) and **Sangan kuppi ver ennai** (Externally).

Clinical results show improvement in large number of the cases that is 50%. During the meantime of treatment, under admission all the Azhal Keel vayu patients were instructed and guided to follow the following asanas.

a) Komugaasana - The Cow head Posture  
b) Padmasana - The Lotus Posture  
c) Vajraasana - The Adamant posture

It was sure that no one had any remission up to 6 months.

If any further recurrence or no satisfied improvement, the individuals were instructed to follow up treatment both internally and externally. It is very pleasurable to say here, the author highlights the trial medicines are found effective just relieved from pain and tenderness, severe morning stiffness, severe crepitation, arresting of marked swelling and so on.

It was noted that the internal drug **Nannariver Choornam** was free from adverse side effects, i.e. no cases were reported either nausea or vomiting and the external application **Sangan kuppi ver ennai** was not irritant, i.e. no cases were reported itching or inflammation or eruption wherever massaged. Meanwhile it gave good soothing effect to the affected part.
 ANNEXURE-I

DRUG REVIEW

PREPARATION OF TRIAL DRUG

(Internal Medicine)

அல்லாஹ்: நல்லூராசி - அணுமீனா மூலகுழல் பொருள் பரம்பரை பாகம்:142

அச்சதீசவர் ஓவிய

வெப்பமைப்பு:

சூழ்நிலை காலநிலை பிரிவில் ஒன்றுக்கொண்ட தந்தை சத்ருதியுடைய காலம் இடைவுகாலம்.

அவதானம்: 1 - 2 கிளை முள்ளை இடைவு

அருப்பாரம்: சம அடைய மூலகுழை சத்ருதி

சுருக்க ஓவியம்: குறிப்பிட்டு தெரு

(External Medicine)

அல்லாஹ்: பெருவாட்ச நல்தா விளங்கக் கூட - பெருவாட்ச மக்கள்:300

சரக்கையான: சூழ்நிலை ஓவிய

வெப்பமைப்பு:

சிற்று வெப்பமை குழு வெப்பமைப்பாளரினால் பரப்பால் குறிப்பிட்டு பிரிப்பட்டு தொடக்கத் தொடங்கப்படும்.
PROPERTIES OF THE HERBAL DRUGS

Internal Medicine:

1. ரோதின்வாடிகள்:

   Botanical Name : Hemidesmus indicus
   Family : Asclepiadaceae

Synonyms:

அம்மார்கனோரீ, குதுக்கிரீ, பாறைதுரீ, தோலைதுரீ, தரவிள, பாறகங்க, நஞ்சூண்டு, காரைமாரீ, கிருந்தூந்துபேரீ, தரவிள.

Part Used:

   Dried Root

Organoleptic Characters:

   Suvai : Inippu, siru kaippu
   Thanmai : Thatpam
   Pirivu : Inippu

Chemical Constituents:

   Plant contains coumarino - lignoid hemidesmine, hemidesine, emidine.

   Roots contain hexatriacontanes, lupeol, α-amyrin, β-amyrin, sitosterol, coumarino - lignoids, hemidesmin - 1 and hemidesmin -2.

   Air dried roots yield essential oil containing p-methoxy salicylic aldehyde as the major constituent, also contain β – sitosterol, α and β amyrins, lupeold, tetracyclic triter pene alcohols, resin acids, fatty acids tannins, saponins, a glucoside and a ketone.

   Recent researchers by allopathy have proved conclusively that the active principles of sarasaparilla consist of an enzyme, an essential oil and a saponin.

Botanical Aspect:

   Twining or prostrate or semi-erect laticiferous herbs. Leaves linear - lanceolate, often with white streales above. Flowers yellow to brownish in cymes. Follicle slender, divaricated.
Therapeutic Actions:

- Alterative: ஆண்டுயிர்க்கி
- Tonic: சரியாகத்திற்கி
- Demulcent: பொய் பொழுதுக்கி
- Diuretic: கீழ்குளத்திற்கி
- Diaphoretic: விஸாகத்திற்கி

Therapeutic Effects:

Diseases of Pitham and Vatham, Rheumatism.

Uses:

“சரியாகத்து கிட்டத்து மேல் புளோடு
ஏமும் காரமால்து இருக்கு - புண்சு
நீர்தோலை வெட்டு பலம் சரியாகத்து பற்றியுறுக்கும்
சாத்துள் நெருந்துக் வெட்டு”

- புண்சு கிட்டன்மீண்டு

Verna cular Names:

Eng : Indian Sarasaparilla, country sarasaparilla
Tel : Sugandhi
Sans : Sariba
Mal : Nannari
Hind : Magrabu
Kan : Sugandha – Palade
Duk : Nat-ka-ushak
2.  கொஞ்சன் துப்பி:

   Botanical Name : Clerodendrum inerme
   Family : Verbenaceae

Synonyms:

தோற்றுட்பு, தோற்று, தோற்றுக்க்குப், குதக்குப், மலையாளுக்குப், பிரார்ந்துக்குப் துப்பி.

Vernacular Names:

   Eng : Smooth volkameria
   Tel : Pishinika, utti-chetta, Pisangi
   Mal : Shangam – kuppi
   San : Kundal
   Hind : Sang – kuppi sang kupi
   Dek : Isamdhari

Part used:

   Root

Organoleptic characters:

   Suvai : Kaippu
   Veeriyan : Veppam
   Pirivu : Kaarppu

Chemical Constituents:

   Plant contains clerodane diterpene – clerodermic acid, friedelin, methoxy flavone, salvigenin, acacetin, and apigenin.

Botanical aspects:

   Straggling shrubs which obovate glandular leaves. Flowers white in axillary cymes. Drupe brown.

   It is called “Garden Quinine” an account of its intense bitter taste.
Therapeutic Actions:

Alterative  : கல்லர்தி
Fegrifuge  : சுருப்பர்தி
Tonic   : நர்மகர்தி

Therapeutic effects:

Diseases of vatham, rheumatism.

Uses:

"சிவப்பு வெளி கீழ் கடிமத்தான் பிடிக்கும்
சுருப்பர்தம் வித்து சுண்டு - காலர்
காச்சைதின் கிளைமாரப்பு மலைகாட் விளைத்து
அரிசுக்கால் திண்மில் கர்த்தியேல்"
- புதுநாட்டின் வித்தியசின்

3. SESAMUM INDICUM: (சொற்)

Family - Pedaliaceae

Other Language Names:

English - Gingelly seed
Hindi - Til
Tamil - Ellu
Telungu - Nuvvulu
Malayalam - Karuellu

Tamil Synonyms:

Habitat:

This small bush is indigenous to India and extensively cultivated in the warmer regions.

Parts used:

Seeds and fixed oil which expressed from the seeds.
**Constituents:**

Seeds contain fixed oil 50-60% proteins 22%, carbohydrates 18%, mucilage 4% woody fibre 4% and ash 4.8%.

Oil contains 70% of liquid fats consisting of the glycerides of oleic and linoleic acids and 12-14% of solid fats, stearin, palmitin and myristin, a crystalline substance sesamin and a phenol compound seasmol.

**Therapeutic action:**

- Laxative
- Emollient
- Demulcent
- Diuretic
- Lactagogue
- Emmenagogue

“புற்று நோய்கலக்கடிகு புரிந்து தேம்புரத்தின்
காதவம் குண்டு குறுப்பிள்ளை - விரைவுபிள்ளை
காதம்பொன் கரையிலிங்கு மாசமுள்ள கரைகரம்
புளைத்தால் இறக் கொள்ளலையமாக இராது”

- புத்தகக்கார் விளக்கம்.
ANNEXURE II

GOVT SIDDHA MEDICAL COLLEGE, PALAYAMKOTTAI

BIO-CHEMICAL ANALYSIS OF

NANNARI VER CHOORNAM

Preparation of the extract:

5gms of Nannari Ver choornam 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 100 ml 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><strong>TEST FOR CALCIUM</strong></td>
<td>A white precipitate is formed</td>
<td>Indicates the presence of calcium.</td>
</tr>
<tr>
<td></td>
<td>2ml of the above prepared extract is taken in a clean test tube. Add 2 ml of 4% ammonium oxalate solution is added to it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td><strong>TEST FOR SULPHATE</strong></td>
<td>No white precipitate is formed</td>
<td>Absence of Sulphate</td>
</tr>
<tr>
<td></td>
<td>2ml of the extract is added to 5% barium chloride solution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td><strong>TEST FOR CHLORIDE</strong></td>
<td>No white precipitate is formed</td>
<td>Indicates the presence of Chloride.</td>
</tr>
<tr>
<td></td>
<td>The extract is treated with silver nitrate solution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td><strong>TEST FOR CARBONATE</strong></td>
<td>No brisk effervescence is formed</td>
<td>Absence of Carbonate</td>
</tr>
<tr>
<td></td>
<td>The substance is treated with concentrated HCL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TEST FOR STARCH</td>
<td>Blue colour is formed</td>
<td>Indicates the presence of starch.</td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
<td>-----------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td></td>
<td>The extract is added with weak iodine solution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TEST FOR IRON FERRIC</th>
<th>No Blue color is formed</th>
<th>Absence of ferric Iron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The extract is treated with glacial acetic acid and potassium ferrocyanide.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TEST OF IRON FERROUS</th>
<th>Blood red colour is formed</th>
<th>Indicates the presence of ferrous iron.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The extract is treated with concentrated nitric acid and ammonium thio cyanate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TEST FOR PHOSPHATE</th>
<th>No yellow precipitate is formed</th>
<th>Absence of phosphate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The extract is treated with ammonium Molybdate and concentrated nitric acid.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TEST FOR ALBUMIN</th>
<th>No yellow precipitate is formed</th>
<th>Absence of Albumin.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The extract is treated with Esbach’s reagent.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TEST FOR TANNIC ACID</th>
<th>Blue back precipitate is formed.</th>
<th>Indicates the presence of Tannic acid.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The extract is treated with Ferric Chloride reagent.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TEST FOR UNSATURATION</th>
<th>It gets decolourised.</th>
<th>Indicates the presence of unsaturated compound.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Potassium permanganate solution is added to the extract.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. **TEST FOR THE REDUCING SUGAR**  
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.  
Colour change occurs.  
Indicates the presence of Reducing Sugar.

13. **TEST FOR AMINO ACID**  
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.  
Violet colour is formed.  
Indicates the presence of Amino acid.

**Inference:**  
The trial drug **NANNARI VER CHOORNAM** contains Calcium, Chloride, Starch, Ferrous Iron, Tannic Acid, Unsaturated Compounds, Reducing Sugar, Amino acid.
ANNEXURE III
PHARMACOLOGICAL ANALYSIS

ANALGESIC STUDY OF NANNARI VER CHOORANAM

Aim:
To study the effects of analgesic action on albino rats by tail flick method.

Instruments:
Analgesiometer using heated nicrome wire as the source of stimulus.

Procedure:
Two groups of rats on either sex were selected, each group having three rats and each rat was put inside a rat holder with the tail projecting out fully. The tip of the tail was kept over the nicrome wire of the analgesiometer. To heat the nicrome wire by switching it on and at the same time starting a stopwatch. The time takes for the rat to flick the tail was noted. This was kept as the control volume.

Paracetamol was administered at a dose of 20mg/100gm of body weight orally to the test group. The reaction time was noted after the administration half an hour and one hour and the average is calculated.

When a rat fails to flick the tail, it should be continued beyond eight seconds to avoid injury.

The result of drug treated group and control group were tabulated and compared.
<table>
<thead>
<tr>
<th>Group</th>
<th>Dose/100mg Body weight</th>
<th>Initial reading (in Sec)</th>
<th>After Drug Administration</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>½ hr. Average</td>
<td>1 hr. Average</td>
</tr>
<tr>
<td>Control</td>
<td>Water 2ml</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Standard</td>
<td>Paracetamol-20mg</td>
<td>2.5</td>
<td>3.5</td>
<td>5.0</td>
</tr>
<tr>
<td>Test drug</td>
<td>100mg</td>
<td>2.0</td>
<td>2.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Inference:**

The test drug seems to have **significant analgesic action**.
ACUTE ANTI-INFLAMMATORY ACTIVITY IN RATS
BY HIND-PAW METHOD

To demonstrate the acute anti-inflammatory activity of NANNARI VER CHOORANAM in albino rats by Hind-paw method.

Procedure:

Nine Albino rats weighing 100-150gm were taken and divided into three groups and each group consisting three rats.

First group was kept as control land received water. Second group received ibuprofen at a dose of 20mg/100gm-body weight. Third group animals received keelvathathuku chooranam suspension at a dose of 100mg/100gm-body weight.

Before administration of drugs, the Hind-paw volume of all the rats was measured. This was done by dipping the Hind-paw upto the ribio-tarsal junction in mercury plethysmograph. Soon after the measurement at the drugs were administered. One hour after the administration of drugs a sub-cutaneous injection of 0.1ml of 1%/W/V of carrageenin in water was made into planter surface of both the Hind-paw of each rat.

Three hours after carrageenin injection, the Hind-paw volume was measured once again. Difference between the initial and final value were noted and compared.

This method is more suitable method for studying anti-inflammatory activity in acute inflammation.
The effect of Nannari Ver Chooranam in acute anti-inflammatory activities.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose volume orally</th>
<th>Initial reading</th>
<th>Final reading</th>
<th>Mean difference</th>
<th>Percentage Inflammation</th>
<th>Percentage Inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Water 2 ml</td>
<td>1.1</td>
<td>1.85</td>
<td>0.75</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Standard</td>
<td>Ibuprofen 20mg/100gm</td>
<td>1.3</td>
<td>1.35</td>
<td>0.05</td>
<td>6.6</td>
<td>93.4</td>
</tr>
<tr>
<td>Test drug</td>
<td>100mg/100gm</td>
<td>1.1</td>
<td>1.34</td>
<td>0.24</td>
<td>32</td>
<td>68</td>
</tr>
</tbody>
</table>

Result:

The drug Nannari Ver Chooranam has **significant acute – anti inflammatory action.**
CHRONIC ANTI-INFLAMMATORY STUDY
BY COTTON-PELLETS GRANULOMA METHOD

Drug:
Nannari Ver Chooranam

Aim:
To study the chronic anti-inflammatory activity of the drug in albino rats by cotton pellets implantation (granuloma) method.

Procedure:
Cotton pellets each weighing long was prepared and sterilized in an autoclave for about one hour less than 15 lbs atmosphere pressure. Nine Albino rats weighing between 100-200gm were selected and were divided into 3 groups. Each rat was anaesthetized with ether and cotton pellets were implanted subcutaneously in the groin, two in each side.

From the day of implantation, one group of animals received Nannari Ver Chooranam at a dose of 100mg/100gm of body weight.

On the eighth day the rats were sacrificed and the pellets were removed weighed. Then they were put in an incubator at 60ºC-80ºC and then weighed.

The concordant weight was noted for all groups and compared.

The effect of Nannari Ver Chooranam in chronic anti inflammatory study.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose/100mg 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>Control</td>
<td>Water 2ml</td>
<td>10</td>
<td>250</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Standard</td>
<td>Paracetamol-20mg</td>
<td>10</td>
<td>55</td>
<td>22</td>
<td>78</td>
</tr>
<tr>
<td>Test drug</td>
<td>100mg</td>
<td>10</td>
<td>110</td>
<td>42</td>
<td>58</td>
</tr>
</tbody>
</table>

Inference:
The drug show significant chronic – anti inflammatory action.
ACUTE ANTI – INFLAMMATORY STUDY ON
SANGAN KUPPI VER ENNAI (EXTERNAL USE)
BY HIND-PAW METHOD I ALBINO RATS

Aim:
To study the acute anti-inflammatory activity of the test drug SANGAN KUPPI VER ENNAI.

Preparation of the test drug:
The Sangan Kuppi Ver Ennai was prepared as per the preparation in Padhartha guna vizhakam.

Procedure:
Six healthy albino rats weighing 100-150gm were taken and divided into three groups, each consisting of 2 rats.

First group was kept as control by giving distilled water of 2ml/100gm of body weight. The second group was kept as test group. The third group was given the standard drug.

Before application of the test drug the Hind-paw volume of all the rats were measured. This was done by dipping the Hind-paw (up to the tibio-femoral junction) into a mercury plethysmograph. While dipping the Hind-paw, by pulling the syringe piston, the level of mercury in the centre small tube was made to coincide with red marking and reading was noted from the plethysmograph.

One hour later, a sub-cutaneous injection of 0.1ml of 1%(w/r) Carrageenin water made into plantar surface of both Hind-paw of each rat. To the second (last) group keelvathathuku thylam was topically applied for three times over the inflammed surface in a thin layer for every 15mts for an hour. To the other group no drug was applied over the inflammed surface.
Three hour 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, anti-inflammatory effect of the test group is calculated.

**EFFECT OF SANGAN KUPI VER ENNAI**

<table>
<thead>
<tr>
<th>Group</th>
<th>Drugs</th>
<th>Dose 100gm of body weight</th>
<th>Initial value</th>
<th>Final value</th>
<th>Difference</th>
<th>Percentage Inflammation</th>
<th>Percentage Inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Water</td>
<td>2ml</td>
<td>1.1</td>
<td>1.85</td>
<td>0.75</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Standard</td>
<td>Ibuprofen</td>
<td>20ml</td>
<td>1.3</td>
<td>1.35</td>
<td>0.05</td>
<td>6.6</td>
<td>93.4</td>
</tr>
<tr>
<td>Test drug</td>
<td>Keelvathathuku thylam.</td>
<td>Ext</td>
<td>1.0</td>
<td>1.25</td>
<td>0.25</td>
<td>33.3</td>
<td>66.7</td>
</tr>
</tbody>
</table>

**Inference:**

The test drug has **significant Anti-Inflammatory action** externally.
ANNEXURE IV

PROFORMA OF CASE SHEET

GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL

POST GRADUATE DEPARTMENT

PALAYAMKOTTAIL. TRIRUNELVELI – 627 002

Branch – III Sirappu Maruthuvam

Dissertation done by:

I.P. No  :  Occupation  :
Bed No  :  Income  :
Ward  :  Nationality  :
Name  :  Religion  :
Age  :  Date of Admission  :
Sex  :  Date of Discharge  :
Permanent Address:  Diagnosis  :
                  Result  :
                  Medical Officer  :

Complaints and duration:

History of present illness:

History of Previous illness:

Personal history including habits:

Family History  :
Socio Economical Status  :
Menstrual History  :

GENERAL CONDITIONS ON EXAMINATION

1. Consciousness :  
2. General appearance :  
3. Nourishment :  
4. Anaemia :  
5. Jaundice :  
6. Cyanosis :  
7. Clubbing :  
8. Lymphadenopathy :  
9. Jugular Venous Pulsation :  
10. Pedal oedema :  
11. Temperature :  
12. Pulse :  
   Rate :  
   Rhythm :  
   Volume :  
   Character :  
   peripheral pulses :  
   Pulses paradoxus :  
13. Respiratory Rate : /min  
14. Heart Rate : /min  
15. Blood pressure :  
16. Miscellaneous :  
   Body Weight
கிளை பலகை செய்கிறது

1. கீழே
   காத்தி
   பல்லன்
   பத்தி
   பானகம்

2. புள்ளி செல்வன்
   கசர் செல்வன் (சுமார்ளி - பாண்டுரி)
   கள்ளிக் செல்வன் (சுமார்ளி - கசர்கிலசுகை)
   பச்சைப்பாசி (பாஞ்சனி - கசர்)
   பிள்ளாபாசி (பாஞ்சனி - பாண்டுரி)
   திருச்சைப்பாசி (சிற்றிக்காரார் - தொண்டைகள்)
   பீத்திருச்சைப்பாசி (அஞ்சி - அஞ்சி)

3. பார்க்கள் (3-8)
   பாண்டுரி
   பிள்ளாபாசி
   கசர்
   கசர்பாசி

4. தற்போது
   திருச்சையம்பால்
   திருச்சையம்பால்
   கசர்பால்

5. பருகி புராணகள்
   பலம் - ஆண்டை
   பலம் - கசர்
   கசர் - கசர்
   சுதந்திர - சுதந்திர
   ஆங்கிலி - ஆங்கிலி

132
6. கல்லூரிகளின் பின்புறம்

தேர் - கருவர்
கல்லூரி - கொழுவர்
கல்லூரி - கொழுவர்
சத்ருகரம் - கிளைக்கணகம்
சத்ருகரம் - குணாகம்

7. குறிப்பிட்டுச் செய்யும்

தவளா போர்த்துக்கள்
போர்
போர்த்துக்கள்
சர்
சத்ருகரக்
சர்
அவ்விங்கிய

8. அதிகாரப் போர்த்துக்கள்

தினப்பு போர்த்துக்கள்
தினத்தல்
போர்த்துக்கள்
சத்ருகரக்
சத்ருகரக்
சர்
அவ்விங்கிய

9. மேல்

10. குறிப்பிட்டுச் செய்யும்

போர்
சத்ருகர
சத்ருகர
அவ்விங்கிய
11. பின் அம்பாறாந்த தின்கால்

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12. இரவு நாள்கைகள்

(அ) மாதம்

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| சிறப்புக் கிளகும்பு | - |
| காலாக்க பிக்கும் | - |
| ஐந்தாக்க பிக்கும் | - |
| பிலாக்க பிக்கும் | - |
(13) கம்ப

அதோம்பகம் -
சின்னகம் -
செல்லகம் -
துக்ககம் -
சுருக்கம் -

13. 2-ம் குறுக்கண்

காரம் -
சுருக்கம் -
சாகம் -
சிறந்தப் -
வேறுப் -
புரோட்டம் -
சக்திபொருள்/சிறுபார்த்திகம் -

14. தான் வேட்டுக்காணப்படும்

சுருண்டு -
சந்திரபில் -
சுருட்டு -
சிற்று -
சமாரை -
சிற்றுத் -
சிள்ளு -

மலற்று

சிற்று -
சந்திர -
சிற்றுத் -
சில்லந்து -

1. BLOOD:

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<td>DC</td>
<td>P %</td>
<td></td>
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<tr>
<td></td>
<td>L %</td>
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</tr>
<tr>
<td></td>
<td>E %</td>
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</tr>
<tr>
<td></td>
<td>M %</td>
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</tr>
<tr>
<td>ESR</td>
<td>½ hour : mm</td>
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<tr>
<td></td>
<td>I hour : mm</td>
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</tr>
<tr>
<td>Hb</td>
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<tr>
<td>Blood Sugar</td>
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<tr>
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<td>Uric Acid</td>
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2. URINE

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<tr>
<td>Sugar</td>
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<tr>
<td>Deposits</td>
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</table>
3. Motion
Ova : 
Cyst : 

4. IMMUNOLOGICAL :
RA Factor : 

5. RADIOGRAPHIC FINDINGS :

6. SEROLOGICAL TEST FOR SYPHILIS :

7. SYNOVIAL FLUID ANALYSIS :

8. ARTHROGRAPHY :

EXAMINATION OF LOCOMOTOR SYSTEM

INSPECTION

Overlying Skin:
 Colour : 
Seacrs and ulcers : 
Periarticular swelling : 
Deformity : 
Unusual posture : 
Muscle changes : 
Symmetrical distribution : 
Gait :

Palpation:
 Skin Temperature : 
Crepitus : 
Sub-cutaneous nodules :
Rheumatoid vasculitic lesion: 
Lymphadenopathy :

Enlargement:

Soft Tissues : 
Bony Enlargement :
Range of Movements :

Examination of individual joints:

Cervical Spine :
Thoracic Spine :
Lumbar Spine :
Sacro-illiac Joint :
Shoulder Joint :
Elbow Joint :
Wrist Joint :
Metacarpophalangeal joint :
Interphalangeal Joint :
Hip Joint :
Knee joint :
Metatarso phalangeal Joint:

Examination of individual joints (Affected Joints)

Measurement (in cm) :

Before and After Treatment:

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<th></th>
<th>RIGHT</th>
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<th>LEFT</th>
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<tbody>
<tr>
<td></td>
<td>BEFORE</td>
<td>AFTER</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Knee Joint</td>
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</tr>
<tr>
<td>Ankle Joint</td>
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<tr>
<td>Wrist Joint</td>
<td></td>
<td></td>
<td></td>
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<td>Elbow joint</td>
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<tr>
<td>Index finger</td>
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<tr>
<td>Middle finger</td>
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<tr>
<td>Ring finger</td>
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<tr>
<td>Little finger</td>
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EXAMINATION OF OTHER SYSTEMS:

1. Respiratory system:
2. Cardio Vascular system:
3. Gastro Intestinal system:
4. Central Nervous system:
5. Genito – Urinary System:

DAILY PROGRESS

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<thead>
<tr>
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<th>SYMPTOMS</th>
<th>DRUG</th>
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CLINICAL PARAMETERS AND PROGRESS

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<th>S.No</th>
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<th>During 1 day of Admission</th>
<th>5th day</th>
<th>10th day</th>
<th>15th day</th>
<th>20th day</th>
<th>25th day</th>
<th>30th day</th>
<th>40th day</th>
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<td>1</td>
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<td>3</td>
<td>Tenderness and swelling of joints</td>
<td>Knee</td>
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<td>Depression</td>
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<td>5</td>
<td>Loss of appetite</td>
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<td>6</td>
<td>Fever</td>
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<td>7</td>
<td>Restriction of Joints Movements</td>
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<td>8</td>
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<td>Deformity</td>
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<td>10</td>
<td>Muscle Weakness</td>
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<td>11</td>
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<td>12</td>
<td>Ulnar Deviation</td>
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+++ - Severe, ++ - Moderate, + - Mild, - - Nil

**DIFFERENTIAL DIAGNOSIS**

1.

2.

3.

**FINAL DIAGNOSIS:**

**LINE OF TREATMENT**

**MEDICINE**

1.

2.

**MEDICAL ADVICE**
GOVERNMENT SIDDHA MEDICAL COLLEGE HOSPITAL,
POST GRADUATE RESEARCH CENTRE,
PALAYAMKOTTAI, TIRUNELVELI-627 002
BRANCH – III SIRAPPU MARUTHUVAM.

ADMISSION-DISCHARGE SHEET FOR “AZHALKEEL VAYU”

IP No : 
Bed No : 
Ward : 
Name : 
Age : 
Sex : 
Permanent Address : 
Temporary Address: 

Occupation : 
Income : 
Nationality : 
Religion : 
Date of Admission : 
Date of Discharge : 
Diagnosis : 
Result : 
Medical officer : 

CLINICAL PICTURES

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<tr>
<th>Sl.No.</th>
<th>During Admission</th>
<th>During Discharge</th>
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PLACE:

DATE: 

Signature of Medical Officer.
BIBLIOGRAPHY

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- Anubhava Vaidhya Deva Ragasiyam
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- Jeevarakthamirtham
- Mooligai Marmam – Fourth Part
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Theraiyar Neerkuri Nekur vilakkam
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Yoga therapy – Dr.V.K.Ahluwalia
www.emedicine.com
www.wikipedia.com
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**ICAN** - Epithelial Cells, **PC** - Pus Cells, **N** - Nil, **NAD** No Abnormal Deposit
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M.S - Morning Stiffness  
L.O.M - Limitation of Movements