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A STUDY ON

KUMBAVATHAM

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CONTENTS

INTRODUCTION

"உயிர்க்குறுதி எல்லாம் உடம்பின் பயனே
அயிர்ப்பின்றி ஆதியை நாடு."

\- ஔவைக்குறள்

"உடம்பார் அழியில் உயிரார் அழிவர்
திடம்பட மெய்ஞானம் சேரவும் மாட்டார்
உடம்பை வளர்க்கும் உபாயம் அறிந்தே
உடம்பை வளர்த்தேன் உயிர் வளர்த்தேனே"

-திருமூலர்

This Quotations given above stress the importance of maintaining a healthy body. Thirumoolar says that when one's health deteriorates, the life force also deteriorates, preventing the person from attaining divine wisdom. He also says that by knowing the techniques of protecting the body from deterioration one can preserve his body and extend his life time.

This reminds us of the famous saying

"Health is wealth"

A healthy body is the real wealth of a person. Health is defined as a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirminity.

According to Siddha System of Medicine , the treatment is given not only to the body but also to the mind. Physiolgical and psychological changes are said to be the causes for a disease and so the saying "A Sound mind in a sound body" is very meaningful.

Siddhars have explained the basic functions and constituents of the body in a beautiful way. All the things including man are made up of five basic elements (Pancha Boothas) -Earth, Water, Fire, Air, and Space.

"Uyir thaathukkal" or humours namely Vatham, Pitham and Kabam are formed by the combination of these pancha boothas. Any derangement in these thathus will result in disease.

"மிகினும் குறையினும் நோய்செய்யும் நூலோர்
வளிமுதலா எண்ணிய மூன்று.'

Food habits and daily activities of an individual play a major role in causing disease because the abnormal physical activities may disturb the levels of the three basic humours leading to disease. Emotion and stress also influence the Uyir thaathukkal ending up in a disease.

Siddhars have classified diseases into 4448 types. In this modern mechanical world, people are suffering from various diseases. Females form the majority of sufferers owing to their dual role both in family and in the society.

In this dissertation the author speaks about Kumbavatham which is one among the 80 types of Vaatham described by Yugi and it mimics most of the features of Cervical spondylosis.

AIM AND OBJECTIVES

Kumbavatham is one of the Vaatha diseases with most of the signs and symptoms comparable to Cervical spondylosis. It is a painful and a distressing one involving shoulder girdle and upper limbs. It affects the people in their active period of life and causes embarrassment both physically and mentally. The clinical study of Kumbavatham was done in 20 cases admitted and treated in inpatient ward and 20 cases in outpatient Department of Sirappu Maruthuvam at Ayothidoss Pandithar Hospital of National Institute of Siddha, Chennai - 47.

i) The author has attempted to study in this clinical trial the action of Vithurasa Mezhugu as internal medicine(Reference: Anuboga Vaithiya Navaneetham part - 5) and Vaatha Ennai as external medicine (Reference: Theraiyar Vaagadam)

ii) The author has explained the clinical course of Kumbavatham and its various aspects such as aetiology, signs, sympotoms, pathology and complications on the basis of both Siddha and Modern Science.

iii) The author has attempted to do a complete study of this disease under the following topics:

Mukkutra verupadugal	-	Imbalance or abnormalities of three thodams.
Udal Thaathukkal	-	Seven physical constituents
Poriyaal arithal	-	Examination by sense organs
Ennvagai thervugal	-	Eight types of examination

iv) To observe the incidence of the disease in relation to age, sex, occupation, food and other habits and paruvakaalam(season).

v) To evaluate the drugs by Qualitative, Pharmacological and Toxicological analysis.

vi) To use modern parameters to confirm the diagnosis and to assess the prognosis of the disease.

vii) Finally to produce an awareness among the patients about the preventive measures to avoid recurrence and complications of the disease.

KUMBA VATHAM

DEFINITION

Kumbavatham is one of the varieties of Vaatha diseases. It is a condition involving the Shoulder, presenting with the symptoms of pain in the Shoulder, radiating pain in the upper limbs, especially arms, burning sensation, tingling sensation in the eyes and cheeks, giddiness, pain below the umbilicus, burning sensation in the tongue.

- Yugi Vaidhya Chinthaamani – 800

DESCRIPTION OF THE NOMENCLATURE

Kumbavatham	-	Kumbam + Vatham
Kumbam	-	The upper portion of the Shoulder, Scapula or Shoulder blade
Vatham	-	One of the three humours

AETIOLOGY

The common aetiological factors for all types of Vaatha diseases including Kumbavatham have been described generally in **Yugi Vaidhya Chinthaamani – 800** and **Agasthiyar Gunavaagadam.**

1. In Yugi Vaidhya Chinthaamani, the following causes have been given.

‘தானென்ற கசப்போடு துவர்ப் புறைப்பு
சாதகமாய் மிஞ்சுகிலும் சமைத்த வண்ணம்
ஆனென்ற வாறினது புசித்த லாலும்
ஆகாயத் தேறலது குடித்தலாலும்
பானென்ற பகலுறக்க மிராவிழிப்பு
பட்டினியே மிகவுறுதல் பார மெய்தல்
தேனென்ற மொழியார் மேற்சிந்தை யாதல்
சீக்கிரமாய் வாதமது செனிக்குந் தானே’.

- பாடல் 244, பக்கம் 23.

“பகரவே வாதமது கோபித் தப்போ
பண்பாக பெண்போக மதுதான் செய்யில்
நகரவே வெகுதூரவழி நடக்கில்
நளிரான காற்றுமே பனிமேற் பட்டால்
மிகரவே காய்கள் கனிகிழங்கு தன்னை
மிகவருந்தி மீறியே தயிர்தான் கொண்டால்
முகரவே முதுகெலும்பை முறுக்கி நொந்து
முழங்காலும் கணைக்காலும் கடுப்பு உண்டாமே”.

- பாடல் 285, பக்கம் 89

1. Consumption of bitter, astringent and pungent food items excessively.
2. Eating food cooked the previous day
3. Drinking polluted water
4. Changing Sleep rhythm
5. Excessive starvation
6. Lifting heavy objects
7. Excessive Lust
8. Sexual indulgence
9. Walking long distance
10. Living in chill environment
11. Excessive consumption of tubers, fruits, curd etc.

2. In Agasthiyar Gunavaagadam

‘தொல்லை செய்ய இன்னும் வெகு வாதநோய்கள்
தொல்லுலகில் மாந்தருக்குக் காண்பதுண்டு
எல்லையில்லை வாதநோய் நேர்மைதன்னை
இயல்பாக அறிந்திடவே விபரங் கேளே’
‘விவரமடா அசதிசன்னி மூளை நோவு
விரிவான மூளையது மிருதுவாகி
அவனிதனில் திடமாகப் போவதாலும்
அப்பனே மூத்திரக் குண்டிக்காய் வியாதியாலும்
தவமுனிவர் தீர்காக்கை மேகரோகம்
தன்மையுள்ள முத்தண்டுக் கொடி வியாதி
அவமிலாப் பரிச நரம்பழுத்தங்கண்டாய்

அணுகுமடா வாதநோய் ஆகும்பாரே'

'அணுகுமடா மாமிசத்தின் வியாதியாலும்
அப்பனே சூதத்தின் பெருக்காலும்
குணமில்லா இரசம் வங்கம் தின்னலாலும்
குடிகெடுத்த வாதமது உண்டாமப்பா'

- அகத்தியர் குணவாகடம்

1. Tiredness
2. Brain diseases
3. Renal disorders
4. Convulsions
5. Sexually transmitted diseases
6. Diseases of the vertebral column and Spinal cord
7. Menorrhagia
8. Intake of improperly prepared medicines of mercury and lead will cause Vaatha disease.

Kanmavinai is also indicated in the aetiology of Vaatha including Kumbavatham.

The aetiological factors are as follows:

"நூலென்ற வாதம் வந்தவகை தானேது
துண்மையாய்க் கன்மத்தின் வகையைக் கேளு
காலிலே தோன்றியது கடுப்ப தேது
கைகாலில் முடக்கியது வீக்கமேது
கோலிலே படுகின்ற விருட்ச மான
குழந்தை மரந்தன்னை வெட்டல்மேல் தோல்சீவல்
நாலிலே சீவசெந்து கால் முறித்தல்
நல்ல கொண்பு தழை முறித்தல் நலித்தல் தானே"

- பாடல் 56, அகத்தியர் கன்ம காண்டம் 300, பக்கம் 23

“என்னவே வாதந்தா னெண்பதாகும்
இகத்திலே மனிதர்களுக் கெய்யுமாறு
பின்னவே பொன்னதனையே சோரஞ்செய்து
பெரியோர்கள் பிராமணரைத் தூடனித்தும்
வன்ன தேவச் சொத்தில் சோரஞ்செய்து
மாதாபிதா குருவை மறந்த பேர்க்கும்
கன்னவே நிந்தை செய்தால்
காயத்திற் கலந்திடுமே வாதந்தானே”

- பாடல் 243, யூகி வைத்திய சிந்தாமணி 800, பக்கம் 76

“ஆனான வரன்றனையே மதியாமாந்தர்
அகதி பரதேசியர்கட் கன்ன மீயார்
கோனான குருமொழியை மறந்த பேர்கள்
கொலை களவு பொய்காமங் குறித்த பேர்க்கு
ஊனான சடந்தன்னில் வாதம் வந்து
உற்பவிக்கும் வேதத்தின் உண்மைதானே”

- பாடல் 253, யூகி வைத்திய சிந்தாமணி 800, பக்கம் 78

1. Cutting trees, peeling of tree bark, cutting tender leaves
2. Breaking legs of animals
3. Abusing the elderly people and priests
4. Exploitation of charitable properties
5. Ingratitude to Mother, Father and Gurus
6. Disrespectful attitude towards God
7. Refusing food for destitute and refugees
8. Involvement in murder, theft, uttering lies and lustful activities.

PATHOPHYSIOLOGY

Changes in lifestyle, occupation, food and habits lead to the development of this disease by causing derangement of micro elements in the body (Panchaboothangal). Improper food habits alter the elemental composition directly while the other activities cause derangement of these elements indirectly. When

elemental composition is altered Uyir Thaathukkal or the three humours which are made up of these elements naturally get deranged. This simultaneously leads to derangement of seven Udal Thaathukal, which produces symptoms of Kumbavatham. Another theory explains that the aetiological factors for Kumbavatham are diet that produces excessive Vaayu and other agents which cause vitiation of Vaayu, leading to derangement of Pitham and Kabam.

Here –

Vali + Aahaayam	-	Vaatham
Earth + Water	-	Kabam
Fire	-	Pitham

So Vaatham, Pitham and Kabam are deranged and the Udal Thaathukkal get deranged. These changes give rise to clinical features of Kumbavatham.

UYIR THAATHUKKAL

Vaatham – Commonly affected Vaatham are Viyaanan, Samaanan, Naagan, Korrman, and Kirukaran.

- Derangement of Viyaanan (Vaayu + Earth) leads to pain in the Shoulder and arms, pain along the upper limbs, pain below the umbilicus.
- Involvement of Samaanan (Vaayu + Aahayam) leads to imbalance of functions of other Vaayus.
- Involvement of Naagan leads to pain in the eyes.
- Involvement of Koorman leads to burning and tingling sensation in eyes.
- Involvement of Kirukaran leads to burning sensation in the tongue.

Pitham – Commonly affected Pitham is Saathaga Pitham.

- Involvement of Saathaga Pitham – produces the features like difficulty in performing regular duties because of the pain in the Shoulder and upper Limbs.

Kabam – Avalambagam, Tharpagam and Santhigam are affected.

- Involvement of Avalambagam leads to imbalance of functions of other Vaayus.
- Derangement of Tharpagam produces burning sensation in eyes.
- Derangement of Santhigam produces pain and stiffness in joints

UDAL THAATHUKKAL

Panchaboothas forming the basic constituents of these Thaathukkal get deranged. Commonly affected Udal Thaathukkal are Saaram, Oon, Kozhuppu and Enbu. Nerves and skin are also affected.

GNANENTHIRIYAM

Panchaboothas forming the basic constituents of these Gnanenthiriyams are deranged. Commonly affected Gnanenthiriyams are Mei, Kan.

KANMENTHIRIYAM

Panchaboothas forming the basic constituents of these Kanmenthiriyams are deranged. Commonly affected Kanmenthiriyams (Organs of action) are Kai.

CLINICAL FEATURES

The signs and symptoms of Kumbavatham are described in the following verses.

In Yugi Vaithya Chinthaamani and Yugi Muni Vaithiya Kaaviam

“நவிலவே தோண்மீதுங் கரத்தின் மீதும்
நலிந்தமெத்த வாகியே நசவுண்டாகும்
கவிலவே கன்னமோடு நயனந் தானுங்
கடுத்துமே விறுவிறுப்பு மெரிவுங் காணும்

துவிலவே துடிப்பாகுஞ் சிரசு தன்னிற்
சுழற்றியே நாபிக்கீழ் வலியு முண்டாம்
அவிலவே அடி நாக்கில் அழன்று காணும்
மலருமே வருகும்ப வாதந் தானே”

- பாடல் 264, யூகி வைத்திய சிந்தாமணி பக்கம் 82

“உய்யவேகையைப் பற்றி யுதறியே வலித்துக்கொல்லும்
மெய்யவேதிமிருமுண்டோ மேனியும் வாதைகாணுந்
துய்யதாந்தோளில்மெத்தத் துண்டித்துத்துண்டித்துக்காணு
மையவிழிமாதேகையிசு வாதமென்றியம்பலாமே”

- பாடல் 74, யூகி முனி வைத்திய காவியம், பக்கம் 21

“தோளதில் வீக்கம் கண்டு
துடர்ந்திடும் பிடரி கண்ணும்
நாளது மூன்றின் மேலே
நல்லதோர் கடுப்பும் காட்டும்
ஆளது சகித்திடாது பாரில்
அடுத்திடும் தோளில் வாதம்
சுளிது சிரத்துள் நீர் தானும்
சூழ்ந்திடில் அணுகும் தானே”

- வாதநோய் மருத்துவம், பக்கம் 93

1. Pain in the Shoulder and arm
2. Muscle weakness in Shoulder and Arm
3. Burning sensation and tingling sensation in the eyes and cheeks.
4. Giddiness and twitching over the scalp
5. Pain below the Umbilicus
6. Burning sensation in the Tongue

DIAGNOSIS

Diagnosis of Kumbavatham in Siddha is based on

Ennvagai Thervu (eight types of examination)

and also on other factors like

- Uyir Thaathukkal
- Udal Thaathukkal
- Gnanenthiriyam
- Kanmenthiriyam

Ennvagai Thervu (Eight types of Examination)

"நாடிப் பரிசம் நா நிறம் மொழி விழி
மலம் மூத்திரமிவை மருத்துவராயுதம்"
"மெய்க்குறி நிறந்தொனி விழி நாவிருமலம் கைக்குறி"
- தேரையர் (நோய் நாடல் பாகம் 1, பக்கம் 253).

The Eight types of Examination

1. Naadi (Pulse reading)
2. Sparism (Tactile sensation
3. Naa (Tongue)
4. Niram (Color)
5. Mozhi (Speech or Voice)
6. Vizhi (Eyes)
7. Malam (Stools)
8. Moothiram (Urine)

GENERAL DEFINITION OF EACH TYPE	FEATURES IN KUMBAVATHAM
1. Naadi: Naadi means a vital force responsible for birth – Agathiyar This vital force is divided into three humours – Vaatham, Pitham and Kabam. It can be assessed in 10 sites. The commonest site is radial artery.	**In Kumbavatham the Naadi felt are,** Vaatha Pitham Pitha Vaatham "சொல்லவே வாதமது மீறிற் றானால் மெல்லவே கைகால்க ளசதி யுண்டாம்" "பொருளான வாதத்தில் பித்தஞ் சேர்ந்து கைகால் தறிப்பு நாக்கசக்கு மன்னம்". - நோய்நாடல் பக்கம் 1, 174, 182
2. Sparism: By Sparism the temperature of the body, smoothness or roughness, dryness, hard patches, abnormal growth, sweating, swelling, tenderness and nourishment can be felt.	**In Kumbavatham Patients** General body temperature – slight warmth Tenderness present in neck and Shoulders Girdle, upper extremities
3. Naa Colour, Coating, Dryness, Movement, Deviation, Sensory changes, Ulcer, Conditions of the Tooth and Gums are noted.	**In Kumbavatham Patients** The tongue shows sensory changes like burning.
4. Niram Colour of the Skin, Mucous Membranes, Hair and Nail are examined.	**In Kumbavatham** General colour – mixed colour (Thonthaniram due to mixed Thodams)

5. Mozhi Disturbances in voice, hoarseness of voice are assessed.	**In Kumbavatham** No change or disturbance of voice are found
6. Vizhi Testing for – Acuity of vision, Colour – redness, pallor, whiteness any burning sensation, excessive lacrimation	**In Kumbavatham** Burning sensation of eyes is present. In aged patients acuity of vision is diminished.
7. Malam The waste and excretory products of body are called as Malam. The faeces should be semi-solid without hardness and looseness. Nature, Quantity, Colour, Odour, Froth, Presence of blood and mucus are noted.	**In Kumbavatham** Some patients have constipation

8. Moothiram

The Urine is examined by two methods.

- Neerkuri
- Neikkuri

Neerkuri

Urine is collected after taking a well balanced diet (appetite corrected, seasonally correlated), which do not alter the three thodams. It should be examined within 3-3/4 Nazhigai. (90 minutes)

"வந்த நீர்க்கரிஎடை மணம் நுரை எஞ்சலென்
றைந்தியலுளவவை யறைகுது முறையே."
- தேரர் நீர்க்குறி நெய்க்குறி நூல் (சித்த மருத்துவாங்கச் சுருக்கம், பக்கம் 334)

In Neerkuri the Niram (Colour), Manam (Odour), Nurai (froth), Eadai (specific gravity) and Enjal (Quantity) are noted. Apart from these, the frequency of urination, presence of abnormal constituents such as sugar, Protein etc., and sediments are also noted.

Neikkuri:

The collected urine is kept in a glass bowl and is placed under direct Sunlight. A drop of Gingelly oil is added and nature of Neikkuri is noted. If the drop of oil lengthens like a snake it indicates Vaatham, if it spreads like a ring it indicates Pittham, if it appears like a pearl it indicates Kabham.

"அரவென நீண்டி ன.்.தே வாதம்" - நோய்நாடல் பாகம் 1, பக்கம் 279
"ஆழி போற்பரவின் அ.்.தே பித்தம்" - நோய்பாடல் பாகம் 1, பக்கம் 279
"முத்தொத்து நிற்கின் மொழிவதென் கபமே" - நோய்நாடல் பாகம் 1, பக்கம் 280

When the drop of oil shows two shapes enclosed within one another it indicates Thondha Neer.

Noi Kanippu Vivaadham (Differential Diagnosis)

Some other types of Vaatha disease mimicking Kumbavatham are mentioned. Careful and clear history taking and examination will reveal the diagnosis.

They are

1. Pei Vaatham
2. Sirakkamba Vaatham
3. Paanikkamba Vaatham
4. Atshebaga Vaatham

1. Pei Vaatham (பேய் வாதம்)

"பெற்றியாம் பெருமையாங் காலுங் கையும்
பெருவயிறு நெடுஞ்சோடு விரலு மூக்கு
ஏற்றியா மெறிகழுத்து மெங்கும் பற்றி
ஏக்கமாய் நொந்துவுடம் பெங்கும் வீங்கி
உற்றியா மூணவே நிமிர்த்தெ டுத்து
உறுதியாய்ப் பிடிக்கவு மெணாம லாகும்
சக்தியாய் வாய்கசந்து மயக்க மாகும்
தரித்திடவொண் ணாதுபேய் வாதந் தானே".

- பாடல் 276, யூகி வைத்திய சிந்தாமணி - 800, பக்கம் 86

The clinical features are

1. Pain and swelling in neck, abdomen, upper and lower limbs
2. Weakness of hand muscles, difficulty in holding things in the hand
3. Vomiting

4. Giddiness

5. Swelling all over the body

2. Sirakkamba Vaatham (சிரக்கம்ப வாதம்)

"தம்பமாய் உதிர்கண்ட நரம்பிற் புக்கித்
தலையோடு சரீரமெல்லாந் தாக்கிப் புக்கும்
கம்பமாங் காதிரண்டு மிகவுங் கேளா
கையோடு காலிரண்டும் வசக்கே டாகும்
நிம்பமாய் நினைவேதான் கலங்கிக் காணும்
நெடுமூச்சுங் கொட்டாவிநித் திரையு மாகும்
சிம்பமாய்த் தலைநடுங்கிக் கனப்பு முண்டாம்
சிரக்கம்ப வாதமென்றே செப்ப லாமே".

- பாடல் 300, யூகி வைத்திய சிந்தாமணி - 800, பக்கம் 94

The Clinical features are

1. Stiffness of neck
2. Deafness
3. Difficulty in using lower and upper limbs
4. Confused thinking/impaired memory
5. Difficulty in breathing
6. Yawning, excessive sleeping
7. Tremor in the head and neck

3. Paanikkamba Vaatham (பாணிக்கம்ப வாதம்**)**

"மார்க்கமாய் வாய்வு மாய் மெய்நி றைந்து
வயிறுதனிற் பசியிலா தூணு மற்று
நார்க்கமாய் ஞாலத்து நடக்கை யற்று
நடுக்கமாங் கையிரண்டுந் திமிரு முண்டாம்
ஊர்க்கமா யுறக்கமில்லா துணர்ச்சி யற்று
உதறியே சரீரமெங்கு முலர்ந்து காணும்
பார்க்கமாய் வாய்விட்டு அலத்த லாகும்
பாணிக்கம்ப வாதத்தின் பாங்குதானே".

- பாடல் 266, யூகி வைத்திய சிந்தாமணி - 800, பக்கம் 83

The Clinical features are

1. Gaseous accumulation and anorexia
2. Tingling sensation and numbness of upper limbs
3. Tremor of upper limbs
4. Sleeplessness
5. Dryness all over the body

4. Atshebaga Vaatham (அட்சேபக வாதம்)

"வாதமே கோபித்துச் சரீரந் தன்னில்
வயிறுவிலாப் பக்கங்கள் வாடி யோடி
நாதமே யுட்புகுந்து இருபத் தஞ்சு
நலமறிய ஈரலைத்தான் பற்றி நொந்து
காதமே கைகாலு மோய்த்து போகுங்
கனக்கவே நோவாகிச் சுருள நொந்து
ஆதமே அங்கமெலா மசைத லாகும்
அஷேவகமாம் வாதத்தி னாண்மை தானே"

- பாடல் 16, யூகி வைத்திய சிந்தாமணி, பக்கம் 561

1. Gaseous accumulation in abdomen and flanks
2. Pain in liver
3. Pain and weakness in upper and lower Limbs
4. Generalised twitching

THE ANATOMY

The Vertebral Column :-

The Vertebral column which lodges and protects the spinal cord, its meninges and the continuation of the central nervous system lies in the dorsum of the body. It forms a pillar which contains 33 segments and lengths about 70cm in an average male and 60cm in a female. It supports the body weight and transmits it to the ground through the lower limbs.
The segments can be divided into cervical, thoracic, lumbar, sarcal and coccygeal segments. The cervical segment has seven vertebral bones, thoracic tweleve, lumbar five, sarcal five and coccygeal four. All are separate bones except the sacrum and coccyx.

The Curvatures of the Spine:-

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

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

The General features of the Vertebrae:-

The Vertebrae can be divided into vertebral body and a dorsal vertebral arch. The vertebral arch has 2 pedicles, 7 process and 2 laminae. Pedicles are thick bars projecting backward from the body. The laminae are vertical plate like structures, fuses together to form spinous process. The spinous process projects downwards and are the lever for the muscles.

The articular processes are four in number, bearing the articular facets and articulate with the adjacent vertebrae. Transverse processes project laterally from the junction of pedicle and laminae. In thoracic region they articulate with ribs.

The Cervical Vertebrae

The Cervical segment of Vertebral column contains 7 Vertebrae. The Cervical spine is divided into anterior and posterior columns. The component parts of anterior columns are

- Anterior longitudinal ligament (ALL)
- Annulus fibrosus (ANN)
- Unco vertebral Joint

Posterior Column consists of

- Nerve root (NR)
- Facet
- Superior ligament
- Posterior Longitudinal Ligament

There are 8 pairs of cervical nerves. Each nerve root contains sensory, motor, sympathetic fibers that innervate the upper extremities. The first, second and the seventh cervical vertebrae are a typical and the third to sixth are typical. They are smaller and delicate than the thoracic and lumbar vertebrae. All the cervical vertebrae have a foramen in the transverse process known as foramen transversarium. This is identical to the cervical vertebrae.

Typical Cervical Vertebrae:-

1. Body :-

It is small and oval. Its superior surface is concave transversely with upward projecting lips on each side and its inferior surface is saddle shaped, convex from side to side and concave from before backwards.

2. Vertebral Foramen :-

Its larger than the body and triangular.

3. Vertebral Arch :-

i. Pedicles

These are short and directed outwards and backwards from the middle of postero lateral parts of the body and they form the postero medial wall of the foramen transversarium.

ii. Laminae

These are long and narrow, being thinner above than below.

iii. Articular Facets

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

iv. Transverse Processes :-

Each Transverse process is short and pierced by foramen transversarium. Each process has an anterior and posterior root which ends in tubercles joined by the costotransverse bar. The anterior tubercle of the sixth cervical vertebra is large and is called carotid tubercle.

v. The Spine :-

It is short and bifid.

Foramen Transversarium

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

The Atypical Cervical Vertebrae :-

1. Atlas :-

It is the first cervical vertebrae which lodges the skull. It has no body and spine. It has anterior and posterior arch, right and left lateral masses and transverse processes. The anterior arch bears an anterior tubercle in the anterior aspect. Its posterior aspect bears an oval facet which articulates with dens. The posterior surface of the posterior arch has a median posterior tubercle. The two lateral masses bear an elongated superior articular facet for atlanto-occipital joint and an inferior articular facet for atlanto axial joint.

The transverse process of atlas is long and thick. It is pierced by the foramen transversarium.

2. The Axis :-

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

3. The seventh cervical vertebrae :-

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

Palpable parts of cervical vertebrae :-

1. The spine of C_2 is in the nape 5 cm below the external occipital protuberance.
2. The spine of $C_7$where the collar bone crosses the posterior medium line of the neck.

3. The transverse process of C_1 through the anterior border of sternocleidomastoid, immediately below the tip of the mastoid process.

Inter-Vertebral Discs

They are fibro cartilaginous discs interposed between the adjacent surfaces of the vertebral bodies. They are thicker in lumbar region than in thoracic. Their peripheral parts are supplied by the adjacent blood vessels but the central parts are avascular.

They receive their nutrients by diffusion from spongy bone of adjacent vertebrae. The central portion of disc is known as Nucleus Pulposus and the peripheral zone is known as Annulus Fibrosus. The central portion is made up of gelatinous mucoid material and it is composed of around 80 – 90% of water. On aging it is converted into fibro cartilagenous material and its water binding capacity is reduced. Annulus Fibrosus (outer ligamentous ring) which hydraulically seals the nucleus and this annulus fibrosus contains collagen bundle in periphery and fibro cartilaginous tissue in the inner part.

The annulus has overlapping radial bands, not unlike the piles of a radial artery. The thickness of the disc varies daily. In the morning it is thick due to absorption of fluids in lying posture and its is thin at night.

Intervertebral Discs – Physiology

1. As a spacer :

Proper spacing of intervertebral disc allows the intervertebral foramen to maintain its height, which allows the segmental nerve roots to exit spinal level without compression.

2. As a shock absorber :

3. As a motion unit :

The elasticity of the disc allows motion coupling so that the spinal segment can flex, rotate and bend to the side all at the same time during a particular activity.

4. As a hydraulic cylinder

The annulus interacts with the nucleus. As the nucleus is pressurized the annular fibres serve a containment function to prevent the nucleus from bulging or herniating. The gelatinous nuclear material directs the forces of axial loading outward and the hoops of annular fibres help to distribute that force without injury.

Joints of the Vertebral Column

The vertebrae from the 2nd cervical to 1st sacral are articulated to one another by a series of cartilaginous joints between vertebral bodies and a series of synovial joints between the vertebral arches. The vertebral bodies are united by anterior posterior longitudinal ligaments and by intervertebral disc of fibro cartilage.

1. Atlanto Occipital Joint

It is a synovial condyloid variety

Articular ends :-

Superiorly	-	Occipital condyles
Inferiorly	-	Superior articular facet of the atlas
Adjacent structures	-	Ligaments, capsule, anterior and posterior occipital membranes
Blood supply	-	Vertebral artery
Nerve supply	-	First cervical nerve

Ligaments :-

1. Capsular ligament
2. The Anterior Atlanto-occipital membrane
3. The Posterior Atlanto-occipital membrane

Movements :-

Flexion, extension and slight lateral flexion are possible.

2. Atlanto Axial Joints :-

Consists of

a. A pair of lateral atlanto-axial joints

b. Median atlanto axial joint

a. Lateral atlanto-axial joints :-

Synovial joint	-	Plane variety
Articular ends	-	Inferior facets of atlas and the superior facets of axis
Ligaments	-	Ant. longitudinal ligament and ligamentum flavum

b. Medial atlanto-axial joint :-

Synovial joint	-	Pivot variety
Articular ends	-	Between the dens of axis, anterior arch of atlas
Ligaments	-	Transverse ligament
Movement	-	Rotatory movements around a vertical axis

Ligaments between axis and occipital bone :-

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

The Unco Vertebral (Luschka's) joints :-

Luschka's joints are not true synovial joints; which develop as a result of degenarative changes in the edges of the disc in early adult.

Luschka's joints are important, because

i. They are the commonest sites of osteophyte formation. The osteophytes may compress the cervical nerves.

ii. Vertebral artery lies lateral to the joints intruding on the canal and can cause distortion of the artery and leads to Vertebro Basilar insufficiency in atherosclerotic vessels.

Movements of the Vertebral Column :-

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

Flexion (or) forward bending, extension (or) backward bending, lateral flexion and rotation are possible in vertebral column. Numerous muscles are attached directly on the vertebrae.

Movements of the Head and Neck :-

Movements	Muscles	Nerve Supply
Flexion	Sternocleidomastoid	Accessory ventral rami of cervical spinal nerves C_2, C_3, C_4
	Longus Coli	Cervical Ventral rami $C_2 – C_6$
	Longus Capitis	Cervical Ventral rami $C_1 – C_3$
	Rectus Capitis Anterior	C1 Ventral ramus
Extension	Splenius Cervicis and Capitis	Dorsal cervical nerve
	Erector Spinae	Dorsal rami
	Rectus capitis posterior major and minor	Dorsal rami C_1
	Obliques capitis superior	C_1 – Dorsal ramus
	Trapezius	Accessory

Lateral flexion and rotation	Sternocleido mastoid	Accessory, Ventral rami of Cervial spinal nerves C_2, C_3, C_4
	Scalene	Cervical Ventral rami $C_3 – C_8$
	Longus Coli	Cervical Ventral rami $C_3 – C_8$
	Levator Scapulae	Cervical Ventral rami C_3 C_4, C_5
	Rectus Capitis	C_1 – Ventral ramus
	Splenius	Cervical dorsal ramus
	Longismus obliques capitis superior and inferior	C_1 Dorsal ramus

Structures passing through :

a. Foramen Transversarium

Vertebral artery, Vertebral vein, Plexus of sympathetic nerve

b. Intervertebral foramen

Spinal nerves form dorsal medulla

Blood supply of Vertebral Column :-

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

Venous Drinage

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

i. The vertebrae through the basilo vertebral veins.

ii. The meninges and spinal cord

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

CERVICAL SPONDYLOSIS

Nomenclature

Cervical	-	Neck region
Spondylosis	-	Vertebral ankylosis

Synonyms and related keywords

Cervical Degenerative Joint Disease, Cervical Degenerative Disk Disease, Cervical Osteoarthritis, Cervical Spondylotic Myelopathy, Disk Degeneration, Degenerative Cervical Disease, Osteophytic Bars, Cervical Radiculopathy.

Definition :-

Cervical spondylosis is a disorder characterised by increasing degeneration of the intervertebral disc, with subsequent changes in the bones and soft tissues. Spondylosis is usually asymptomatic. Symptoms are usually manifested by encroachment on local neural elements such as cervical nerve roots, spinal cord, vertebral artery (or) sympathetic nerves. The symptoms and signs appear to be related to the cause and time course of compression as well as the structures being compressed.

Epidemiology

Age : Cervical spondylosis is present in 5 – 10% over the age of 20 to 30 years,

20 – 25% by the age of 50 years and 70 – 85% by the age of 65 years.

Sex : Men are affected more than women.

Location

C5-C6 levels are commonly involved due to maximal movements occurring at this cervical spine.

However C6-C7 and C4-C5 can also be affected at times.

AETIOLOGY

I. Degenerative Causes

They are primary and secondary

Primary - Senility, genetic factors, metabolic factors and manual labour

Secondary - Osteoarthritis, rheumatoid arthritis, metastatic carcinoma or lymphomas of the spine and TB spine.

II. Injury

Automobile accidents with "Whiplash" injury, athletic injury

Sudden jerks on the arms during fall down

Previous injury with fracture or disc prolapse

III. Occupational causes

The physical discomfort, which arises through an occupation is occupational stress. The physical strain, intensity of work and duration of working hours all constitutes the occupational strain.

IV. Hereditary factors

Congenital narrowing of the cervical spinal canal (myelopathy is often seen when canal's sagital diameter is 12mm or loss)

Segmental defects – Hemi vertebra, fused vertebra.

V. Aquired narrowing of cervical spinal canal due to Osteophytes

Ossified Posterior Longitudinal Ligament (OPLL)

Facet joint hypertrophy (results foraminal stenosis and compression of foot of radicular artery)

Hypertrophied Ligamentum Flavum (Compress the cord during extension).

Outgrowths of bone that sometimes occur with aging.

Inter vertebral disc protrusions are commonest in the Cervial region which is due to degeneration of the intervertebral disc and if it involves several discs with Osteoarthrosis liable to interfere with blood supply of the cord and thus leads to further damage.

Pathology

In Cervical spondylosis, involvement of following structures has to be considered.

- Intervertebral disc
- Unconvertebral joints
- Apophyseal joints
- The foramina (intervertebral) and
- The transverse foramina

Intervertebral disc

All the three parts of disc cartilage plate, nucleus and annulus are involved.

Cartilage plate

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

Nucleus

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

Annulus

Annulus undergoes some changes as in nucleus. Focal necrosis and calcification is common. They form hard ridge within the cervical canal. Osteophytes are formed as a result of instability producing stress on the periosteum

Uncovertebral joints

The unconvertebral joints are most affected as C5-C6 and C6-C7 levels. Progressive decrease in disc height the uncinate process approximates against the vertebral body undergoes erosion and formation of osteophytes.

Apophyseal Joints

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

The foramina (intervertebral and transverse)

Foramina are narrowed by fibrosis and posterior longitudinal ligament thickening which is not obviously seen on radiography.

Vertebral Artery

Spondylotic changes in the foramina transversarium are not uncommon. They can cause buckling or tortuosity of the vertebral arteries which is commonly found in older age group. The artery may also be affected by uncovertebral and apophyseal osteophytes. Vertebral artery compression is most common at C4/5 and C5/6 levels.

PATHOGENESIS

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

2.The disc degeneration, the primary event which is a progressive decrease in the degree of hydration. Glycoproteins diminish in size and number and their ability to retain water diminishes. This results in loss of disc height, disc fibrosis and annular weakening. Adjacent vertebral bodies approximate each other and uneven abnormal movement in the affected areas probably results in oseteophyte formation. These occur at all the joints, namely the disc, zygoapophyseal joints and the neurocentral joints of luschka. Though ostephyte formation may be the body's attempt to stabilize the joints their growth.

3.Ostephytes may form posteriorly with osteoarthritis of the apophyseal joints and also anteriorly in relation to degenerative changes and narrowing of the intervertebral disc with sclerosis of the bony end plates. The osteophytes may cause symptoms by encroaching on the spinal nerve foramina or in narrowing of the spinal canal and cord compression or in the cervical regions on the vertebral artery foramen. In the cervical region intermittent pain and discomfort may be followed eventually by stiffness and limitation of movements.

4.The predisposing factors which may accelerate of these changes viz.

Occupation requiring repetitive motion and chronic flexion of the Previous injury with fracture or disc prolapse.

Segmentation defects like hemivertebrae or fused vertebrae.

May be a hereditary predisposition to intervertebral disc disease.

5.Factors responsible for Myelopathy in cervical spondylosis:

Uncovertebral osteophytes cause anterior compression of cord

Bony ridges on the posterior vertebral bodies cause central compression on the cord.

Zygapophyseal osteophytes causing posterior compression

In curving of the ligamentum flavum causing posterior compression on the cord

Development of narrow cervical canal

Dynamic effect of narrowing of the cervical canal

Calcification of the posterior longitudinal ligament

Teethering of the roots to the osteophytes

Arachnoiditis, postoperative scar

Interference of blood supply to cord.

CLINICAL FEATURES

Symptoms and Signs:

Symptoms and signs of cervical spondylosis can be acute, subacute or chronic occasionally acute exacerbation of chronic symptoms can occur.

Symptoms:

Symptoms can be described as

1) Neck pain

2) Radiculopathy

3) Headache

4) Myelopathy

5) VBI [Vertebro Basilar Insufficiency]

6) Autonomic symptoms

1) Neck pain:

Pain is present in nape and its nature is aching or boring quality, which radiates to the shoulder blades top of the shoulder, upper arm and hands or back of the head. Clinically it is very difficult to decide, which disc is responsible to pain. Patients feel of crunching sounds with the movement of the neck or shoulder muscles.

2) Radiculopathy:

Radiculopathy may be acute in onset. It consists of acute shooting pain usually radiating along the dermatomal distribution of the particular nerve root, usually into the forearm or fingers. Such each spinal nerve supplies nerves to the bones, joints, muscles and blood vessels even when one root is affected the pain is felt in shoulders as well as forearm and fingers. Pain is often related to the position of the neck which may itself be painful. There

may be muscle spasm. Unlike sciatica it is not made worse as a rule by coughing or sneezing. In one type of acute radiculopathy, pain in the neck and muscle spasm may be absent. A frozen shoulder is not an uncommon complication of this type of brachial neuritis.

While in these acute attacks, there may be slight impairment of sensation in the affected segment, obvious motor weakness is rare, though when it occurs, it may be quite marked with rapid wasting of the muscles.

In chronic radiculopathy, symptoms may come on insiduously or it may be the grumbling on of an acute attack.

Neurological deficit specially the sensory disturbance may be more marked. In these too, a frozen shoulder is often seen incidentally.

3) Headache:

Headache is a common symptom; its pathogenesis is not fully understood. It is more a pain than a headache usually located in occipit on bothsides. It spreads to the temple or eyes. It is described as a tight band round the head.

4) Myelopathy:

Myelopathy can be classified in various ways and depends on the involvement of the lateral or medial cord or vascular involvement. The signs may be a mixure of upper motor neuron signs in the lower limbs and lower motor neuron signs in the upper limbs.

Generally myelopathy may be predicated by central disc herniation, but is more commonly the result of spondylytic change superimposed on a congenitally narrow canal. Motor weakness is rare. If they occur there may be marked wasting of the muscles.

5) VBI [Vertebro Basilar Insufficiency]:

VBI usually requires a combination of arterosclerosis & osteophytes intrusion into the foramen transversorium. The symptoms of this insufficiency are typically a brief attack of giddiness without loss of consciousness and generally brought by head movements.

6) Autonomic symptoms:

Vertigo, flushing, tinnitus & visual blurring are the autonomic symptoms produced by cervical disc diseases. These may be mediated by sympathetic distribution to the sinuvertebral nerves from stellate ganglion.

Signs:

1. **Motor**

   Atrophy of the hand musculature (Intrinsic muscle atrophy)

   Muscle weakness

2. **Sensory**

   Loss of vibratory sense or proprioception in the extremites especially in the feet, superficial sensory loss.

3. **Reflexes**

   Hyper reflexia

   Ankle clonus

4. **Babinski's sign**

5. **Lhermitte's sign** positive (Electric shock like sensations down to the center of the back following flexion of the neck)

Summary of the site of lesion

Cervical spondylosis can produce cord compression (upper motor neuron signs) or root compressions (lower motor neuron signs)

C5	Motor	Raised elbows (axillary n.)
	Reflex	Biceps (musculocutaneous n.)
	Sensory	Upper, Lateral arm, near/over deltoid (axillary n.)
	Pain	Upper, Lateral arm, never below elbow
C6	Motor	Elbow supination (radial n.) / pronation (median n.)
	Reflex	Brachioradialis (radial n.)
	Sensory	Lateral forearm (musculocutaneous n.)
	Pain	Lateral forearm, possibly into thumb
C7	Motor	Elbow extension (radial n.)
	Reflex	Triceps (radial n.)
	Sensory	Over triceps, mid-forearm and middle finger
	Pain	Deep pain in triceps, front and back of forearm and into middle finger
C8	Motor	Thumb index pinch (ant. interosseus n. off median n. at the elbow)
	Sensory	Medial forearm (antebrachial cutaneous n.)
	Pain	Medial forearm, into the 2 medial fingers
T1	Motor	Finger abduction (ulnar n.)
	Sensory	Medial arm (brachial cutaneous n.)
	Pain	Deep pain in axilla and shoulder / some radiation down inside of arm.

DIAGNOSIS

Mainly based on X-ray

1. X-ray cervical spine

Anteroposterior (AP) view

- Lateral view
- Right Oblique
- Left Oblique
- AP Odontoid view

Plain X-rays can demonstrate loss of disc space height, anterior and posterior end-plate osteophytes, fusion or instability. A lateral view will also show the anteroposterior diameter of the spinal canal; and if this is less than 14 mm then cord compression is a real possibility.

2. CT Scan

A CT Scan of your spine uses X-ray technology, but produces a more detailed image than X-ray can.

3. Myelogram

This test involves generating images using X-rays or CT scans after dye is injected into the spinal canal. The dye makes areas of your spine more visible.

4. Electromyography (EMG) and Nerve conduction study.

Needle EMG, nerve conduction studies and evoked potentials may help to differentiate spondylotic neurological problems from motor neurone disease, multiple sclerosis, peripheral nerve compression and so on.

5. MRI (Magnetic Resonance Imaging)

MRI uses a magnetic field and radio waves and can produce detailed, cross-sectional images of your spine. These tests may help your doctor determine the extent of damage to your cervical spine.

DIFFERENTIAL DIAGNOSIS

1. Motor neuron disease
2. Multiple sclerosis
3. Syringomyelia
4. Spinal cord tumors
5. Tropical spastic paresis from HTLV – 1 infection
6. Amyotrophic lateral sclerosis
7. Carcinomatous infiltration or radiotheraphy
8. Peripheral nerve lesions (distal ulnar or median nerve)
9. Reffered pain

Cardiac ischaemia

- Sub-diaphragmatic lesions
- Gall bladder lesions

COMPLICATIONS

1. Cord compression-Quadriplegia, spastic gait, affecting the bladder.
2. Nerve root compression – Neurological injury, Brachialgia
3. VBI (Vertebro Basilar Insufficiency)

TREATMENT OF KUMBAVATHAM

Treatment – Directed towards relief of symptoms like

நோய்நாடி நோய்முதல் நாடி அதுதணிக்கும்
வாய்நாடி வாய்ப்பச் செயல்.

- திருக்குறள்

உற்றான் அளவும் பிணியளவும் காலமும்
கற்றான் கருதிச் செயல்.

- திருக்குறள்

According to Thiruvalluvar, after diagnosis and finding the etiology, a physician prescribes the line of treatment based on patient's condition, condition of the disease and climatic condition.

For Kumbavatham patients, the following line of treatment is given,

- Purgation
- Internal Medicine
- External Medicine
- Paththiyam
- Thokkanam
- Exercise
- Kanmaneekkam (Expiation)

Purgation:

"விரேசனத்தால் வாதம் தாழும்" - நோய்நாடல் பாகம் 1, பக்கம் 248

"அறிந்திடும் வாதம் அடங்கு மலத்தினில்" – சித்த மருத்துவாங்கச் சுருக்கம் பக்கம் 97

Purgation is used to normalize the vitiated Vaatham and eliminate other toxic products of digestion, metabolism and catabolism.

Purgative medicine:

Agasthiar Kuzhambu – 130mg with hot water at early morning on first day only.

Internal medicine:

Vithurasa Mezhugu – 130mg, twice a day with butter.

External medicine:

Vaatha Ennai – 30ml

Patthiyam:

Dietary regimen (or) regulation of diet.

The sort of diet to be observed either simple or rigorous depends on various factors such as patient's strength and nature, nature of the disease, quality of medicine, time, climate etc.

Patthiyam supports the treatment and produce successful result.
Substances that should not be consumed are:

"புளிதுவர் விஞ்சுங்கறி யாற்பூரிக் கும்வாதம்
ஒளி யுவர்கைப் பேறில் பித்துச் சீறும் - கிளிமொழியே
கார்ப்பினிப்பு விஞ்சிற் கபம்விஞ்சு ஞ்சட்டிரதச்
சேரப் புணர் நோயணுகாதே"

பதார்த்த குணசிந்தாமணி (நோய்நாடல் பாகம் 1, பக்கம் 22)

"இலவணம் புளிகடுவெண் ணாலு முதலாக
வொவொரு குணமா யொழிவாயே - நவிலிறைச்சி
கூழ்ப்பாண்ட மச்சம் பெண்சோத்திரங் கொள்பிரமபத்திரி
தீழ்ப்பாகி மெத்தவிது சீ"

தேரன் வெண்பா 601 (T.V. சாம்பசிவம்பிள் VOL V பக்கம் 141)

Salt, tamarind, mustard, gingelly - any of them should be prohibited as warranted by the medicine taken. Further flesh, fish ash, pumpkin, tobacco, horse gram, and lustful activities should be avoided.

பாதரச பத்தியம்

மற்சமுப்பு சீதோட்டின மந்தாதி வத்தெண்ணெய்
துற்சமத்தி யங்கைப்பு தொங்குபுளி – யைச்சற்றுங்
கூட்டாமற் சூதங் கொடுப்பருண்டா ரைச்சமன்பாற்
கட்டாம் றமிருத்தக் காண்

சிகிச்சாரத்ன தீபம், பக்கம் 319

Bitter substances, salt, tamarind, gingelly oil, any of them should be prohibited as warranted by the medicine taken. Further fish and cold food items should be avoided.

In Siddha System of Medicine “Sirappu Maruthuvam” deals with cure and prevention of diseases especially with special treatment techniques such as Yogam, Thokkanam, Varmam, in addition to internal medicine and external medicine. The author has explained here the methods of Thokkanam and also some exercise for treating [Kumbavatham] patients

Thokkanam:

Thokkanam is one of the oldest and simplest forms of siddha treatment. It improves muscle tone, stimulates blood circulation and helps elimination of waste products throughout the body. At its best thokkanam has the potential to restore the individual physically, mentally and spiritually.

தொக்கணம்	-	தொக்கு – அணம்
தொக்கு	-	தோல்
அணம்	-	அணைந்து செய்தல்

Thokkanam - A process consisting in striking with fist and then pressing the body or its part of a person suffering from some ailment. On account of this treatment the body grows strong, the skin gets luster and the person gets sound sleep.

தொக்கணத்தி னாலிரத்தந் தோல் ஊனிவைகட்கு
மிக்கு சவுக்கியஞ்ச மீரனும்போ - மெய்க்கதிக
புட்டியறக்கம் புணர்ச்சி யிவைகதிக்கும்
பட்ட அலைச்சலறும் பார் (சமீரம் - வாயு)

- பொருட்பண்பு நூல் (சித்தர் அறுவை மருத்துவம், பக்கம் 30)

“மர்த்தனமாகிய தொக்கணத்தின் செயல் வகுப்பேனே - சதா
நிந்தமும் வாதம் பிணித்த பிணிப்பைச் செகுப்பேனே
மல்லகரான பிடகர்கை யென்கிற வாளாலே - பிணி
வல்லியை மெய்யினிற் சேதிப்பராந் திறமை வாளாலே
தட்டலிறுக்கல் பிடித்தல் முறுகல்கை தைவந்து - கரங்
கட்டலழுத்த லிழுத்தல் மலாத்துதல் கைவந்து
அசைந்தலிவ் வொன்பது மத்தனத்திந்திரமானாலும் - இதில்
இசைத்த குணங்களைச் சொல்லப் போகு மோவடி யேனாலும்”

- தேரன் தரு (சித்தர் அறுவை மருத்துவம், பக்கம் 30)

The nine techniques mentioned in the verse above are the thokkanam procedures described in our Siddha system. In our inpatient ward and outpatient department, the author treated the patients of Kumbavatham with the following thokkanam methods.

1. Azhutthal
2. Piditthal

Exercise:

Simple movements of the Shoulder, head, neck and upperlimbs were precribed to patients of Kumbavatham.

Expiation: (Kanmaneekkam)

As per Siddha literature, poorvakanmam is one of the reasons for diseases among mankind. It should be expiated.

"நலியாலே வந்தகன்மந் தீரவென்றால்
நன்மரங்கள் தோப்பு நடைசாலை வைத்தல்
தெளிவான கிணறுவெட்டல் குளங்கள் வெட்டல்
தெய்வதலங் கோயில் கட்டத்தீரும் பாரு
எளிதான பாலகர்க்கா பரணமீதல்
என்பதென்ற வாதமெல்லா மிடைத்து போகும்
பழியானநோய் வந்தாவிப்படியே செய்து
பதிவாக வைத்தியத்தைப் பிறகு செய்யே"

- பாடல் 57, அகத்தியர் கன்ம காண்டம் - 300, பக்கம் 23.

To expiate misdeeds of kanma, planting tress, establishing gardens, laying roads and pathways, digging wells, pools, lakes, construction of temples, donating ornaments to poor children must be done. These are advised to patients

PROTOCOL

AN OPEN TRIAL OF "VITHU RASA MEZHUGU" AND "VAATHA ENNAI" FOR THE TREATMENT OF "KUMBA VATHAM (CERVICAL SPONDYLOSIS)"

BY

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1.BACKGROUND:

According to the literature of '**Anuboga Vaithiya Navaneetham - Part 5'** and '**Theraiyar Vaagadam'**, '**Vithu Rasa Mezhugu'** and '**Vaatha Ennai'** are the preparations given for '**Kumba Vatham'**. **Vithu Rasa Mezhugu** contains **Rasam** and **Seraankottai** which are very effective anti – vathaa drugs as described in **Pathartha Guna Chinthamani**.

2. AIMS:

a) Primary aim:

- To find out the efficacy of **Vithu Rasa Mezhugu** and **Vaatha Ennai** for **Kumba Vatham** .

b) Secondary aim:

- To evaluate any adverse effects of the trial drug (if any).

3. POPULATION:

A) About the disease:-

In siddha literature the clinical features of **Kumba vatham** according to **Yugi muni** is given below,

"நவிலவே தோண்மீதுங் கரத்தின் மீதும்
நலிந்தமெத்த வாகியே நசவுண்டாகும்
கவிலவே கன்னமோடு நயனந் தானுங்
கடுத்துமே விறுவிறுப்பு மெரிவுங் காணும்
துவிலவே துடிப்பாகுஞ் சிரசு தன்னிற்
சுழற்றியே நாபிக்கீழ் வலியுமுண்டாம்
அவிலவே அடி நாக்கில் அழன்று காணும்
மலருமே வருகும்ப வாதந்தானே".

என்பதால், இந்நோயில் தோள்பட்டை, கை, முதலிய இடங்களில் மிக்க நோயுண்டாகி அவை நீட்டவும் முடக்கவும் ஒட்டாமல் நோகும், கன்னமும், கண்ணும் கடுத்து விறுவிறுத்து எரிவுண்டாகும் உடல் துடித்து, தலை சுற்றி மிகு சுரமுண்டாய் நாபியின் கீழ் வலியும் அடி நாக்கில் அழற்சியுமுண்டாகும்.

B) ACCORDING TO MODERN MEDICINE, CLINICAL FEATURES OF CERVICAL SPONDYLOSIS ARE:-

1. Pain in the neck radiating down to arm.
2. Pain radiates to shoulder, arms and hands with restriction of movements.
3. The neck is held rigidly and neck movements may exacerbate pain.
4. Paresthesia and sensory loss may be found in affected segment.
5. Headache in the occipital region, on one or both sides and may spread into the temple or into one eye.
6. Burning and tingling sensation in the upper limbs especially extension of the neck.
7. Giddiness (or) drop attacks precipitated by neck movements.
8. Muscle weakness.

4. SAMPLE:

Kumba Vaatham Patients reporting at OPD - Ayothidoss Pandithar Hospital in National Institute of Siddha, Tambaram Sanatorium, Chennai- 47.

SAMPLE SIZE:

It is proposed to study a sample of 40 patients (20 In patients and 20 Outpatients)

STUDY DESIGN:

Clinical trial of cases of Kumba vatham (Cervical spondylosis) treated with Vithu Rasa Mezhugu and Vathaa Ennai for a period of 20 days.

a) INCLUSION CRITERIA:

1. Age: between 25 years and 60 years.
2. Sex: Both Male and Female
3. Pain in the neck radiating to shoulder and arm.
4. Occipital headache, giddiness generally by neck movement.
5. Diabetics with the above symptoms.

b) EXCLUSION CRITERIA:

1. History of trauma
2. Hypertension
3. Cardiac diseases
4. Narcotic addicts
5. Pregnancy
6. Lactation
7. Patients with any other serious illness

c) TERMINATION CRITERIA:

1. Development of any adverse reaction (ADR).
2. Occurrence of any other serious illness.

d) TRIAL DRUG AND DURATION:

1. PURGATIVE : **Agasthiyar Kulambu -** 130mg at early morning on the first day only.
2. INTERNAL DRUG : **Vithu Rasa Mezhugu**, 130 mg twice a day with butter for 9 days
3. EXTERNAL DRUG(Along with internal drug): **Vaatha ennai**, 30-50 ml for external application twice a day for 20 days.
4. TRIAL PERIOD : 20 days for each patients.

5. STUDY PERIOD: 6 months

6. RECRUITMENT: As and when patients with inclusion criteria are reporting, they will be included in the study with their consent. The recruitment will take a period of 5 months. Kumba Vatham patients satisfying inclusion and exclusion criteria will be eligible for admission to the trial. Informed consent will be obtained from the patients.

7. TESTS AND ASSESSMENTS:

RADIOLOGICAL TESTS: X-ray cervical spine

ROUTINE INVESTIGATIONS:

BLOOD - TC, DC, ESR, Hb, Blood sugar, Serum cholesterol, Blood Urea, Serum creatinine

URINE - Albumin, Sugar, Deposit

STOOLS - Ova, cysts, occult blood

8. ASSESSSMENT BY SIDDHA ASPECTS:

En vagai thervugal and Mukkutra assessment.

SIDDHA ASPECTS (According to Yugi Vaithiya Chinthamani):

- Pain in the shoulder and arm
- Muscle weakness in shoulder and arm
- Burning sensation and tingling sensation in the eyes and cheeks
- Giddiness
- Pain below the umbilicus
- Burning sensation in the tongue

9. METHODOLOGY OF TREATMENT:

A day before starting trial treatment, Purgation will be given for balancing the mukkutras.

For In patients, the trial drugs will be given daily in the IP Department of Sirappu Maruthuvam of APH. The clinical assessment will be made daily and laboratory investigations will be done on the first day, 10^{th} day and 20^{th} day of the treatment. The radiological investigations will be done before and after the treatment.

For out patients, the trial drugs will be given in the Outpatiet Department of our APHospital. The patients will be asked to follow regular check up in the OP Department. In each visit, the clinical assessment will be made regularly. The laboratory investigations and radiological investigations will be done before and after treatment.

10. DATA COLLECTION FORMS:

Required information will be collected from each patient by using forms I, II.

- FORM I – SELECTION PROFORMA – At the time of admission of the patient to the study.
- Form II – CLINICAL ASSESSMENT PROFORMA – during study period.

11. ANALYSIS:

- Normal proportion test for determining the significance of treatment
- Mean of objective parameters – before and after treatment - paired‘**t**’ test.

RESULTS AND OBSERVATION

Results of the study were observed with respect to the following criteria.

1. Sex distribution
2. Age distribution
3. Kaalam (Life span)
4. Paruvakaalam
5. Diet
6. Thinai
7. Socio economic status
8. Derangement of Mukkutram
9. Envagai thervugal
10. Derangement of Udalthaathukkal
11. Derangement of Kanmenthriam
12. Duration of illness
13. Associated history
14. Clinical features
15. Precipitating factors
16. Occupational status
17. Radiological findings
18. Degree of Shoulder movements
19. Preclinical studies
20. Result of treatment

RESULTS AND OBSERVATION

Table 1 Gender distribution

Gender	**Cases**	
	No.	**Percentage**
Male	17	42.5
Female	23	57.5
Total	40	100.0

Observation:

Out of 40 patients recruited for the study, 57.5% were females.

Table 2 Age distribution

Age (years)	**Cases**	
	No.	**Percentage**
21-30	1	2.5
31-40	12	30
41-50	12	30
51-60	15	37.5
Total	40	100.0

Observation:

Out of 40 patients, 37.5% were in the age group of 51 – 60.

Table :3 Kaalam (Life span)

Kaalam	Cases	
	No.	Percentage
Vaathakaalam (up to 33 yrs)	3	7.5
Piththaakaalam (34-66 yrs)	37	92.5
Kaba Kaalam (above 67 yrs)	0	0
Total	40	100.0

Observation:

Out of 40 cases, 92.5% of the cases were found to be in Piththakaalam i.e. between 34 –66 years.

4. Paruvakaalam

Among 40 patients, 36(90%) cases were admitted to the trial in kaarkaalam and the remaining 4 (10%) cases were admitted in koothirkaalam

No case was admitted in Munpanikaalam, Pinpanikaalam Elavenil Kaalam, Muthuvenil Kaalam.

5. Diet

Diet	Cases	
	No.	Percentage
Vegetarian	3	7.5
Non-Vegetarian	37	92.5
Total	40	100.0

Observation:

Out of 40 cases 92.5% of cases were non-vegetarians and 7.5% of cases vegetarians.

6. Thinai:

Most of the cases (100%) were reported from Neithal thinai.

Neithal thinai, which is responsible for vaatha diseases, may be the reason for the higher incidence.

6. Socio economic status:

Socia Economic Status	**Cases**	
	No.	**Percentage**
Poor	10	25
Middle class	25	62.5
Rich	5	12.5
Total	40	100.0

Observation:

62.5% of patients belong to middle class income group.

7. Disturbances in Vaatham:

Out of 40 cases observed viyaanan and samanan were affected in almost all the cases while abanan affected in 5 cases, koorman affected in 3 cases

8. Disturbances in Piththam:

Out of 40 cases, Saathagam was affected in almost all cases.

9.Disturbances in Kabam:

Only Santhigam was affected in all the 40 cases.

10. Envagai Thervugal (Siddha Diagnostic Parameters)

Examination of Naadi revealed Vathapitham (Thontha Naadi) in all the cases; Sparism revealed tenderness in 52.5% of cases; Constipation was found in 5% of cases and impaired vision in 8.3% of cases.

11. Naadi

Naadi	**Cases**	
	No.	**Percentage**
Vaatham	0	0
Vaathapitham	40	100
Piththavaatham	0	0
Piththakabam	0	0
Total	40	100

All the cases were diagnosed as having Vathapitham

12. Neikuri

Spreading Pattern	**Cases**	
	No.	**Percentage**
Aravenaneendathu	11	18.3
Aazhipolparaviathu	0	0.0
Muththupol Ninrathu	29	81.7
Total	40	100.0

Out of 40 patients, Neerkuri revealed 81.7% were Kaba neer and 18.3% were vaatha neer.

13. Udal Thathukkal:

Enbu was affected in all 40 cases (100%) .

Saaram also affected in all 40 cases (100%)

14. Disturbances in Kanmenthiriyam:

Kai was affected in all 40 cases (100%)

15. Duration of Illness:

Duration of Illness (month)	**Cases**	
	No.	**Percentage**
Up to 6 months	22	55
7 – 12 months	8	20
13 –18 months	0	0
19 – 24 months	5	12.5
25 – 30 months	0	0.0
Above 30 months	5	12.5
Total	40	100.0

55% of patients reported with 6 months duration of illness

16. Involvement of Shoulder Joints

Shoulder Joints	**Cases**	
	No.	**Percentage**
Both Shoulder Joints	8	20
Right Shoulder joint only	12	37.5
Left Shoulder Joint only	20	42.5
Total	40	100.0

17. Clinical Features

Clinical Feature	**Cases**	
	No.	**Percentage**
Pain in shoulder	40	100.0
Pain in upper limbs	40	100.0
Numbness	23	57.5
Tenderness	21	52.5
Stiffness	30	75
Headache	15	37.5
Burning sensation of the eyes	10	25
Burning sensation of the tongue	1	2.5
Pain below the umbilicus	5	5
Restriction of movements	40	100.0

18. Precipitating Factors:

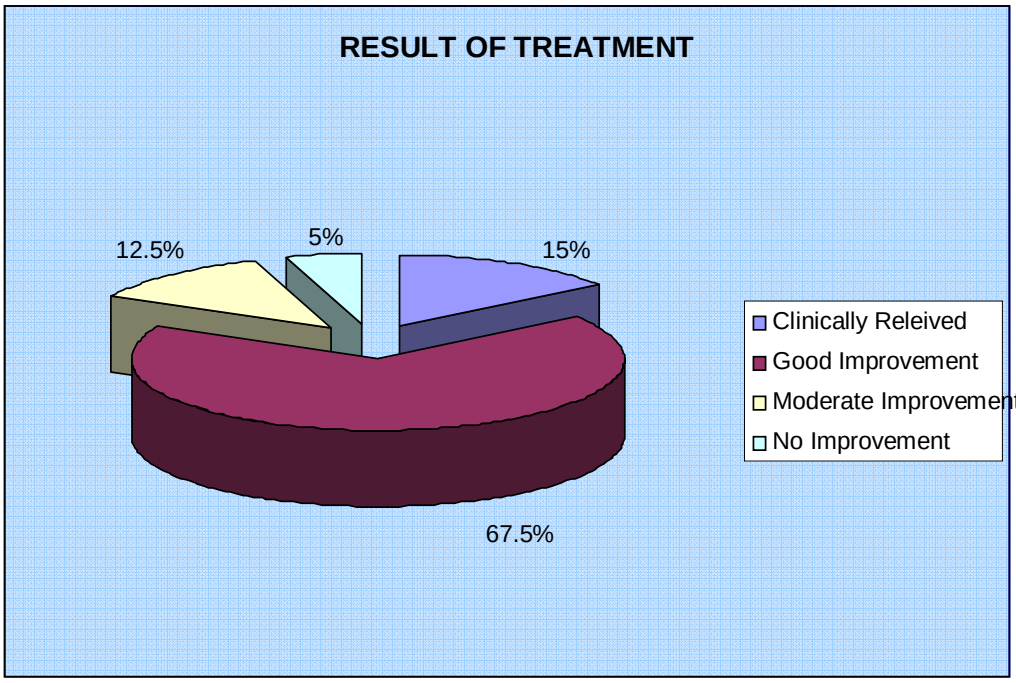
Factors	**Cases**	
	No.	**Percentage**
Menopause	11	27.5
Heavy household works	10	25
Occupational related	20	50
History of trauma	2	10
Diabetis Mellitus	7	17.5

19. Occupation:

Occupation	**Cases**	
	No.	**Percentage**
Clerk	13	32.5
Teacher	3	7.5
Watchman	2	5
Tailor	2	5
Farmer	10	25
Household works	10	25
Total	40	100.0

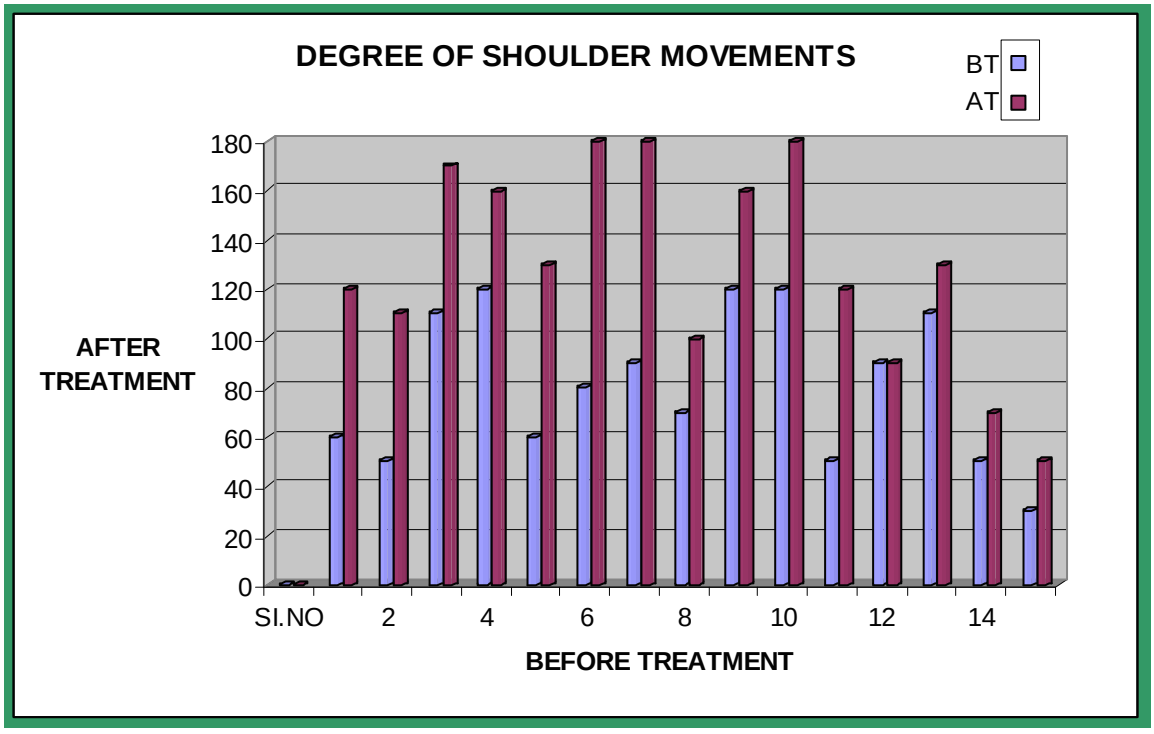
20. Results:

Results	Cases	
	No.	**Percentage**
Clinically Releived	6	15
Good Improvement	27	67.5
Moderate Improvement	5	12.5
No Improvement	2	5



21. Degree of Shoulder Movements:

SI.NO	PATIENT NO	Degree of Shoulder Movements	
		BT	AT
1.	1515	60	120
2.	1525	50	110
3.	AL 6409	110	170
4.	AI 5794	120	160
5.	AM 3183	60	130
6.	1127	80	180
7.	1141	90	180
8.	1133	70	100
9.	AM 7096	120	160
10.	AM 7162	120	180
11.	1156	50	120
12.	1640	90	90
13.	1152	110	130
14.	1214	50	70
15.	1231	30	50



```
Paired t test - comparision of Degree of shoulder movement before and
after treatment

------------------------------------------------------------------------
-------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf.
Interval]
---------+--------------------------------------------------------------
------
    debt |      40      142.75    8.219641    51.98557    126.1242
159.3758
    deat |      40      161.25    5.514404    34.87615    150.0961
172.4039
---------+--------------------------------------------------------------
------
    diff |      40       -18.5    4.662315    29.48707   -27.93042   -
9.069578
------------------------------------------------------------------------
-------

                    Ho: mean(debt - deat) = mean(diff) = 0
Ha: mean(diff) < 0         Ha: mean(diff) ~= 0        Ha: mean(diff) >0
     t =  -3.9680                t =  -3.9680             t =  -3.9680
 P < t =   0.0002          P > |t| =   0.0003          P > t =   0.9998
```

22. Genderwise prognosis

RESULT	FEMALE	MALE	TOTAL
C.R	3	3	6
G.I	16	11	27
M.I	3	2	5
N.I	1	1	2
TOTAL	23	17	40

C.R = Clinically Releived
G.I = Good Improvement
M.I = Moderate Improvement
N.I = No Improvement

ROUTINE HAEMATOLOGICAL INVESTIGATIONS (OP cases)

2	8600	7800	56	41	3	0	57	39	3	1	14.6	12.5	99		81		44	23	203	219	2	4
	TC (Cumm)				DC(Cumm)						Hb (mg/dl)		Blood Sugar(mg%)				Blood Urea(mg %)		Blood Cholesterol (mg%)			ESR
	BT	AT	BT(%)				AT (%)				BT	AT	BT		AT		BT	AT	BT	AT	BT	
			P	L	E	M	P	L	E	M			F	PP	F	PP					1/2hr	1hr
9	6900	7200	50	45	5	0	53	42	5	0	12.5	9.2	198	300	120	192	25	20	252	253	13	40
	7300	7100	52	43	5	0	50	46	4	0	12.1	12.8	85	123	79	110	18	20	187	192	4	8
	6800	7000	54	42	6	0	51	47	2	0	13.2	12.8	80	107	70	108	22	24	231	235	10	20
	8900	6800	56	42	2	0	56	39	5	0	12.5	14.1	108		118		20	19	155	191	2	4
3	7000	7100	50	46	4	0	52	43	5	0	9.7	10.8	85	104	90	107	19	20	244	238	30	63
	6400	8000	58	40	2	0	53	44	3	0	9.7	10.8	247		216		18	18	158	163	4	10
2	7000	8000	55	42	3	0	53	45	2	0	9.2	10.5	82			74	22	15	167	147	2	4
7	7000	7200	54	43	3	0	55	42	3	0	11.8	12.1	89	112	85	114	23	21	234	245	4	8
6	6900	7800	55	43	2	0	52	45	3	0	11.1	11.8	125		96	112	31	32	245	236	2	4
2	7000	7400	52	46	4	0	51	46	3	0	10.2	11.4	81		81		24	28	194	155	6	12
	7200	8100	58	38	4	0	53	45	2	0	12	13	70		78		32	34	198	187	4	8
	7200	7500	56	40	3	1	53	42	5	0	9.2	10.2	113		109		35	28	222	231	10	22
	7900	8200	60	37	3	0	53	45	2	0	9.8	12	85		104		16	19	-	240	22	44
6	6800	7500	52	45	3	0	53	42	5	0	9.7	11	95		88		27	18	170	165	8	16
1	6200	8000	50	48	2	0	42	48	4	0	13	14	171	-	256		16	31	-	210	4	10
3	7800	6900	53	42	3	2	52	46	2	0	12.5	12	70		78		17	16	154	166	4	8
5	8200	8900	54	42	4	0	51	46	3	0	13.1	12.5	112		124		27	29	189	198	2	4
0	8100	8200	53	44	3	0	52	45	2	1	8.7	10.8	119		110		20	25	268	257	18	36
9	7800	8200	53	42	5	0	55	43	2	0	10.2	11.2	107		102		24	26	150	153	15	32

BT = Before Treatment AT = After Treatment

ROUTINE HAEMATOLOGICAL INVESTIGATIONS (IP cases)

SI .NO	IP. NO	TC(Cumm)		DC(Cumm)								Hb(mg/dl)		Blood Sugar(mg/dl%)				Blood Urea (mg%)		Blood Cholesterol (mg%)		ESR(mm)		
		BT	AT	BT				AT				BT	AT	BT		AT		BT	AT	BT	AT	BT		AT
				P	L	E	M	P	L	E	M			F	PP	F	PP					1/2hr	1hr	1/2
1.	1060	7800	6100	60	37	3	0	51	47	2	0	11.1	12.1	89	106	88	114	21	30	186	221	42	85	8
2.	1515	5800	6600	52	45	3	0	53	36	8	3	11.1	13.2	78	106	108	124	17	24	190	176	12	26	8
3.	1525	8900	5900	62	37	1	0	50	49	1	0	13.5	12.1	167	246	72	-	18	21	173	171	44	88	20
4.	3015	7400	6100	56	42	1	0	54	44	2	0	11.6	11.1	124	169	116	152	26	27	280	188	4	8	10
5.	1140	6400	7800	57	38	1	4	54	40	5	1	10.7	12.7	91	116	70	116	26	25	194	189	10	20	15
6.	1141	7000	6200	56	42	2	0	57	38	4	0	7.7	10.3	221	400	151	288	19	19	314	-	4	8	15
7.	1127	7400	6500	60	39	1	0	65	32	3	0	10.6	10.6	81	114	69	106	18	19	239	167	8	16	16
8.	1621	810	6600	57	40	3	0	52	40	2	0	14	10.2	81	99	73	111	30	33	208	218	2	4	2
9.	1133	7000	6900	57	41	2	0	55	45	4	1	7.7	10.2	117	268	273	-	27	28	209	209	10	20	10
10.	1614	8200	7300	54	42	4	0	62	35	2	1	13.1	9.7	73	90	93	131	25	34	-	227	5	10	12
11.	1156	6500	7800	48	48	4	0	53	42	4	1	9.2	8.9	86	98	74	110	18	18	166	-	6	12	22
12.	1640	6100	8000	52	42	6	0	53	44	3	0	9.2	12	63	110	70	94	21	16	150	137	100	200	70
13.	1214	9400	7000	58	38	2	0	53	42	5	0	11.1	10	82	115	78	-	30	30	-	196	16	32	22
14.	1607	7100	7400	62	36	2	0	55	43	2	0	14.5	13.1	86	145	82	87	22	27	222	251	4	8	4
15.	1198	7400	7300	52	42	2	4	51	40	4	5	9.8	10.4	118	235	79	134	28	20	-	-	20	40	12
16.	1152	6600	7800	56	41	3	0	58	38	4	0	9.7	9.8	103	120	94	208	23	18	240	-	14	28	12
17.	1652	6500	7000	54	42	4	0	53	42	5	0	10.6	13.1	95	127	80	116	21	20	248	-	6	12	12
18.	1176	7100	6100	65	31	4	0	55	43	2	0	9.7	9.8	252	331	251	369	27	18	250	-	8	16	4
19.	1231	9800	7000	50	44	6	0	52	44	6	0	11.5	10.2	118	-	84	157	20	22	-	189	20	40	14
20.	1791	7200		52	46	2	0	50	41	8	1	14	14	75	104	87	103	20	25	146	160	10	24	4

BT = Before Treatment AT = After Treatment

HAEMATOLOGICAL INVESTIGATIONS (OP cases)

SI.NO	OP.NO	LIVER FUNCTION TESTS								RENAL FUNCTION TESTS			
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
		T.BILIRUBIN		SGOT		SGPT		SAP		CREATININE		T.PROTEIN	
1.	AL6409	0.8	0.7	18	17	17	16	-	-	0.6	0.6	7.2	7.6
2.	AI5794	0.6	0.7	15	17	20	19	123	-	0.8	0.9	7.8	7.3
3.	AL039	0.3	0.4	21	22	24	21	142	135	0.6	0.7	6.1	5.9
4.	AI5144	0.4	0.6	25	24	28	20	124	133	0.6	0.7	7.7	6.9
5.	AM3183	1.1	0.8	19	20	17	16	123	-	0.7	0.6	8.1	7.8
6.	AJ3676	0.8	0.7	28	11	24	10	-	-	0.6	0.5	7.2	7.6
7.	AL7832	0.6	0.6	13	10	10	9	181	-	0.8	0.5	7	6.8
8.	AM5387	0.4	0.6	20	21	18	17	-	-	0.7	0.7	7.5	7.3
9.	AM7096	1	1.1	32	28	28	19	222	167	1	0.8	7.5	7.2
10.	AM7162	1.2	0.8	34	24	30	21	206	205	0.9	0.9	7.3	7.2
11.	AJ3454	1.1	0.9	20	21	20	23	-	134	1	1.1	7.2	7.3
12.	AJ3692	2.8	1.2	21	24	18	20	137	123	1	0.8	7.9	7.2
13.	AM9512	0.9	0.8	24	29	20	26	147	197	1.1	0.6	7.5	6.5
14.	AJ8019	0.8	0.8	17	17	15	15	-	220	0.5	0.7	6.4	7.9
15.	AM8976	0.6	0.7	17	11	13	9	124	143	0.9	0.6	7.3	7.7
16.	AG8071	0.5	0.5	13	17	12	19	137	166	1	0.8	7.7	6.4
17.	AN7073	0.6	0.7	12	23	10	21	-	177	0.6	0.6	7.6	8.9
18.	AN6125	0.6	0.6	13	16	11	10	-	-	0.7	0.6	6.3	5.7
19.	AO1510	0.6	0.5	18	12	12	16	229	189	0.9	0.6	7.2	7.1
20.	AK2619	3.6	1.1	23	20	21	23	153	147	0.7	0.8	7.4	6.8

BT = Before Treatment AT = After Treatment T. = Total

HAEMATOLOGICAL INVESTIGATIONS (IP cases)

SI.NO	IP.NO	LIVER FUNCTION TESTS								RENAL FUNCTION TESTS			
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
		T.BILIRUBIN		SGOT		SGPT		SAP		CREATININE		T.PROTEIN	
1.	1060	0.8	0.7	25	24	23	21	-	-	0.9	0.9	7.4	7.4
2.	1515	0.6	0.6	23	22	18	18	-	-	0.6	1.1	7.1	7.1
3.	1525	1.3	1	21	20	20	20	-	-	1.1	0.9	8.9	7.8
4.	3015	0.7	0.6	46	37	43	35	111	121	0.9	0.9	8	7.6
5.	1140	0.6	0.6	22	16	18	14	205	-	0.8	0.4	8.8	7.6
6.	1141	0.6	0.7	32	25	28	21	220	-	0.6	0.5	7.4	7.2
7.	1127	0.5	3.5	13	18	16	15	224	188	0.6	0.6	7.4	6.9
8.	1621	0.8	0.6	29	31	27	63	154	185	0.9	0.8	7.7	7.3
9.	1133	0.8	0.7	38	40	32	38	437	283	0.8	0.7	7.9	7.1
10.	1614	0.8	0.7	23	25	31	22	158	134	0.8	1	7.4	7.7
11.	1156	0.7	0.7	34	18	24	16	146	-	0.6	0.8	17	7.7
12.	1640	0.8	0.7	12	19	11	16	159	157	0.7	0.5	7.4	7.6
13.	1214	0.8	0.9	32	31	45	25	-	187	0.9	0.8	7.8	7.2
14.	1607	1	0.5	71	38	66	38	189	200	1	0.6	6.2	6.8
15.	1198	0.6	0.7	21	22	22	20	-	-	0.8	0.7	7.4	7.1
16.	1152	0.8	0.6	25	24	22	21	198	-	0.8	0.6	7.5	7.9
17.	1652	0.7	0.7	17	16	15	14	194	-	0.7	0.7	7.8	7.4
18.	1176	0.7	0.8	18	22	16	20	289	-	0.8	0.7	7.4	8.8
19.	1231	0.6	0.6	22	21	20	19	141	141	0.6	0.8	7.3	7.8
20.	1791	0.7	0.8	21	24	20	20	224	193	0.7	0.8	7.3	7.8

BT = Before Treatment AT = After Treatment T. = Total

URINE ANALYSIS (OP cases)

SI.NO	OP.NO	Before treatment			After treatment			Before treatment			After	
		Albumin	Sugar	Deposits	Albumin	Sugar	Deposits	Ova	Cyst	Occult blood	Ova	Cy
1.	AL6409	Nil	+	1-2PC,0-1EC	Nil	Nil	1-2PC,1-2EC	Nil	Nil	Nil	Nil	Nil
2.	AI5794	Nil	Nil	2-3PC,2-3EC	Nil	Nil	1-2PC,01EC	Nil	Nil	Nil	Nil	Nil
3.	AL039	Nil	Nil	0-1PC,2-1EC	Nil	Nil	1-3PC,0-2EC	Nil	Nil	Nil	Nil	Nil
4.	AI5144	Nil	Nil	2-3PC,1-2EC	Nil	Nil	2-3PC,0-1EC	Nil	Nil	Nil	Nil	Nil
5.	AM3183	Trace	Nil	3-5PC,4-5EC	Nil	Nil	1-2PC,0-1EC	Nil	Nil	Nil	Nil	Nil
6.	AJ3676	Nil	Nil	1-2PC,102EC	Nil	Nil	3-4PC,2-5EC	Nil	Nil	Nil	Nil	Nil
7.	AL7832	Nil	Nil	1-2PC,0-1EC	Nil	Nil	1-2PC,0-1EC	Nil	Nil	Nil	Nil	Nil
8.	AM5387	Nil	Nil	2-3PC,2-4EC	Nil	Nil	1-2PC,0-1EC	Nil	Nil	Nil	Nil	Nil
9.	AM7096	Nil	Nil	1-3PC,1-2EC	Nil	Nil	0-2PC,0-2EC	Nil	Nil	Nil	Nil	Nil
10.	AM7162	Nil	Nil	1-3PC,0-1EC	Nil	Nil	4-6PC,2-4EC	Nil	Nil	Nil	Nil	Nil
11.	AJ3454	Nil	Nil	1-2PC,0-1EC	Nil	Nil	2-3PC,1-2EC	Nil	Nil	Nil	Nil	Nil
12.	AJ3692	Nil	Nil	1-2PC,1-2EC	Nil	Nil	2-3PC,2-4EC	Nil	Nil	Nil	Nil	Nil
13.	AM9512	Nil	Nil	1-2PC,2-4EC	Nil	Nil	2-3PC,1-2EC	Nil	Nil	Nil	Nil	Nil
14.	AJ8019	Nil	Nil	1-2PC,1-2EC	Nil	Nil	0-1PC,2-4EC	Nil	Nil	Nil	Nil	Nil
15.	AM8976	Nil	Nil	1-2PC,0-1EC	Nil	Nil	1-2PC,1-2EC	Nil	Nil	Nil	Nil	Nil
16.	AG8071	Nil	+	2-3PC,1-2EC	Nil	Nil	1-2PC,2-5EC	Nil	Nil	Nil	Nil	Nil
17.	AN7073	Nil	Nil	2-3PC,2-4EC	Nil	Nil	2-3PC,2-3EC	Nil	Nil	Nil	Nil	Nil
18.	AN6125	Nil	Nil	2-4PC,0-1EC	Nil	Nil	2-3PC,1-2EC	Nil	Nil	Nil	Nil	Nil
19.	AO1510	Nil	Nil	1-2PC,1-2EC	Nil	Nil	0-1PC,0-1EC	Nil	Nil	Nil	Nil	Nil
20.	AK2619	Nil	Nil	4-6PC,2-4EC	Nil	Nil	3-4PC,1-2EC	Nil	Nil	Nil	Nil	Nil

PC = Pus Cells EC = Epithelial Cells

URINE ANALYSIS (IP cases)

SI.NO	IP.NO	Before treatment			After treatment			Before treatment			After tr	
		Albumin	Sugar	Deposits	Albumin	Sugar	Deposits	Ova	Cyst	Occult blood	Ova	Cys
1.	1060	Nil	Nil	3-4PC,2-4EC	Nil	Nil	2-4PC,23EC	Nil	Nil	Nil	Nil	Nil
2.	1515	Nil	Nil	2-4PC,2-4EC	Nil	Nil	1-2PC,1-2EC	Nil	Nil	Nil	Nil	Nil
3.	1525	Nil	Nil	2-4PC,2-4EC	Nil	Nil	3-4PC,2-4EC	Nil	Nil	Nil	Nil	Nil
4.	3O15	Nil	Nil	1-2PC,0-1EC	Nil	Nil	2-3PC,2-3EC	Nil	Nil	Nil	Nil	Nil
5.	1140	Trace	Nil	1-2PC,2-4EC	Nil	Nil	1-2PC,1-2EC	Nil	Nil	Nil	Nil	Nil
6.	1141	Nil	Nil	2-3PC,0-1EC	Nil	Nil	2-3PC,0-1EC	Nil	Nil	Nil	Nil	Nil
7.	1127	Nil	Nil	1-3PC,1-2EC	Nil	Nil	2-3PC,1-3EC	Nil	Nil	Nil	Nil	Nil
8.	1621	Nil	Nil	1-3PC,1-2EC	Nil	Nil	1-2PC,1-3EC	Nil	Nil	Nil	Nil	Nil
9.	1133	Nil	+	1-2PC,0-1EC	Nil	++	2-5PC,Plenty	Nil	Nil	Nil	Nil	Nil
10.	1614	Nil	Nil	1-2PC,1-3EC	Nil	Nil	1-3PC,1-2EC	Nil	Nil	Nil	Nil	Nil
11.	1156	Nil	Nil	2-3PC,Plenty	Nil	Nil	2-3PC,3-5EC	Nil	Nil	Nil	Nil	Nil
12.	1640	Nil	Nil	1-2PC,0-1EC	Nil	Nil	1-3P,1-2EC	Nil	Nil	Nil	Nil	Nil
13.	1214	Nil	Nil	1-2PC,2-4EC	Nil	Nil	1-2PC,1-2EC	Nil	Nil	Nil	Nil	Nil
14.	1607	Nil	Nil	0-1PC,1-2EC	Nil	Nil	1-2PC,0-1EC	Nil	Nil	Nil	Nil	Nil
15.	1198	Nil	Nil	1-2PC,1-2EC	Nil	Nil	2-5PC,4-5EC	Nil	Nil	Nil	Nil	Nil
16.	1152	Nil	Nil	1-2PC,1-2EC	Nil	Nil	1-3PC,1-2EC	Nil	Nil	Nil	Nil	Nil
17.	1652	Nil	Nil	1-3PC,2-4EC	Nil	Nil	1-3PC,2-5EC	Nil	Nil	Nil	Nil	Nil
18.	1176	Nil	++	1-3PC,2-4EC	Nil	+++	5-6PC,3-4EC	Nil	Nil	Nil	Nil	Nil
19.	1231	Nil	Nil	0-1PC,1-2EC	Nil	Nil	1-3PC,2-4EC	Nil	Nil	Nil	Nil	Nil
20.	1791	Nil	Nil	2-4PC,2-5EC	Nil	Nil	3-5PC,1-2EC	Nil	Nil	Nil	Nil	Nil

PC = Pus Cells EC = Epithelial Cells

RADIOLOGICAL FINDINGS:

S.NO	OP.NO/IP.NO	Radiological findings – X - Ray	MRI Cervical Spine
1.	1060		$C_4 – C_5$ block vertebra + Mild post. Disc bulge at $C_3 – C_4$ +Disco – osteophytic protrusion $C_5 – C_6$ & $C_6 – C_7$
2.	1515		Cervical Spondylosis + R.Posterolateral disc protrusion $C_5 – C_6$ + narrowing of R neural foramina
3.	AL 6409	Cervical Spondylosis + large antero lateral osteophytes	Dehydratic disc changes C_3- C_4, $C_4 – C_5$, $C_6 –C_7$ + Posterocentral disc bulge + B/Lnarrowing of neural foramen
4.	AJ 3676	Loss of lordosis + IV disc space narrowing	
5.	AM3183	Loss of lordosis + IVF narrowing + osteophytic changes	
6.	AI5144	Anteroposterior degenerative OA changes + IVD space maintained	
7.	AL7832	IVD space narrowing + Loss of lordosis	
8.	AM5387	Early Spondylosis + Prevertebral tissue normal	Disc bulge at $C_5 – C_6$ & $C_6 – C_7$
9.	AM3015	Cervical Sponylosis	
10.	AM9512	Cervical Sponylosis + B/L rudimentary cervical rib	Mild posterior disc bulge $C_3 – C_4$, C_4 -C_5 & $C_5 – C_6$
11.	1133	Loss of lordosis + B/L IVF narrowing + osteophytic changes	
12.	1640	Loss of lordosis + IVF narrowing + osteophytic changes	
13.	1621	IVD space narrowing + Loss of lordosis	
14.	1152	Osteophytic changes involved in $C_5 – C_6$ & $C_6 – C_7$	
15.	1791	Cervical Spondylosis + Osteophytic changes	

RESULTS AND OBSERVATIONS: (OP CASES)

SI.NO	O.P NO	NAME	AGE	SEX	DOA	DOI	DOD	NO OF DAYS TREATED	RESULT
1.	AL039	Venkatesan	50	M	2.8.08	2months	22.8.08	21 days	G.I
2.	AI5794	Thara	50	F	7.8.08	6months	27.8.08	21days	G.I
3.	AL6409	Jeyammal	60	F	9.8.08	2weeks	29.8.08	21days	G.I
4.	AM3183	Janagi	60	F	25.8.08	2years	13.9.08	21days	M.I
5.	AJ3676	Tamilselvi	34	F	25.8.08	2years	13.9.08	21days	C.R
6.	AJ3454	Kumar	35	M	26.8.08	2years	14.9.08	21days	NI
7.	AJ3692	Philips	39	M	28.8.08	1years	16.9.08	21days	M.I
8.	AI5144	Balaji	35	M	6.9.08	5months	24.9.08	21days	G.I
9.	AL7832	Manjula	36	F	8.9.08	2months	28.9.08	21days	G.I
10.	AM5387	Balasubramanian	50	M	8.9.08	5months	28.9.08	21days	G.I
11.	AM7162	Pazhaniyammal	29	F	9.9.08	5months	29.9.08	21days	G.I
12.	AM7096	Daniel	45	M	9.9.08	5months	29.9.08	21days	G.I
13.	AM9512	Pandiyarajan	32	M	18.9.08	1year	8.10.08	21days	G.I
14.	AM8976	Sathyaveni	36	F	22.9.08	2months	12.10.08	21days	C.R
15.	AG8071	Krishnamoorthi	60	M	24.9.08	1year	14.10.08	21days	C.R
16.	AJ8019	Amudha	32	F	4.10.08	3months	24.10.08	21days	G.I
17.	AN6125	Padmanoel	60	F	11.10.08	10years	31.10.08	21days	G.I
18.	AN7073	Saraswathi	38	F	15.10.08	3months	4.11.08	21days	G.I
19.	AO1510	Shanbagavalli	60	F	5.11.08	2years	25.11.08	21days	M.I
20.	AK2619	Mujipunisha	40	F	12.11.08	2months	2.12.08	21days	G.I

C.R = Clinically Releived
G.I = Good Improvement
M.I = Moderate Improvement
N.I = No Improvement

RESULTS AND OBSERVATION: (IP CASES)

SI.NO	IP.NO	NAME	AGE	SEX	DOA	DOI	DOD	NO OF DAYS TREATD	RESULT
1.	1060	Vasanthi	54	F	31.7.08	2years	19.8.08	21 days	G.I
2.	1515	Sundaram	52	M	1.8.08	9months	23.8.08	21days	G.I
3.	1525	Balakrishnan	52	M	4.8.08	6months	23.8.08	21 days	G.I
4.	3015	Dhamodharan	53	M	27.8.08	20 days	13.9.08	21 days	C.R
5.	1127	Kalaivani	32	F	2.9.08	2months	28.9.08	21 days	C.R
6.	1133	Jeyalakshmi	50	F	4.9.08	10years	28.9.08	21 days	NI
7.	1140	Jamuna	40	F	6.9.08	2months	13.9.08	21 days	G.I
8.	1141	Selvi	52	F	6.9.08	3years	4.10.08	21 days	G.I
9.	1607	Shivaprakash	52	M	8.9.08	1year	23.9.08	21 days	C.R
10.	1614	Mani	49	M	9.9.08	5years	1.10.08	21 days	G.I
11.	1621	Anbazhagan	39	M	12.9.08	20 days	30.9.08	21 days	G.I
12.	1152	Sulochana	47	F	13.9.08	1year	10.10.8	21 days	G.I
13.	1156	Banu	41	F	15.9.08	3months	13.10.8	21 days	G.I
14.	1640	Elango	58	M	18.9.08	8months	22.10.8	21 days	G.I
15.	1652	Selvaraj	50	M	22.9.08	4years	18.10.8	21 days	M.I
16.	1176	Vaidegi	60	F	22.9.08	15 days	8.10.08	21 days	G.I
17.	1198	Loganayagi	48	F	3.10.08	2weeks	14.10.8	21 days	G.I
18.	1214	Rajeshwari	60	F	10.10.08	10months	23.10.8	21 days	G.I
19.	1231	Kamala	46	F	23.10.08	6months	23.1.08	21 days	M.I
20.	1791	Chellakannu	60	M	18.11.08	6months	16.12.08	21 days	G.I

C.R = Clinically Releived
G.I = Good Improvement
M.I = Moderate Improvement
N.I = No Improvement

DISCUSSION

The signs and symptoms of Kumbavatham can be correlated to those of Cervical Spondylosis.This study includes collection of data like age, sex, duration of the presenting signs and symptoms, precipitating factors that provoked the condition and radiological findings.

The drugs used for this clinical trial are Vithurasa Mezhugu and Vatha Ennai.The detailed
discussion of this dissertation topic by the author is based on the results and observations.

Age distribution:

This study shows that the highest incidence of Kumbavatham is between 51 – 60 years of age.

Sex distribution:

The predominantly affected sex is female(57.5). The common cause for this may be
calcium depletion around menopause.

There is no significant difference between male and female on improvement (P>0.05)

Living Lands (Thinai):

In this study all cases were from Neithal land.

Neithal land is known to be a promoter of Vatha diseases and hence higher incidence.

Gunam (Quality of the individual):

All the patients (100%) under study were predominantly of Rajogunam assessed from interrogation and other observations

Socio – economic status:

62.5% of cases of Kumbavatham belong to the middle class and 25% to low socio economic status and 12.5 to high class.

Seasonal distribution:

Kaarkaalam showed the highest incidence of 90% and 10% of cases were reported during Koothirkaalam.

Precipitating factors:

Already the author has explained that ageing is the common cause for Kumbavatham.

Apart from that, occupation takes the major part (50%) of the causative factor and 50% of cases with history of increased house hold works. (See Table No:18)

Occupational references:

Those engaged in clerical work account for the highest number (32.5%) of cases. Maintaining the same posture throughout the working hours produces the impact.

Clinical Manifestations:

Pain in the shoulder and upper limbs were present in all the 40 cases(100%). The other important features were stiffness (75%), headache(37.5%), numbness in upper limbs (57.5%), giddiness(46.7%), etc.

Derangement of Vaatham:

Viyaanan and Samaanan were affected in all the 40 cases (100%)

Derangement of Pittham:

Saathaga Pittham was affected in all the 40 cases (100%)

Derangement of Kabam:

Santhigam was affected in all the 40 cases.

Udal Thaathukkal:

Saaram was affected in the all 40 cases
Enbu was affected in all the 40 cases

Gnanenthiriyam:

Among the 40 cases Kann was affected in 15 cases (25%)

Kanmenthiriyam:

Among the 40 cases Kai was affected in40 cases (100%). Eruvaai was affected in 5 cases (12.5%).

Degree of Shoulder movements

There is signifigant improvement in degree of shoulder movements after treatment (Table 21)

Eight parameters in our diagnostic system (Envagai Thervugal):

In Sparism, 52.5% showed tenderness. At the time of admission 5 patients 12.5% reported to have constipation.

In Moothiram, Neerkuri and Neikkuri were analysed. In 11 cases (18.3%) oil slowly spread, and in 29 patients (81.7%) oil spread like pearl (Kaba neer).

Pulse reading was noted in all the 40 cases and vaathapitham was observed in all
the 40 cases.

Treatment:

The treatment was aimed at normalizing the deranged thodams and providing relief from symptoms. Before treatment the patients were advised to take Agasthiar kuzhambu – 130 mg with hot water during early morning for purgation. The patient was advised to take rest without internal medicines and other activities on that day.

The author treated the patients with trial drugs Vithurasa Mezhugu (internal) – 130 mg,bid with butter and Vaatha Ennai (external). During treatment, the patients were advised to follow paththiyam (avoid tamarind, tubers etc).

Sirappu Maruthuvam Techniques(methods) applied in Kumbavatham patients

a) Thokkanam:

Among the 40 cases, 20 were treated additionally by Thokkanam with Vaatha Ennai once a day regularly.

b) Exercises:

All the 40 cases were instructed to do simple exercises for upper limbs

Curative Effect:

On the basis of curative effect of the trial drugs, all symptoms were relieved in 6

patients (15%). Good improvement was assessed in 27 patients (67.5%). Moderate improvement was assessed in 5 patients (12.5%). No improvement was assessed in 2

patients (5%).

No toxic and side effects were clinically observed in all cases

Qualitative analysis of drugs done in C.L.Baid Metha college of pharmacy,

Thoraippaakkam, Chennai – 96, reveals Vithurasa Mezhugu contains Calcium, Iron(ferrous), Sulphate, Chloride,

Phosphate,carbonate,Sugar,Alkaloids, Protein,Tannins, Phenols,

Aminoacid, Glycosides, ,Flavonoids,Steroids,Starch,

Tannic acid.

Pharmacological studies done in C.L.Baid Metha college of pharmacy, Thoraippaakkam, Chennai – 96, reveals Vithurasa Mezhugu exhibited significant analgesic, and anti-inflammatory activity in acute experimental inflammatory conditions in rats.

Toxicological studies of Vithurasa Mezhugu done in C.L.Baid Metha college of pharmacy, Thoraippaakkam, Chennai – 96. Acute oral toxicity study did notexhibit any mortality in rats.

The repeated oral toxicity study conducted for15days with the drug did not exhibit significant changes in RBC count and in Hb%.However the test drug exhibited significant ($P<0.001$) alteration in liver marker enzymes levels (AST and ALT)

Repeated oral toxicity study also exhibited reduction in body weight with dehydration. However, these alterations did not reflect on the histopathological study of liver tissue after 15 days repeated dosing. The duriug treatment also exhibited elevated levels of urea and uric acid levels. Cholesterol level also showed an upward trend after the treatment.

However the histopathology of liver and kidney did not show any gross pathological changes in the tissues

SUMMARY

Based on Yugi Vaithiya Chinthamani, 40 cases of Kumbavatham were diagnosed Clinically. 20 cases were admitted and treated with the trial drugs in the inpatient ward and
the rest of the patients treated in the outpatient department of Sirappu Maruthuvam at the Ayothidoss Pandithar Hospital attached to National Institute of Siddha, Tambaram Sanatorium, Chennai – 47.

The various Siddha methods of examination of the disease were carried out and the data were recorded in the proforma.

The trial medicines selected for both internal and external treatment were Vithurasa Mezhugu – 130 mg bid and Vatha Ennai – 30 ml respectively.

Before starting treatment careful history was taken and recorded for the 40 selected cases.

During treatment all the patients were put under patthiyam (a specific dietary regimen).

Laboratory investigations were done periodically for all the cases before and after treatment.

The observations made during the clinical study show that the internal drug Vithurasa Mezhugu and external application – Vatha Ennai are clinically effective.

As per our Siddha Meteria Medica the ingredients of the trial medicines were found to have the property of controlling Vaatha diseases.

CONCLUSION

The patients of Kumbavatham were treated with Vithurasa Mezhugu – 130 mg, twice a day with butter (internally) and Vatha Ennai (externally). The clinical evaluation of all the 40 cases of Kumbavatham under study has brought out the following results.

Clinically relieved	– 15%
Good improvement	- 67.5%
Moderate improvement	– 12.5%
No improvement	– 5%

The results of the clinical trial indicate the efficacy of the drugs. However there is recurrence of symptoms over months in some of the Kumbavatham patients who engage themselves in the same occupation again or go back to their fast and mechanical lifestyle. Most of the patients in whom the symptoms recurred were housewives who after their discharge from hospital continue to do their household works.

Hence these drugs and methodology of the treatment will become one of the milestones in treating Kumbavatham successfully expecially in this era of fast and sophisticated lifestyle.

Preclinical pharmacological & Toxicological studies of Vithurasamezhugu for Analgesic, Antiinflammatory, antioxidant and antimicrobial activities

Index

1.0 MATERIALS AND METHODS

1.1 Test Drugs

The following medicine used in the study was processed by the methods prescribed in standard text books of siddha medicine.

Vithurasamezhugu (VRM) was prepared by the method prescribed in the text book of Sidha Medicine - Anuboga Vaithiya Navaneetham – Part 5.

1.2 Preparation of drug for dosing

All drugs used for the study were suspended each time with 1% (w/v) solution of sodium carboxy methyl cellulose before administration.

1.3 Drugs and chemicals

Standard Drugs and fine chemicals used in these experiments were obtained from Sigma Chemicals company, U.S.A. Other analytical grade chemicals were obtained from S.d. Fine Chemicals Ltd., Mumbai.

1.4 Experimental animals

Colony inbred animals strains of wistar rats of either sex weighing 200 - 250 g were used for the pharmacological and toxicological studies. The animals were kept under standard conditions 12:12 (day/night cycles) at 22^0C room temperature, in polypropylene cages. The animals were fed on standard pelleted diet (Hindustan Lever Pvt Ltd., Bangalore) and tap water *ad libitum*. The animals were housed for one week in polypropylene cages prior to the experiments to acclimatize to laboratory conditions. The experimental protocol was approved by the Institutional Animal Ethical Committee (IAEC).

1.5 Acute oral toxicity study

Acute oral toxicity study was conducted as per the OECD guidelines (Organization of Economic Cooperation and Development) 423 (Acute Toxic Class Method). The acute toxic class method is a stepwise procedure with 3 animals of a single sex per step. Depending on the mortality and /or moribund status of the animals, on the average 2-4 steps may be necessary to allow judgment on the acute toxicity of the test substance. This procedure results in the use of a minimal number of animals while allowing for acceptable data based scientific conclusion.

The method uses defined doses (5, 50, 300, 2000 mg/kg body weight) and the results allow a substance to be ranked and classified according to the Globally Harmonized System (GHS) for the classification of chemicals which cause acute toxicity

Wistar albino rats of either sex weighing 200-250 g were fasted overnight, but allowed water *ad libitum*. Since the formulation is relatively non toxic in clinical practice the highest dose of 2000 mg/kg/p.o (as per OECD guidelines "Unclassified") was used in the acute toxicity study.

The animals were observed closely for behavioral toxicity, if any by using FOB (Functional observation battery).

1.6 Repeated oral toxicity study

Repeated oral toxicity studies can be used to get additional information regarding the toxicity profile of a chemical. Repeated oral toxicity studies are defined as those studies where the chemical is administered to the animal for a period covering approximately 10% of the expected life of the animal. Usually, the dose levels are lower

than for acute studies and allow chemicals to accumulate in the body before lethality occurs, if the chemical possess this ability.

Experimental procedure

The following experimental procedure was followed to evaluate the repeated oral toxicity study of VRM

Group I : Control animals received 1%CMC, 2 ml/kg/p.o. for 15 days

Group II : Vithurasamezhugu(VRM)(500mg/kg/po) was given in 1% sodium carboxy methyl cellulose solution for 15 days

Body weight, food intake and water intake was recorded at two intervals with simultaneous observation for toxic manifestation and mortality, if any. At the end of 15days treatment all the animals were sacrificed by over dosage of ether anaesthesia. Blood was collected and used for haematological studies. Section of liver, kidney, and heart were dissected out and kept in 10% formalin for histopathological studies.

1.7 Biochemical studies

Aspartate aminotransferase (AST)

Aspartate aminotransferase was estimated using commercial AST kit (Span Diagnostics) by the method of Reitman and Frankel (1957).

Alanine aminotransferase (ALT)

Alanine aminotransferase was estimated using commercial AST kit (Span Diagnostics) by the method of Reitman and Frankel (1957).

Alkaline phosphatase (ALP)

Alkaline phosphatase was assayed using commercial ALP kit (Span Diagnostics) by the method of King (1934).

Urea,uric acid And cholesterol

Urea,uric acid and cholesterol were assayed using the commercial kit (Span Diagnostics)

1.8 Haematological studies

Erythrocyte count

Erythrocyte count was estimated by Hemocytometer method of Ghai (1995).

Total Leukocyte Count (WBC)

Total Leukocyte Count was estimated by Hemocytometer method of John (1972).

Haemoglobin

Haemoglobin was estimated by the method of Ghai (1995).

1.9 Histopathological studies

Animals were sacrificed at the end of repeated oral toxicity study and tissues were processed for histopathological studies.

1.10 Analgesic, Antiinflammatory studies

Analgesic activity

Tail Flick method

Wistar rats of either sex(200-250g) were divided into different groups with 6 animals in each group

Group-1. Control animals received 1%CMC 10ml/Kg/po

Group 2. Test drug at the dose of 500mg/kg/po

Withdrawal of tail (Tail Flick) for noxious thermal (radiant heat) can be used for screening drugs with analgesic activity. Radiant heat can be generated by passing electrical current through nichrome wire mounted in an analgesiometer.

The base of the tail of the test rats is placed on a nicrome wire. The tail withdrawal for the radiant heat (flicking response) is taken as the end point. Normally the rats and mice withdraw their tails within 3 – 5 secs. A cutoff time of 10 – 12 secs is used to prevent damage to the tail. Any animal failing to withdraw its tail in 3-5 secs is rejected from the study.

The reaction time of test drug, standard and control are taken at intervals of 30, 60 and 120 mts. A reaction time (withdrawal time) increment of 2-5 secs more than the control animals can be considered for analgesic activity of the drug.

Anti inflammatory activity

Anti inflammatory activity was evaluated in acute model of inflammation. Wistar rats either sex weighing 200-250g were divided into different groups with 6 animals in each group

Group-1. Control group received 15CMC 10ml/kg/po

Group-2. received Carrageenan (0.1% solution) and served as positive control

Group-3 Received test drug(VRM) at the dose of 500mg/kg/po

Group-4 received standard drug Diclofenac sodium(5mg/kg/po)

Acute model

Carrageenan induced hind paw edema

The carrageenan assay procedure was carried out according to the method of Wintar *et al.* (1962). Edema was induced by injecting 0.1 ml of 1% solution of carrageenan in saline into the plantar aponeurosis of the left hind paw of the rats. The extracts, reference drug and the control vehicle (distilled water) were administered 60 min prior to the injection of the carrageenan. The volumes of edema of the injected and contra lateral paws were measured at +1, 3 and 5 hrs after induction of inflammation using a plethysmometer (Bhatt *et al*., 1977) and percentage of anti-inflammatory activity was calculated.

1.11 In Vivo Antioxidant study

Samples of serum collected from rats treated with test drugs were assayed for GSH (Moron *et al* , 1979) and LPO (Yagi, 1976) and the results were compared with control group.

2.0 Results

2.1 Preliminary basic, acidic radicals and phytochemical studies

The qualitative chemical analysis and acidic, basic radicals assay of the drugs showed the presence of phytoconstituents and minerals as depicted in (Table 1).

2.2 Acute oral toxicity study

VRM at the dose of 2000mg/kg/po did not exhibit any mortality in rats. As per OECD 423 guidelines the dose is said to be “Unclassified” under the toxicity scale. Hence further study with higher doses was not executed

2.3 Repeated oral toxicity for 15 days

Test drug VRM at the dose of 500 mg/kg/po when administered orally for 15 days in rats did not show toxicity in haematological parameters.. However the drug exhibited significant increase in the marker enzyme levels off liver and kidney.(Tables 2 and 3). 15days repeated dosing of the drug exhibited elevation of serum cholesterol level(Table 3).The body weights of the animals at the end of the study showed significant reduction in weight with dehydrarion.

2.4 Histopathological study

VRM at the dose of 500 mg/kg/po daily administered for 15days did not show evidence of pathological lesions in the tissues tested (Plate 1).

2.5 Analgesic, Antiinflammatory studies

VRM at the dose of 500 mg/kg/p.o showed significant analgesic activity in rats (Table-4). VRM also exhibited significant anti-inflammatory activity in carrageenan induced hind paw edema (acute inflammation model) in rats. The results of present study were comparable to that of the standard NSAID Diclofenac sodium (5 mg/kg/p.o) (Table-5).

2.6 Antioxidant activity

At the end of 15 days of repeated oral toxicity study when the plasma of drug treated animals was examined for GSH activity, the level of GSH activity was increased significantly ($p>0.001$) in test groups. The LPO activity was significantly decreased in drug treated group when compared to control (Table 6).

Discussion

The Siddha formulation Vithurasa Mezhugu (VRM) was tested for its reverse pharmacological and toxicological profiles in the experimental rats. The drug did not exhibit mortality at the highest dose of 2000 mg/kg/p.o. As per OECD 423 guidelines the dose is said to be "Unclassified" under the toxicity scale. Hence further study with higher doses was not executed

The preliminary phytochemical study revealed the absence of alkaloids and steroids in the test drug. The test drug answered for the presence of ca++, Fe++, sulphate, Chloride,phosphate and carbonate.

The repeated oral toxicity study conducted for15days with the drug did not exhibit significant changes in RBC count and in Hb%. However the test drug exhibited significant ($P<0.001$) alteration in liver marker enzymes levels (AST and ALT)

Repeated oral toxicity study also exhibited reduction in body weight with dehydration. However, these alterations did not reflect on the histopathological study of liver tissue after 15 days of repeated dosing. The duriug treatment also exhibited elevated levels of urea and uric acid levels. Cholesterol level also showed an upward trend after the treatment. However the histopathology of liver and kidney did not show any gross pathological changes in the tissues

The drug exhibited significant analgesic and anti-inflammatory activity in acute experimental inflammatory conditions in rats... The analgesic activity was observed at the end of one hour and subsequently subsided to a non significant level at the end of two hours... A significant anti-inflammatory activity was obtained with the test drug in carrageenan induced hind paw edema model. The test drug showed maximum anti-inflammatory activity at the end of 4^{th} hour after carrageenan challenge. The result of test drug (500 mg/kg/p.o) was comparable to that of Diclofenac Sodium (5 mg/kg/p.o). Since the maximum anti-inflammatory activity (reduction in the paw edema volume) was observed at the end of 4^{th} hour and the mechanism of anti-inflammatory activity of test drug may be attributed to its inhibitory activity on cyclooxygenase (COX) enzymes.

The drug treatment for 15days increased the antioxidant status of GSH with a decrease in LPO in serum of treated rats when compared to controls. Both these parameters observed in this study are indicative of antioxidant property of the drug.

Table-1

Preliminary acid, basic radicals and phytochemical screening of Vithurasa mezhugu(VRM)

S.No.	Constituents	VRM
1.	Calcium	+
2.	Iron (Ferric)	-
3.	Iron (Ferrous)	+
4.	Sulphate	+
5.	Chloride	+
6.	Carbonate	+
7.	Starch	+
8.	Phosphate	+
9.	Tannic acid	+
10.	Unsaturated	+
11.	Sugar	+
12.	Alkaloids	+
13.	Steroids	+
14.	Protein	+
15.	Tannins	+
16.	Phenols	+
17.	Flavanoids	+
18.	Saponins	-
19.	Amino acid	+
20.	Glycosides	+

(+) - present
(-) -Absent

Table 2

Effect of Siddha Formulations(VRM) on Haematological parameters after 15 days repeated oral dosing (500 mg/kg)

Groups	Hb (gm/dl)	RBC (millions/cu. mm)	WBC (cells/cu.mm)	Differential leucocyte count (%)		
				Lympho cytes	Mono cytes	Granulo cytes
Normal	14.00. ± 0.34	6.08 ± 0.35 ^{ns}	6400± 491.44	76.06 ± 3.89 ^{ns}	5.30 ± 1.04	16.50 ± 4.27
VRM (500mg/ kg. p.o.,)	13.50 ± 0.60^{ns}	5.81 ± 0.70 ^{ns}	6586.66 ± 3.323^{ns}	74.67 ± 3.32 ^{ns}	8.16 ± 1.7 ^{ns}	18.66 ± 3.44 ^{ns}

N=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test
Ns – non significant when compared to control groups

Table 3

Effect of Siddha formulation (VRM) on Biochemical markers of liver and kidney after 15 days of repeated oral dosing (500 mg/kg/po) in rats

Groups	AST (IU/L)	ALT (IU/L)	Cholesterol (mg/dl)	Urea (mg/100ml)	Uric acid (mg/dl)
Normal	77.48±0.23	26.70 ± 0.81	45.06 ± 0.89	24.86 ± 0.37	1.86 ± 0.64
VRM (500mg/kg. p.o.,)	96.55±5.92 ***	40.13 ± 2.67 ***	29.66 ± 0.68***	49.60 ± 0.69 ***	2.49 ± 0.28***

N=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test
Ns – non significant when compared to control groups,
***P<0.001 as compared with control

Table 4

Analgesic activity of (VRM) using Tail flick Method

Groups	Paw licking response (Sec)			
	0 min (Sec)	30 min (Sec)	60 min (Sec)	120 min (Sec)
Control	2.266± 0.396	2.393± 0.96	2.46±0.367	2.532± 0.653
VRM (500mg/kg. p.o.,)	2.811 ± 0.361	4.807 ± 0.450 ***	5.621± 0.077 ***	2.762± 1.213

n=6, Values are expressed as mean ± S.D using followed by paired T – test
***P<0.001 as compared with control.

Table 5

Anti inflammatory activity of VRM in carrageenan induced hind paw edema in rats

Groups	Paw volume (ml) by mercury Displacement at regular interval of time					
	0min	30min	60min	120min	240min	4th hrs
Control	1.583 ± 0.1915	1.766 ± 0.1366	2.0 ± 5.164	2.195 ± 7.7619	2.25 ± 0.136	2.43 ± 0.4612
VRM (500mg/kg. p.o.,)	1.686 ± 0.1402 ns	1.828 ± 0.1397 ns	2.1 ± 0.304 ns	2.65 ± 0.022 ns	2.97 ± 0.1266 ns	1.43 ± 0.1033 ***
Standard (Dic.Sodium 5 mg/kg/po)	0.835 ± 0.065 ns	1.315 ± 0.069**	1.128 ± 0.049**	1.011 ± 0.056**	0.896 ± 0.048**	0. 85 ± 0.054

n=6; Values are expressed as mean ± S.D followed by paired T – test .
ns - Non significant as compared with control;
P< 0.001 (***),P <0.003(**)as compared with control.

Table 6

Anti oxidant activity of Siddha Formulation (VRM)
after 15 days repeated oral dosing (500 mg/kg)

Groups	LPO umol/gram proteins	GSH Umol/gram protein
Control	0.68 ± 1.37	37.48 ± 2.31
VRM (500mg/kg. p.o.,)	0.46 ± 4.90***	57.51 ± 0.35***

N=6; Values are expressed as mean ± S.D followed by Student T- Test.
***P<0.001 as compared with control.

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POST GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN TRIAL OF 'VITHU RASA MEZHUGU' AND 'VATHA ENNAI' FOR THE TREATMENT OF

"KUMBA VATHAM (CERVICAL SPONDYLOSIS)"

FORM I - SELECTION PROFORMA/CASE SHEET

1. OP/ IP No: 2. BED No: 3. Sl. No:

4. NAME: 5. AGE: 6. GENDER:

7. OCCUPATION: 8. SOCIAL STATUS

9. DATE OF ADMISSION: 10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

Lecturer **HOD**

12. COMPLAINTS & DURATION:

13. HISTORY OF PRESENT ILLNESS:

14. PAST HISTORY:

15. FAMILY HISTORY:

16. MENSTRUAL HISTORY (If applicable):

17. HABITS:

	Yes	No
1. Smoker	☐	☐
2. Alcoholic	☐	☐
3. Betel nut chewer	☐	☐
4. Non-Vegetarian/Vegetarian	☐	☐
5. Drug addiction	☐	☐

18. GENERAL EXAMINATION:

1. Body weight [Kg] :
2. Height [cm] :
3. Body Temperature [F] :
4. Blood Pressure (mmHg) :
5. Pulse Rate /min. :
6. Heart Rate / min. :
7. Respiratory Rate /min. :

		Yes	No
8. Pallor	:	☐	☐
9. Jaundice	:	☐	☐
10. Clubbing	:	☐	☐
11. Cyanosis	:	☐	☐
12. Pedal Oedema	:	☐	☐
13. Lymphadenopathy	:	☐	☐
14. Jugular venous pulsation	:	☐	☐

19. CLINICAL EXAMINATION:

I. INSPECTION:

1. Attitude: **Normal** ☐ **Affected** ☐

	Present	Absent	
2. Muscular spasm	☐	☐	……
3. Muscle wasting of the upper limbs	☐	☐	……

II. PALPATION:

	Present	**Absent**
1. Tenderness	☐	☐
2. Muscle spasm	☐	☐
	☐	☐
3. Muscle wasting		

III. MOVEMENTS:

Restriction of Movements Neck: Full ☐ Partial ☐ No ☐

Shoulder: Full ☐ Partial ☐ No ☐

1. NECK:	**PAIN**		**MUSCULAR SPASM**		**ROM**	
	Yes	No	Yes	No	Normal	Reduced
i. Rotation	☐	☐	☐	☐	☐	☐
ii. Flexion	☐	☐	☐	☐	☐	☐
iii. Extension	☐	☐	☐	☐	☐	☐
iv. Lateral bending (Dorsal cervical region)	☐	☐	☐	☐	☐	☐
v. Nodding (Atlanto-occipitalis)	☐	☐	☐	☐	☐	☐

2. SHOULDER:	**PAIN**		**MUSCULAR SPASM**		**ROM**	
	Yes	No	Yes	No	Normal	Reduced
i. Flexion	☐	☐	☐	☐	☐	☐
ii. Extension	☐	☐	☐	☐	☐	☐
iii. Internal rotation	☐	☐	☐	☐	☐	☐
iv. External rotation	☐	☐	☐	☐	☐	☐
v. Abduction	☐	☐	☐	☐	☐	☐
vi. Adduction	☐	☐	☐	☐	☐	☐

3. SHOULDER MOVEMENTS:

(Degree of movements) Before treatment ☐ After treatment ☐

IV. NEUROLOGICAL EXAMINATION:

i. Sensation Normal ☐ Abnormal ☐

…….

ii. Tone Normal ☐ Abnormal ☐

…….

iii. Power Normal ☐ Abnormal ☐

……..

iv. Muscle wasting Present ☐ Absent ☐

……..

V. AUTONOMIC NERVOUS SYSTEM Normal Affected

i. Bladder ☐ ☐

ii. Bowel ☐ ☐

VI. REFLEXES:

1. DEEP TENDON REFLEXES	**Normal**	**Diminished**	**Exaggerated**
i. Biceps	☐	☐	☐
ii. Triceps	☐	☐	☐
iii. Supinator	☐	☐	☐
iv. Knee jerk	☐	☐	☐
v. Ankle jerk	☐	☐	☐

2. SUPERFICIAL TENDON REFLEXES:

i. Abdominal **Present** ☐ **Absent** ☐

ii. Cremasteric **Present** ☐ **Absent** ☐

iii. Plantar **Flexion** ☐ **Extension** ☐

3. CLONUS	**Present**	**Absent**
i. Ankle	☐	☐
ii. Petallar	☐	☐

20. CLINICAL ASSESSMENT:

I. PAIN:

A. Pain in the Nape: No ☐ Mild ☐ Moderate ☐ Severe ☐

i. Onset Sudden ☐ Gradual ☐

ii. Nature: Local ☐ Diffuse ☐ Others ☐

B. Pain in the shoulder:

Right ☐ Left ☐ Both ☐

C. Pain in the upper limb(s):

Right ☐ Left ☐ Both ☐

D. Nature of pain Shooting ☐ Burning ☐ Others ……

		Yes	**No**
E. Aggravating factor	- Movements	☐	☐
F. Relieving factor	- Rest	☐	☐

	Yes	**No**
II. Numbness	☐	☐
III. Tenderness	☐	☐
IV. Giddiness	☐	☐
V. Headache	☐	☐
VI. Stiffness	☐	☐
VII. Burning sensation of the eyes	☐	☐
VIII. Burning sensation of the tongue	☐	☐
IX. Pain below the umbilicus	☐	☐

21. EXAMINATION OF OTHER SYSTEMS:

	Normal	Abnormal
1. CVS	☐	☐
2. RS	☐	☐
3. CNS	☐	☐
4. ABDOMEN	☐	☐
5. GENITO-URINARY	☐	☐

SIDDHA ASPECTS

1 . NILAM:

1. Kurinji ☐ 2. Mullai ☐ 3. Marutham ☐ 4. Neithal ☐ 5. Paalai ☐

2 . KAALAM:

1. Kaar Kaalam ☐ 2. Koothir Kaalam ☐ 3. Munpani Kaalam ☐
4. Pinpani Kaalam ☐ 5. Ilavenir Kaalam ☐ 6. Muduvenir Kaalam ☐

3. YAAKKAI:

1. Vatham ☐ 2. Pitham ☐ 3. Kabam ☐
4. Vathapitham ☐ 5. Pithavatham ☐ 6. Kabavatham ☐
7. Vathakabam ☐ 8. Pithakabam ☐ 9. Kabapitham ☐

4. GUNAM:

1. Sathuvam ☐ 2. Rasatham ☐ 3. Thamasam ☐

5. IYMPORIGAL:

	Normal	**Affected**	
1. Mei	☐	☐	……..
2. Vaai	☐	☐	……...
3. Kan	☐	☐	……
4. Mookku	☐	☐	……
5. Sevi	☐	☐	……

6. KANMENDHIRIUM / KANMAVIDAYAM:

	Normal	**Affected**	
1. Kai	☐	☐	……...
2. Kaal	☐	☐	……...
3. Vaai	☐	☐	……..
4. Eruvaai	☐	☐	……..
5. Karuvaai	☐	☐	……..

7. UYIR THATHUKKAL:

I. VATHAM:	**Normal**	**Affected**	
1. Piraanan	☐	☐	……
2. Abaanan	☐	☐	……
3. Viyaanan	☐	☐	……
4. Uthaanan	☐	☐	……
5. Samaanan	☐	☐	…….
6. Naagan	☐	☐	…….
7. Koorman	☐	☐	…….
8. Kirukaran	☐	☐	……
9. Devathathan	☐	☐	……
10. Dhananjeyan	☐	☐	……

II. PITHAM :	**Normal**	**Affected**	
1. Analam	☐	☐	…….
2. Ranjagam	☐	☐	…….
3. Saathagam	☐	☐	……..
4. Aalosagam	☐	☐	…….
5. Praasagam	☐	☐	…….

III. KABAM:	**Normal**	**Affected**	
1. Avalambagam	☐	☐	……
2. Kilethagam	☐	☐	……
3. Pothagam	☐	☐	……
4. Tharpagam	☐	☐	……...
5. Santhigam	☐	☐	……

8. UDAL THAATHUKKAL:	**Normal**	**Affected**	
1. Saaram	☐	☐	……..
2. Senneer	☐	☐	……..
3. Oon	☐	☐	……..
4. Kozhuppu	☐	☐	……..
5. Enbu	☐	☐	……...
6. Moolai	☐	☐	……..
7. Sukkilam / Suronitham	☐	☐	……...

9. ENVAGAI THERVUGAL:

1 **. Naadi** …….

	Normal	Affected	
2. **Sparisam**	☐	☐	……..
3. **Naa**	☐	☐	……..
4. **Niram**	☐	☐	……..
5. **Mozhi**	☐	☐	……..
6. **Vizhi**	☐	☐	……..

7. **Malam**

	Normal	Affected	
a. Niram	☐	☐	……..
b. Nurai	☐	☐	……..
c. Kirumi	☐	☐	……..

d. Thanmai:

i. Irugal ☐ ii. Ilagal ☐

8. Moothiram:

I. NEERKURI:

	Normal	Affected	
a. Niram	☐	☐	……..
b . Manam	☐	☐	……..
c. Edai	☐	☐	……..
d. Nurai	☐	☐	……..
e. Enjal	☐	☐	……..

II. NEIKURI: …….

Vatha Neer ☐ Pitha Neer ☐ Kaba Neer ☐

10. LABORATORY INVESTIGATIONS:

I. BLOOD:

TC (Cells/Cumm):

DC (%): N L M E

ESR (mm) : ½ hr 1 hr

Hb (gm%)

Blood Sugar (mg %):

Fasting Post Prandial

Serum Creatinine (mg %):

Blood urea (mg %):

Blood cholesterol (mg %):

II. **URINE:**

Albumin:

Sugar:

Deposits**:**

Epithelial cells:

Pus cells:

Red blood cells:

Casts/Crystals:

III. **MOTION:**

Ova -

Cyst -

Occult blood -

Pus cells -

X – RAY CERVICAL SPINE:

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DEPARMENT OF SIRAPPU MARUTHUVAM

AN OPEN TRIAL OF VITHU RASA MEZHUGU AND VATHA ENNAI FOR THE TREATMENT OF KUMBA VATHAM (CERVICAL SPONDYLOSIS)

FORM II - CLINICAL ASSESSMENT

1. OP/ IP No 2. BED No 3. Sl. No

4. NAME 5. AGE 6. GENDER

7. DATE OF ADMISSION 8. DATE OF DISCHARGE

I. INSPECTION:

1. Attitude: **Normal** ☐ **Affected** ☐

	Present	**Absent**	
2. Muscular spasm	☐	☐	……
3. Muscle wasting of the upper limbs	☐	☐	……

II. PALPATION:

	Present	**Absent**	
1. Tenderness	☐	☐	…….
2. Muscle spasm	☐	☐	…….
3. Muscle wasting	☐	☐	…….

III. MOVEMENTS:

Restriction of Movements Neck: Full ☐ Partial ☐ No ☐

Shoulder: Full ☐ Partial ☐ No ☐

1. NECK:	**PAIN**		**MUSCULAR SPASM**		**ROM**	
	Yes	No	Yes	No	Normal	Reduced
i. Rotation	☐	☐	☐	☐	☐	☐
ii. Flexion	☐	☐	☐	☐	☐	☐
iii. Extension	☐	☐	☐	☐	☐	☐
iv. Lateral bending (Dorsal cervical region)	☐	☐	☐	☐	☐	☐
v. Nodding (Atlanto-occipitalis)	☐	☐	☐	☐	☐	☐

2. SHOULDER:	**PAIN**		**MUSCULAR SPASM**		**ROM**	
	Yes	No	Yes	No	Normal	Reduced
i. Flexion	☐	☐	☐	☐	☐	☐
ii. Extension	☐	☐	☐	☐	☐	☐
iii. Internal rotation	☐	☐	☐	☐	☐	☐
iv. External rotation	☐	☐	☐	☐	☐	☐
v. Abduction	☐	☐	☐	☐	☐	☐
vi. Adduction	☐	☐	☐	☐	☐	☐

3. SHOULDER MOVEMENTS:

(Degree of movements) Before treatment ☐ After treatment ☐

IV. NEUROLOGICAL EXAMINATION:

i. Sensation Normal ☐ Abnormal ☐…….

ii. Tone Normal ☐ Abnormal ☐…….

iii. Power Normal ☐ Abnormal ☐……..

iv. Muscle wasting Present ☐ Absent ☐……..

V. AUTONOMIC NERVOUS SYSTEM	Normal	Affected
i. Bladder	☐	☐
ii. Bowel	☐	☐

VI. REFLEXES:

1. DEEP TENDON REFLEXES	**Normal**	**Diminished**	**Exaggerated**
i. Biceps	☐	☐	☐
ii. Triceps	☐	☐	☐
iii. Supinator	☐	☐	☐
iv. Knee jerk	☐	☐	☐
v. Ankle jerk	☐	☐	☐

2. SUPERFICIAL TENDON REFLEXES:

i. Abdominal	**Present**	☐	**Absent**	☐
ii. Cremasteric	**Present**	☐	**Absent**	☐
iii. Plantar	**Flexion**	☐	**Extension**	☐

3. CLONUS	**Present**	**Absent**
i. Ankle	☐	☐
ii. Petallar	☐	☐

LAB INVESTIGATIONS CHART

	DATE OF ADMISSION	**10th DAY**	**DATE OF DISCHARGE**
I. BLOOD: TC (Cells/Cumm): DC (%): ESR (mm) : ½ hr & 1 hr Hb (gm%): Blood Sugar (mg %): Fasting: Postprandial: Serum Creatinine (mg %): Blood urea (mg %): Blood cholesterol (mg %):			
II. URINE : Albumin : Sugar : Deposits : Epithelial cells: Pus cells: Red blood cells: Casts/Crystals:			
III. MOTION: Ova Cyst Occult blood Pus cells			
IV. X-RAY CERVICAL SPINE:			

Lecturer HOD

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47.

DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF 'VITHU RASA MEZHUGU' AND 'VATHA ENNAI' FOR THE TREATMENT OF 'KUMBA VATHAM (CERVICAL SPONDYLOSIS)'.

CONSENT FORM

CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all details about the study in the terms readily understood by the patient.

Signature…….

Date…… Name……

CONSENT BY PATIENT

I have been informed to my satisfaction, by the attending physician, the purpose of the clinical trial, and the nature of drug treatment and follow-up including the laboratory investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so.

I, exercising my free power of choice, hereby give my consent to be included as a subject in the clinical trial of 'Vithu Rasa Mezhugu' and 'Vatha Ennai' for the management of 'Kumba Vatham (CERVICAL SPONDYLOSIS)'.

Signature…….

Date…… Name……

Signature of witness…….

Date……

Name……

Relationship…….

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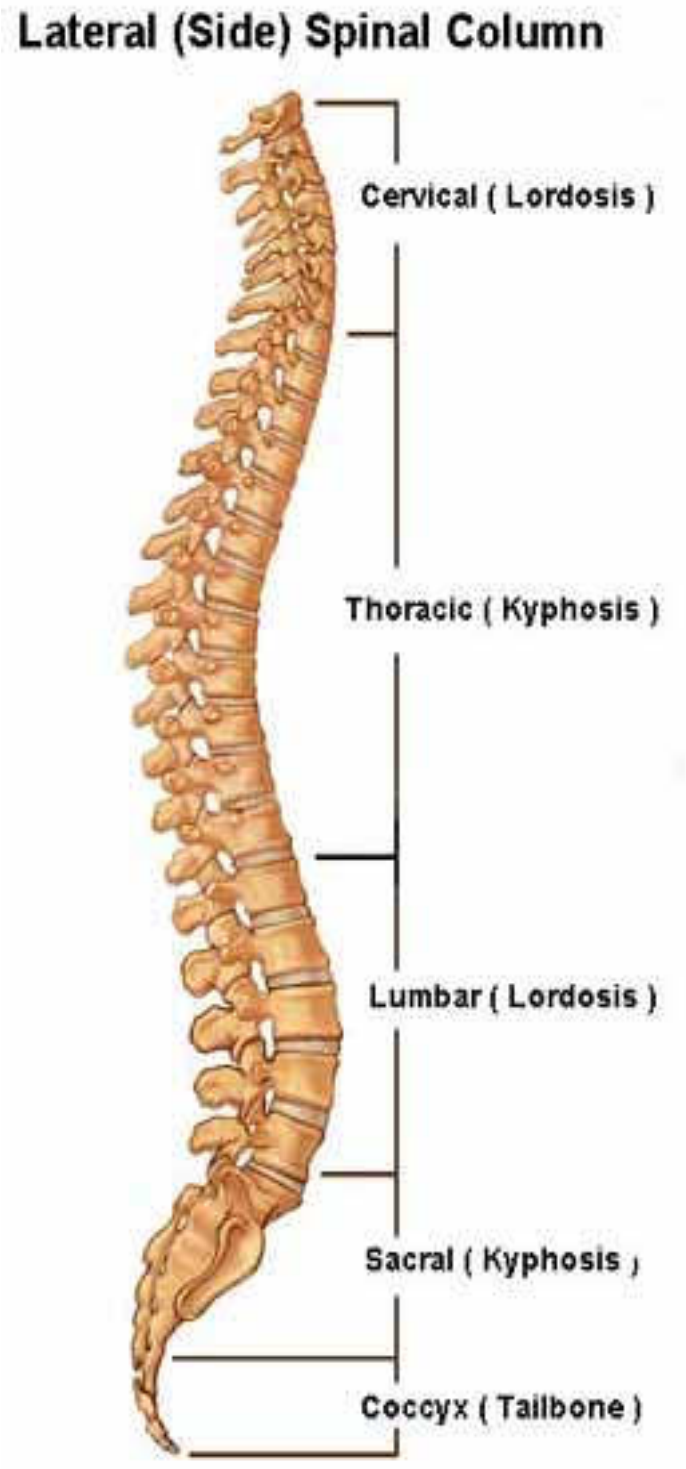
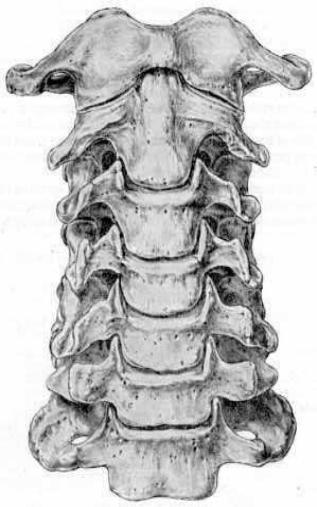
VERTEBRAL COLUMN



CERVICAL VERTEBRAE



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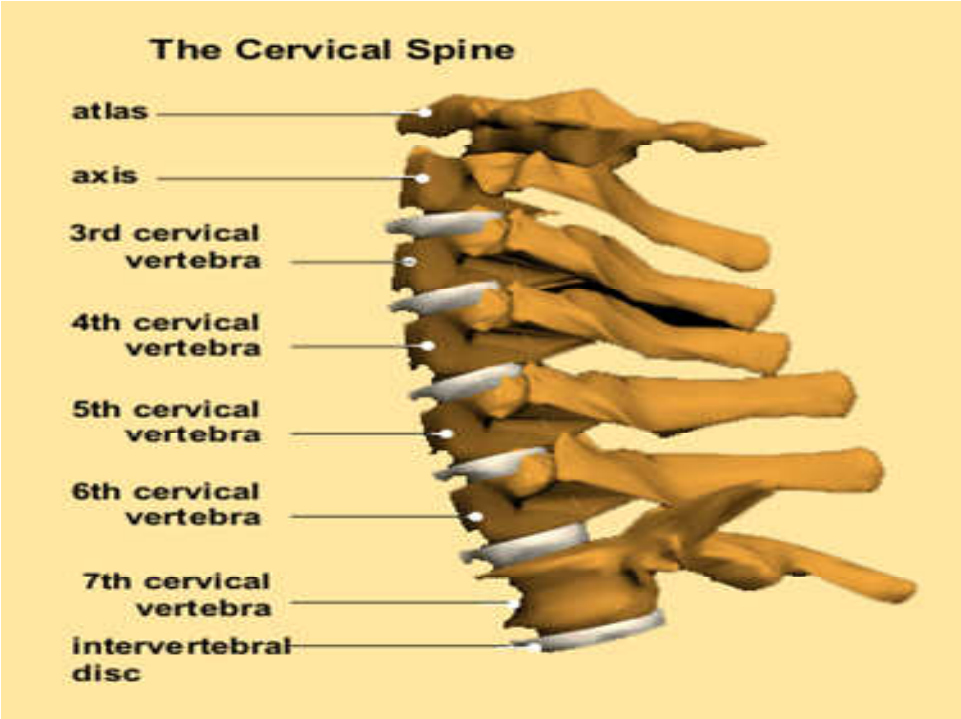

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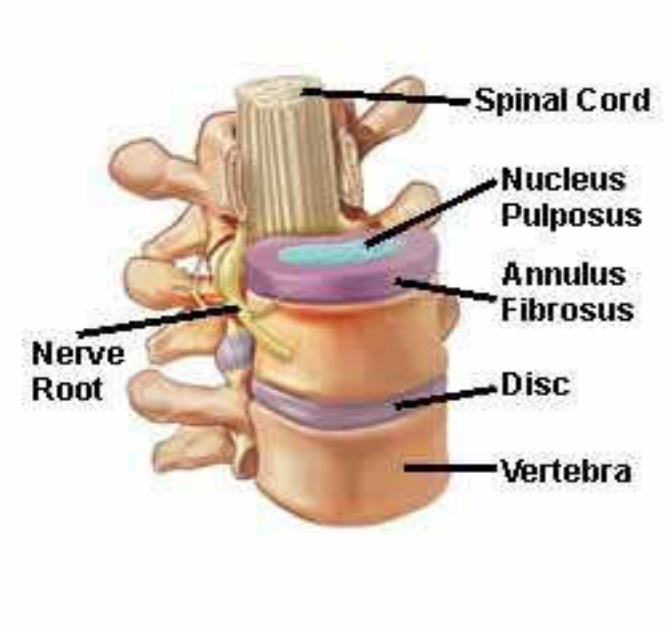
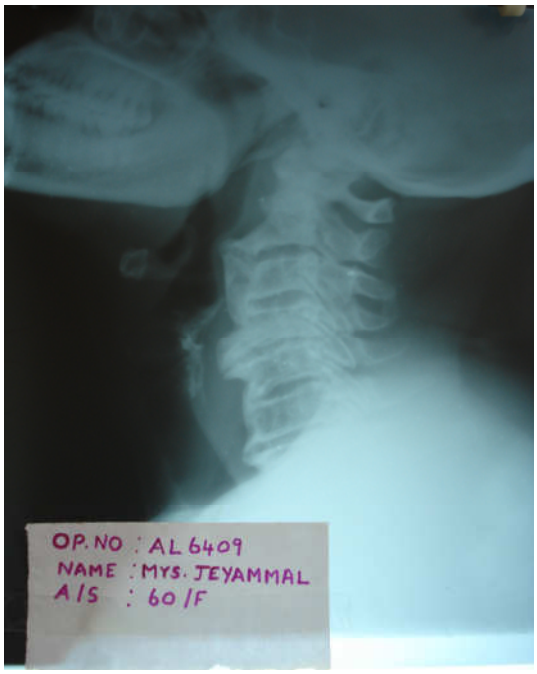
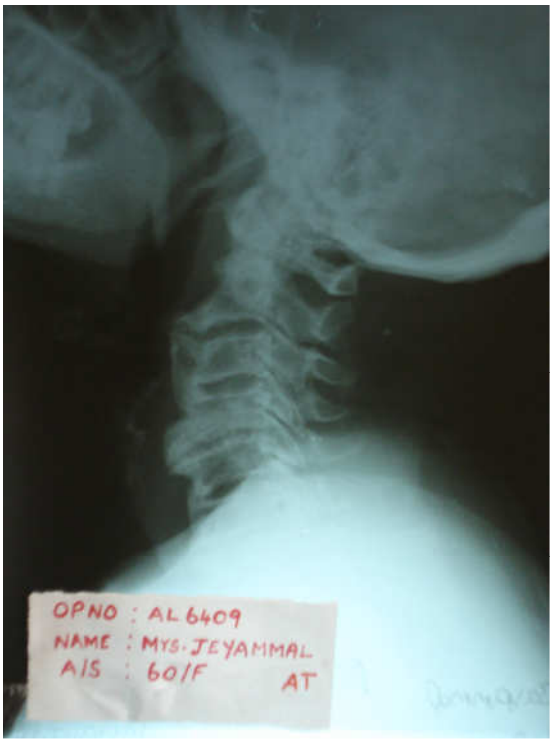


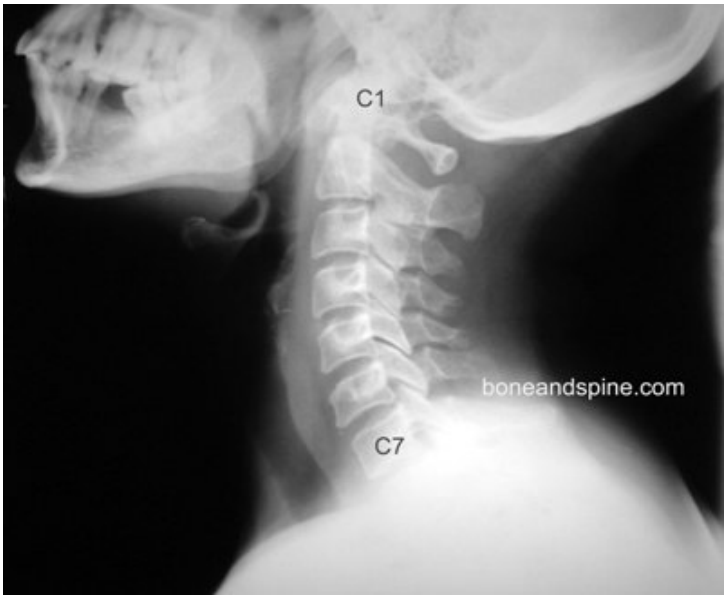
CERVICAL SPONDYLOSIS X – RAY

BEFORE TREATMENT

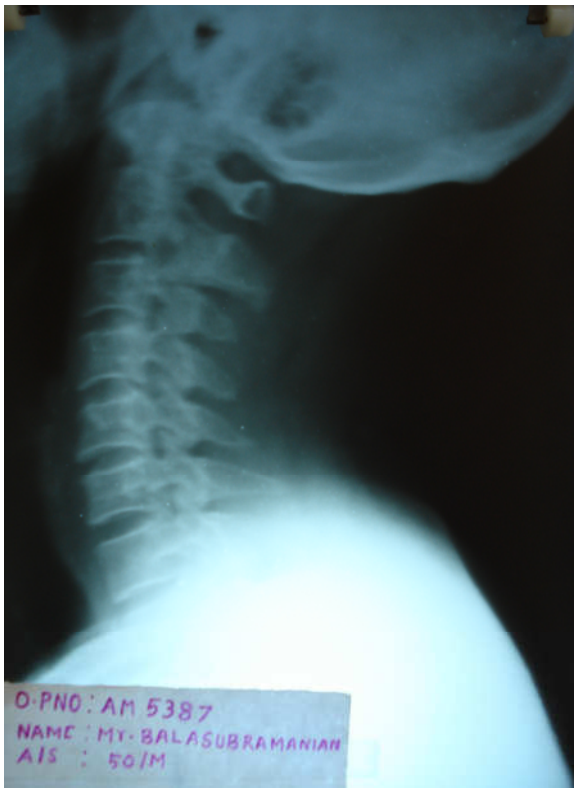




NORMAL X – RAY CERVICAL SPINE



CERVICAL SPONDYLOSIS X – RAY



வித்துரச மெழுகு

வாத எண்ணெய்

வித்துரச மெழுகு

சேரும் சரக்குகள்

சேராங்கொட்டை

இரசம்

வாத எண்ணெய்
சேரும் சரக்குகள்

ஆமணக்கெண்ணெய்

இலுப்பெண்ணெய்

வேப்பெண்ணெய்

பால்