A STUDY ON

SALATHAMBA VAATHAM

(Dissertation Subject)

For the partial fulfillment of the requirements to the degree of

DOCTOR OF MEDICINE (SIDDHA)

Branch I – Maruthuvam

GOVERNMENT SIDDHA MEDICAL COLLEGE

(Affiliated to the Tamil Nadu Dr. M.G.R. Medical University.)

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CERTIFICATE

Certified that I have gone through the dissertation submitted by Dr. T.Suyamariyathai, a student of final M.D(s), Branch-I Maruthuvam, Govt. Siddha Medical College, Chennai and the dissertation work has been carried out by the individual only.

Place: Chennai

Date:

Professor and Head of the Department
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INTRODUCTION

"Health is infinite and expansive in its mode and reaches out to be filled with the fullness of the world, where as disease is finite and reductive in mode and endeavors to reduce the world to it self"

- OLIVER SACKS

Medicine as every one know is not merely a science but an art as well. It certainly deals with the different process of life. The art of medicine in India, has been purely associated with religion and philosophy and such is evidently based on truth. Siddha science is very ancient in origin, as old as the earliest civilization of the southern peninsula of India, where the Tamil had their highly developed languge.

The term siddha is derived from siddhi that is attainment of perfection, accompolished or achievement. Any system of medicine is only an evolution and not an overnight invention, so also the traditional Tamil system evolved with the development of mankind. Perfect health is not relative term but an absolute one. This is the first system to emphasise health as the perfect state of physical, psychological.

To quote saint Thirumoolar,

"kWg;g Jly;Neha; kUe;njd yhFk;
kWg;g JsNeha; kUe;njdr; rhYk;
kWg;g jpdpNeha; thuh jpUf;f
kWg;gJ rhitA kUe;njd yhNk"

-jpUke;jpuk;

Siddha medicine could rightly be called as a by product of the siddha practices to reach the ultimate. This is the reason why siddha medicine though a perfect science looks as a mixture of art, philosophy and science. But it is to be remembered.

"Science doesn't need mysticism
And mysticism doesn't need science

But man needs both"

To quote Albert Einstein, the Nobel laurette,

"Science without religion is blind

And religion without science is lame"

Tholkappiyam says,

"epye;jP ePh;tsp tpRk; Nghile;Jk;

fye;j kaf;fk; cyfk; Mjypd;"

Meaning:

The world is formed of the five elements earth, water, fire, air and ether.

Thirumanthiram also has a verse stressing the fact that these five elements from the basis of the world.

"kz;zpdpy; Td;W kyh; ePU kq;fhFk;

nghd;dpdpy; mq;fp Gfo;top ahfhak;"

These five elements are in subtle state (sukumanilai) they manifest into a gross state (sthulanilai) and become visible.

Macrocosm vs Microcosm:

The world around us in the macrocosm and the human being is considered as the microcosm. The microcosm or human being are also formed by the basic five elements.

In Chinese medicine it also says "As in heaven so in earth" which is identical to sattamuni, a siddhar who said,

"mz;lj;jpYs;sNj gpz;lk; gpz;lj;jpYs;sNj mz;lk;

mz;lKk; gpz;lKk; xd;Nw mwpe;Jjhd; ghh;f;Fk; NghNj"

In the organisms of man, these forces may act in an abnormal manner and causes diseases thereby planets exercise special power over some part of the body to cause disease.

Eg,

Saturn - Bones, Bladder and Brain

Mars - Gall bladder, Kidney

Venous - Blood & Semen, Abdomen, Uterus, Genitalia.

The siddha system of medicine is based on "Tridhosha theory" or "Trithathu theory". The biological function of the body is governed by these distinct factors known as vaatha, pitha and kabha.

"kpfpDk; FiwapDk; Neha; nra;Ak; E}Nyhh;

tspKjyh ntz;zpa %d;W"

- jpUf;Fws;

Thiruvalluvar said above when natural harmony of the trithathu becomes altered, this disequilibrium causes various diseases.

Among "three thathus" the vaatha, may be infuriated and it harbours an various vaatha diseases.

One of the ancient siddhars "Yugimuni" has classified the diseases into 4448 out of these, he has explained vaatha diseases into "80"types one amidst them is **"salathamba vaatham"**.

I have selected **"salathamba vaatham"** as dissertation subject. This study opens new avenues for multidisciplinary studies of various aspects of the disease and treatment.

Most of the clinical features of **"salasthamba vaatham"** described in siddha literatures, relatively similar to the **"Urinary tract infection".**

The urinary tract infection being the second common infection, I enthusiaed treat, without any side effects and to give new innovation of treatment to serve the sufferings.

I have selected **"santhanaathy chooram and nerunchil – kothamalli kudineer"** for clinical study of **"salathamba vaatham"** as santhanaathy chooranam a trial medicine consists of santhanam, one of the ingredient, yield very good remedy for urinary tract infection. I have selected this medicines to prove their efficacy by pharmacological activity and biochemical analysis & microbiological studies.

AIM AND OBJECTIVES

Yugi Vaidhya Chinthamani, Yugi describe vaatha diseases into 80 types. Among them Salathmba vaatham is one of the diseases.

Salathamba vaatham incidence and its clinical profiles are mostly correlated with urinary tract infection in allopathy medicine because of its similarities.

As urinary tract infection is the second most common type of infection in human and is encountered in the clinical practice. Even though urine can support the growth of many bacteria the urinary tract is normally sterile. The mechanisms by which urinary infection is initiated are critical to the pathogenesis of renal infection. In some instances, such an infection can be life threatening, but even in a mild case, if it is neglected it can lead to the kidney damage. So, I have selected salathamba vaatham for my study.

Urinary tract infection most commonly occurs in women. Further it is influenced by social, economical, seasonal and geographical factors, the spectrum of the symptoms in this disease requires the use of several diagnostic and investigative procedures.

The prime aim of the study is to select the **"salathamba vaatham"** patients and treat them when the trial drugs as per the line of treatment and analyse both clinically and experimentally to prove the efficacy of the drugs.

The trial drugs are:

1. Santhanaathy choornam 0.5 gm twice a day with water
2. Nerunchil – kothamalli kudineer 40ml twice a day.

The other aims are:

- To study the clinical course of the disease **"Salathamba vaatham"** with deep observation on the eitiology, pathology, diagnosis, differential diagnosis, prognosis, complications and treatment by siddha aspects.
- To expose the efficacy of siddhars diagnostic principles to know how this disease deranges the normal mukkutram, poripulangal, udarkattugal and envagai thervugal.
- The etiology and clinical features of **"salathamba vaatham"** revealed in siddha literatures are compared with that of allopathy aspects.
- To have an idea about the incidence of disease with age, sex, occupation, economic status, habits, family history and climatic conditions.
- To have a detailed clinical investigation and to utilize the possible diagnostic tools in the confirmation of the diagnosis and prognosis of the disease.
- To evaluate biochemical and pharmacological effects of the trial medicines.
- To evaluate microbiological study of the trial medicine.
- To evaluate the statistical analysis of clinical study.

All patients were subjected to thorough investigations during and after treatment.

The haematological analysis, urine analysis, ultrasonogram, stool examination were done to all patients.

REVIEW OF LITERATURES

SIDDHA ASPECT

VAATHA

Definition

It cannot be seen by eyes. However it can be detected by its functions and characters, like wind makes when it flows and touches our body.

(Sarbendra vaidhi muraikal-vaatha Roga chikitechai Page No VIII)

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

FORMATION OF VAATHA

“,Ug;ghd ehb vOgNjhBuh
<ukhd Njfj;jpy; Vyg; ngUehb
Xf;fjrkj; njhopiy Cf;f jr thAf;fs;
jf;fgb vd;Nw rhUk;”

“rhUe;jr ehb jd;dpy; %yk; %d;W
NgUkplk; gpq;fiyAk; gpd;dYld;-khWk;
ciuf;f tpuw; fhw;nwhl; Lzh;j;JNk ehrp
tiur;RopNah ikaj;jpy; te;J”

“te;j fiy %d;wpy; thAth kghdDld;
je;j gpuhzd; rkhdDf;FQ; re;jkwf;
$l;LwT Nufpj;jy; cWk; thjk; gpj;jk;
ehl;Lq; fgNkahk; ehL”

-fz;Zrhkpak;

The human body is composed of 72,000 nerves. Among this, the ten are big nerves. They are otherwise called as thasa naadis. They are Edakalai, Pinkalai, Suzhumunai, Siguvai, Purudan, Gandhari, Aththi, Alambudai, Sangini, Kuru. Among these the first 3 nerves are called as **"Mooladhara Naadies".**

Like that, ten vaiyus are make our body. They are piranan, abaanan, viyaanan, uthanan, samanan, nagaan, koorman kirugaran, devathathan & thananjeyan. Among ten vayus, first five are more important.

When the three nerves edakalai, pinkalai & suzhumunai are combined with abaanan, piranan and samanan respectively the three humours of vaatha, pitha, kabha are formed.

According to pancha bootha theory, the vaatha is made up of air and ether.

LOCATION

"thjj;jpd; giltPL dhgpf;Fq; fPNo"

-Njiuah; ehb

Theruiyar says that vaatha lives below the umbilicus.

According to kannusamiyam ennum vaidhya segaram

"mwpa Te;jp thj kLj;j gpj;je;jhDk;
kwpAk; eLkhh;gpy;....."

-gf;fk; 7

Abdomen is the site of vaatha.

According to our text, siddha maruthuva noi nadal noi muthal nadal part-I. Vaatha lives in abaanan, stools, edakalai, anus, hip bones, skin, nerves, joints, hairfollicles, muscles etc.

According to thanvanthri naadi, umbilicus region is the site of vaatha

"NtjNk Aiuj;j thjj;jpd; tPL ghA njhg;Gs;"

-jd;te;jphp ehb

According to **"vaidiya sara sangirogam"**

"nrg;G Ke;jp rpijAk; thjepiy
nka;g;G khKdp kpz;L Kiuj;jNj"

vaatha is located from abanan to abdomen.

According to sarabendra vaidhiya muraikal, vaatha is located in the following parts,

1. Stomach
2. Hip
3. Bladder
4. Thighs
5. Foots
6. Bones
7. Generally below the parts of umbilicus.

NATURAL QUALITIES OF VAATHA:

According to our text,Noi nadal noi muthal nadal, vaatha in its natural state is responsible for

- Alertness
- Inspiration and expiration
- Mental and physical activities
- Elimination of fourteen reflexes
- Unique with seven udarkattugal
- Strength of five sensory organs

“xOq;Fld; jhNjo; %r; Nrhq;fp ,aq;f
vOr;rpngw vg;gzpAkhw;w-vOe;jphpa
Ntfk; Gyd;fSf;F Nktr; RWRWg;G
thfspf;Fk; khe;jh;f;Fk; thA”

-k.j.gh> gf;fk;-232

AGONIST QUALITIES OF VAATHA :

“thjq; fLik twl;rpAld; neha;ik
rPjQ; rydk; rpjwZT-VjKl
dpf; Fzj;NjhLw;Nw apaf;fe; jUkstpw;
wf;f ghpfhue; jh”

-fz;Zrhkpak;

According to above text, vaatha has six properties. Due to had and unwanted things in our food and water makes strengthening of vaatha's own qualities. They are,

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

ANTAGONIST QUALITIES OF VAATHA:

"thj Fz khWf;Fk; khW FzNk Nehf;fpd;
XjkpU jPuk; cah;ghuk;-Nghjuth
As;s jPNah LWjpAw;Wj; jpushf
cs;s Fzj;ijNa Cl;L"

-fz;Zrhkpak;

These qualities eliminate the agonist qualities of vaatha, by giving the food supplements with the following properties they are,

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

FUNCTIONS OF VAATHA IN OUR BODY:

- Body pain
- Numbness
- Tremors
- Dryness
- Emaciation
- Paralysis
- Paresis
- Constipation
- Olguria
- Excessive thirst
- Horiplication
- Astringent taste in the mouth
- Dislocation of joints

- ❖ Movements
- ❖ Rigidity
- ❖ Black discolouration of skin

VAATHA DISEASES

SYNONYM : VALI NOIGAL

DEFINITION:

,J> tspf;Fw;wk; jd;dstpy; kpFe;J my;yJ Fiwe;J NflilAk; NghJ cl;k;gpy; Fj;jy;> Filjy;> Nehjy;> njhopy; mw;Wg;Nghjy;> eLf;fy; Kjypa Fz Ngjq;fisAz;lhf;fpg; gy tifg;gl;l Jd;gq;fis gpwg;gpf;Fk; ,ay;Gila Nehahk;. (rpj;jkUe;Jt Neha;ehly; Neha; Kjy; ehly; jpul;L ,uz;lhk; ghfk;. gf;fk; - 550)

euk;G Jthuq;fspy; nfl;l ePh; jq;fp jirapy; Cwp mjpfhpj;J typ> mrjp> rhpthq;fk; KOtJk; Nehia tpistpj;jyhk;. (Mtpaspf;Fk; mKj Kiw tpsf;fk;. gf;fk; - 354)

tha;T mjpfhpj;J kdpjd; clk;gpy; ,Uf;Fk; midj;J euk;G(Jtuq;fSf;Fk;) jirfSf;Fk; gutp tha;T mjpfhpj;J typ> mrjp> cly; KOtJk; thj Nehia gutr; nra;Ak;. (gy jpul;L itj;jpak;. gf;fk; -76)

CHARACTERISTICS OF VAATHA DISEASES:

“fhy;ifAyh;e;J jpkpUz;lhk; fz;Ze; J}q;fpr; Nrhgpj;Jf;
NfhyQ;nrhpA kq;fnky;yhq; Fjpj;Jr; rw;Nw fdq;nfhz;L
rPy kpFe;J rPh;fhzr; rpWePh; tw;wp KLFnkd;d
thyj;jlq;fz; khdidaha; khNj thjNuhfkpNj”

- mf];jpah; 2000 Kjy; ,uz;L ghfq;fs; gf;fk; 201

According to above text, vaatha disease have the features of,

1. Dryness & numbness in the hands & legs.
2. Eyes like sleepy eyes.
3. Pain and he feels increases of body weight.

4. Phlegm increased.

5. Scanty micturition.

According to **Theraiyar vagadam**

thj Neha;fspd; ,ay;G

“thj tPW md;d kpwq;fhJ fLg;Gz;lhk; tz;z Kz;lhk;

NkhJ fl;L Nuhfk; RuKz;lh kpUkYkh Kwq;fhnjd;Dk;”

- 210 Njiuah; thflk; gf;fk;-72

1. In take of food amount decreased

2. Aches present in the body

3. Body colour changes

4. Fever

5. Cough occurs

CLASSIFICATION OF VAATHA DISEASES:

According to **“Yugi Vaidhiya Chinthamani”** there are 3 various school of thoughts. They are,

“vd;dNt thjkJ vz;g jhFk;

Vw;wkhk; NgUila ntopiyf; Nfsha;”

-A+fp itj;jpa rpe;jhkzp> gf;fk; -93

“jhf;fhd thje;jh ndz;g jhFk;”

-A+fp itj;jpa rpe;jhkzp

According to above two poem, the vaatha diseases are classified into 80 types.

Again he described 84 types of vaatha diseases,

“Mkg;gh thj nkz;gj;J ehYk;

mjpDila FzhFzq;fs; mlq;fshf”

gf;fk; - 131

But while he describing the disease, he had described 85 types of vaatha diseases.

In agasthiyar 2000, I & II parts, published by Saraswathy Mahal Library,thanjavur..

The vaatha diseases are classified into 1482.

“thpj;jpL thjgpj;j rpNyj;Jk tpahjp %d;wpy;
thpj;jpLQ; rpy Njh\j;jhy; tz;ik Kd;
Diuj;jpL kPNuo; E}Nw jd;dpnyd;gj;jpuz;L
fLj;jpdhy; thjf; $wpd; Nehnadf; fUjyhNk” (5)

-mf];jpah; 2000

According to **Theraiyar vagadam**,

“thj tpUj;jQ; rd;dNuhfk; #hpathjk; tUtjha;
rPj re;jputhjk; rhjputhjq; Fj;jp rPthfj;NjhL njhe;jpa thjk;
.....
fpilthjk;> gilthjk; gpwTthjk; Nfo;f;fp Nyfhkd thj”

nkd;gj;njhd;W (204 - 209)

-Njiuah; thflk;> gf;fk; - 70-71

Vaatha disease are classified into 81 in number

In Theraiyar vaidhiya kaviyam-1500, vaatha disease are classified into 80 in number,

“cwq;F thj nkhopa vz;gJf;F”

-gf;fk; - 89

According to **Rathina Surukka Naadi Nool,**

“ghug;gh tjkJ vz;gj;J ehY”

-,uj;jpd RUf;f ehb E}y;

Vaatha diseases are 84 in number

According to 4448 viyadigal,

“tpsk;gpL thjNehA vz;gj;J ehYkpf;f”

gf;fk; - 5

According to **“Dhanvanthiri Vaidhiyam”**, T.V.Sambasivampillai, dictionary, Jeeva Rakshamirtham (Subramanya Pandithary) **“Aathma Rakshamirtham”** vaatha diseases are classified 80 types.

In **“Sarabendra Vaidhiya Muraikal”** (Vaatha Roga Chikitchai) vaatha disease are classified into 80 types. gf;fk; XX.

According to Sekarasa sekara vaidhiyam

“rPuzp thj nkz;gj; ije;jpd; rpwg;Gk; NgUk;”

-nrfuhr Nrfu itj;jpak;

Vaatha diseases are classified into 85 in number.

SALATHAMBA VAATHAM

Salathamb vaatham is one of the vaatha diseases described in Yugi Vaidhiya Chinthamani.

Definition:

According to Yugi Vaidhiya Chinthamani – 800.

It is a type of vaatha disease mostly affecting anus and urethra and produces burning painful micturation, constipation, pain in the urethral orifice.

According to **T.V. Sambasivam Pillai** – Tamil, English dictionary volume IV Page No:1935-1936. ePh;j;jhiuAk;; kyj;JthuKk; jhf;fg;gl;L kyryk; ntsptUk;NghJ jLj;J tUj;jj;ij Az;lhf;Fk; Xh; thjNeha;. ,jdhy; ntbj;j Gz;zpw; fhZk; typiag; Nghy; ky %j;jpuk; fopAk; NghJz;lhFk;.

A nervous affection in which the urethra and the rectum are chiefly affected. It is attended with extreme pain like that experienced in tissue especially when answering or responding to the calls of nature.

(2) ePh; fLg;G-painful discharge of urine –Dysuria

ryj;jk;g thA: Nfhshwpdhy; %j;jpuhjp jilg;gl;L Ntjid Az;lhf;FNkhh; Neha;.

A kind of flatulence marked by suppression of feaces and urine followed by extreme pain due to the derangement of vayu (humour) in the body. According to N.Kathiraiver Pillai. Tamil Mozhi Agarathi.

ryj;jk;gk; ry];jk;k; ryj;jk;gdk;	ePhpdpay;ig jLj;jy;

Neerkattu means neermarippu

SYNONYMS

- Neerkattu vaatham
- Moothira vaatham
- Moothira sara vaatham
- Moothira varana vaatham
- Thamara vaatham
- Thamba vaatham
- Ushna vaatha moothira rogam
- Moothirakaatham

ETIOLOGY

According to Yugi Vaidhiya Chinthamani

“vd;dNt thjkjh nzz;g jhFk;
,fj;jpNj kdpjh;fSf; nfa;AkhW
gpd;dNt nghd;jida NrhuQ; nra;J
nghpaNahh;fs; gpuhkziu J}\zpj;Jk;
td;dNj tw;nrhj;jpr; NrhuQ; nra;J
khjhgpjh FUit kwe;j Ngh;f;Fk;
fd;dNt Ntjj;ij epe;ij nra;jhy;
fhaj;jpw; fye;jpLNk thje; jhNd” 243

-A+fp itj;jpa rpe;jhkzp> gf;fk; : 92.

In yugi vaidhiya chinthamani as there is no specific etiology for salathamba vaatham, causes for all types of vaatha diseases are suitable to this disease and are described. People who have behaviors like theft,. Unrespected to elders, ignorance of vethas, will be affected by vaatha diseases.

“jhndd;w frg;NghL Jth;g;G iwg;G
rhjfkha; neQ;RfpDQ; rikj;j td;dk;
Mndd;w thwpdJ nghrpj;j yhYk;

Mfhaj; NjwyJ Fbj;j yhYk;
ghndd;w gfYf;f kpuhtp opg;G
gl;bdpNa kpfTWjy; ghu nka;jy;
Njndd;w nkhopahu;Nkw; rpe;ij ahjy;
rPf;fpukha; thjkJ nrdpf;Fe; jhNd”

-A+fp itj;jpa rpe;jhkzp gf;fk; : 93

In take of food with bitter, astringent, pungent tastes, drinks, day sleep, insomnia, starvation, sexual desire etc will readily cause vaatha disease.

According to **“Pararasa Sekaram-Vaatha Roganithanam”**

“njhopy; ngW ifg;Gf; fhh;j; jy;Jth;j;jy; tpQ;RfpDQ; NrhWk;
gioajhk; tuF kw;iwa ige;jpid aUe;jp dhYk;
vopy;ngwg; gfYwq;fp ,utpdp Ywq;fh jhYk;
kioepfh; Foyp dhNs thjq; Nfhtpf;Fq; fhNd”

-guuhr Nrfuk; thjNuhfepjhdk;> gf;fk;-59

“fhzNt kpfTz; lhYq; fUJgl; bdptpl; lhYk;
khdid ahh;fz; Nkhf kwf;fpD kpFe;jpl;lhYk;
Mzt kyq;f lk;ik aq;ENd tplhj jhYk;
thDjd; kley; yhNs thjq; Nfhgpf;Fq; fhNd”

-guuhr Nrfuk;> gf;fk;-60

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

“fhyq;fz; khwp Az;Zq; fhhpaj; jhYe; jz;zPh;
rhyNt aUe;jp dhYk; re;jpap Yl;fhh;e; jhYk;
Nfhykhk; Gspg;G nea;iaf; Fiwtw tUe;jp dhYk;
thythh; Kiyey; yhNsthjKw; gtpf;Fq; fhNz”

-guuhr Nrfuk;> gf;fk;-60

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

According to **"Theraiyar Vagadam"**

"nta;apypy; elf;if ahYk; kpfj;jzpzph; Fbf;if ahYk;
nra;apio kfsp dhisr; Nrh;e;jD gptpf;if ahYk;
igaNt cz;if ahYk; ghfw;fha; jpd;if ahYk;
ijaNy thjNuhfQ; rdpf;F nkd; wwpe;J nfhs;Ns" (15)

-Njiuah; thflk;> gf;fk; -6

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

DENIAL OF 14 URGES

"thjj;ijj; jilnra; jhNyh
khh;gpNdha; Fd;k thA
Ngjpj;j Tju thjk;
ngUfpL Klk;G Nehjy;
thijfs; jpul;Lk; ty;iy
kyryq; fl;Lg; gl;Lg;
NgijNa grpj;jp ke;jk;
ngUfpNa kypj Yz;Nl"

-cly; jj;Jtk;> gf;fk;-331

Denial of vaatha produces somany diseases, among these urinary obstruction and constipation are one of the diseases.

"ePhpidj; jLj;jy; nra;apd;
ePh;f;fl;Lj; Jthuk; Gz;zhk;
ghwpLQ; re;J re;jpy;
gz;GW NehtjhFk;
Nehpyq; faUq; fhk;ak;
epr;ra Nehjy; nra;Ak;

ghhpdp yghd thA

gz;Gwr; NrUkd;Nw”

-cly; jj;Jtk;> gf;fk;-332

When urine is denied, it produces urinary obstruction ulcer extra.

“Rf;fpye; jidalf;fpd;

RuKldPh;f; fl;lhFk;

gf;fkhq; iffhy; re;J

ghuNeha; topapwq;Fk;

kpf;f khh;Neha; Az;lhFk;

kpFj;jpLk; gpuNkfe;jhd;

jf;fNjhh; NghJkhfpd;

jhpj;jpLk; thAf; $Nw”

-cly; jj;Jtk;> gf;fk;-337

Denial of ejaculation of semen produces urinary obstruction with fever etc.

According to **Theraiyar Naadi,**

“cgj;jpu nkhd;Wkpy;iy clypiy tpahjpapy;iy

etkjha; thjkpQ;rpy; ebf;fpLk; tpahjpAz;L”

-Njiuah; ehb

Exaggerated vaatha humour causes vaatha diseases

According to Thirukkual

“kpFDq; FiwapDk; Neha; nra;Ak; E}Nyhh;

tspKjyh ntz;zpa %d;W”

-jpUf;Fws;

Three humours which increase or decrease causes diseases vaatha diseases are produced by hyper vaatha, due to any of the above other etiology.

According to T.V.Sambasivam Pillai dictionary

Due to various food and misbehavior, the alteration in five forms of vaatha (ie, vayu) produces vaatha diseases.

According to Sarabendhira Vaidhiya Muraikal,

Causes of vaatha diseases are, take food of too hot or too cold varieties in large amount, decreased intake of food, control of nature calling, control of appetite.

PATHOLOGY

According to Thirumoolar Karukkadai Vaidhiyam-600

“thAtpdhNy kyryq; fl;bLk;”

-gf;fk; 35

According to theraiyar

“thjkyhJ Nkdp nflhJ”

-rpj;j kUj;Jt Neha; ehly; Neha; Kjy; ehly; jpul;Lghfk;-

I> gf;fk; - 363

In salathamba vaatham, among three humours, the vaatha is initially exaggerate due to certain extrinsic and intrinsic factors such as irregular food, habits and alterations in weather.

The exaggerated vaatha affects pitha humour, which is in equilibrium with vaatha. Among five vayus, abaanan and viyaanan get affected.

Affected abaanan alters fire, which is one of the five elements. This produces the following symptoms.

- Burning micturition
- Painful micturition
- Burning and pain over external genitalia
- Oliguria
- Constipation

Affected viyaanan alters space, which is on of the five elements. This produces the following symptoms.

- Pain all over the body
- Lower abdominal discomfort
- Fatigue

Then the exaggerated three humours affect the seven body structures (7 udal kattugal). of these, saaram, senneer, oon are affected.

CLINICAL FEATURES (Noi Guri Gunankal)

According to Yugi Vaidhiya Chinthamani

“jhndd;w kyj;Jth uj;jp NdhL
jhf;fpNa ryj;Jth ue;njhlq;fp
Ntndd;w ePhpwq;Fk; NghJ jhDk;
ntb Gz;zpy; NehTNghw; fpNyrk; gz;Zk;
thndd;w kyq;fLj;Jr; rpWfp tPOk;
kaph;f;$r;rz;lhfpNa tUj;jk; gz;Ze;
Njndd;w jpj;jpg;G Nghy;eP uhFk;
rpWjptOQ; ryj;jk;gr; nra;if ahNk”

-A+jp itj;jpa rpe;jhkzp

- Burning urination
- Painful urination
- Pain over anus
- Pain over urethra
- Constipation
- Frequency of urination
- Pilo-erection of the skin
- Body pain
- Oliguria

According to Pararasasekaram

“fzf;Fw Ts;sq; fhYq; fdf;fNt File;J nehe;J
tzf;fQ;rw; wpyhkd; NkNy typj;Jw Nehf;F khfpy;
czh;g;GW Gspg;gp dhNy As;sth jq;f lk;gpy;
jzh;glh; tpUk;G neQ;rhe; ijaNy ryj;jk; gq;fhz;”

-gf;fk; 239

- Urinary symptoms

- ❖ Pain over soles
- ❖ Radiating pain to lower limbs
- ❖ Among other vaatha diseases, it is caused by sour taste of foods.

According to Agasthiyar Mani 4000

“kyge;j thj ky%j;jp uj;ijr;
nrynthl;lh thAge;jk; nra;jy;-,yFFz
%j;jpuj;jpd; thjKiwapl Nehk; ePh;f;fl;Lk;
Nfhj;jpUky; fz;lnkOk; nfhs;”

-mf];jpah; kzp 4000> gf;fk;-54

- ❖ Named as **moothira vaatham**
- ❖ Urinary obstruction
- ❖ Oliguria
- ❖ Burning urination
- ❖ Cough

According to anubhava vaidhiya devarahasiyam Page no-162

- ❖ Named as **mothira sara vaatham**
- ❖ Vaatha occupies in the urethra
- ❖ Scanty, frequency of urination
- ❖ Supra-pubic pain
- ❖ Burning & painful urination

According to Jeva Rakshamirtham-VIIIth vaatha roga padalam

- ❖ Named as **Moothira sara vaatham**
- ❖ Vaatha occupies urethra
- ❖ Scanty, painful, burning urination
- ❖ Lower abdominal pain
- ❖ Frequency of urination

According to Thanvanthri Vaidhiyam

“Nktpa cjue;jhNd nghUkpNt jidfSz;lhe;

jhT %j;jpu kpw;wpw;W rw;W rw;whf tPO

Nkhtpy; fy;nyhpg;gd; NghYq; FzNk Tz;lh nkd;dpw;

fhtpaq; fz;zpd; khNj %j;jpufh jnkd;Nd”

-jd;te;jphp itj;ak;> gf;fk;-210

- Named as **Moothira kaatham**
- Abdominal pain
- Abdominal distention
- Scanty micturation
- Pain & burning in the urethra

According to Sarabendhra Chikichai Murai

“kyj;jpNdhL ryq;fl;Lk; grpahJ Njfj;jpy;
thjq;nfhs;Sk;
fyf;F kPJ kyge;j thjkhk;
ePh;fl;Lq; fz;le;jd;dpy;
tpyf;fhpa tpUkYW kpd;dJ %j;jpu
thjk; tpsq;Flk;gpy;
tYj;jp bstajpdiu ahe;Jauh
kq;Fypapd; thje;jhNd” (72)

-ruNge;jpu itj;jpa Kiwfs; thjNuhf rpfpr;ir> gf;fk;-LXII

- Named as **Moothira vaatham**
- Constipation
- Oliguria
- Loss of appetite
- Cough

According to Jeeva Rakshamirtham Page No-$R

- Named as **Ushna vaatha moothira rogam**
- Lower abdominal pin
- Fever

- Haematuria or yellowish urination
- Burning and painful micturition

DIAGNOSIS (Piniyari Muramai)

To deal one disease and confirm what is what, diagnosis is made out. It is very helpful to take over correct line of treatment and assess the prognosis of the disease. In siddha aspect, the diagnosis is based upon the following methods.

- Poriyaal aridhal (Inspection)
- Pulanaal aridhal (Palpation)
- Vinadhal (Interrogation)
- Envagai thervugal

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

- Thinai (land and place)
- Kaalam (seasons)
- Mukkutrangal (three life principles)
- Udarkattugal (seven body structures)

PORIYAAL ARIDHAL (sensory organs)

Porigal are the five organs of perception. They are

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

Poriyal aridhal is examining the pori of the patient by the pori of the physician

PULANAAL ARIDHAL (Palpation)

Pulangal are the five objects of senses. They are,

Ooru - Touch

Osai - Sound

Suvai - Taste

Oli - Vision

Natram - Smell

Pulanal aridhal is examining the above five sensation by a physician.

In salathamba vaatham, most of the patients have supra pubic tenderness or lower abdomen pain, when the patients were palpated.

VINADHAL (Interrogation)

By vinadhal, the physician knows about the patients name, age, occupation, native place (thinai) family history, socio economic status, dietary habits, his/her complaints, history of past illness, relevant history of treatment & frequency of attacks by change of season.

ENVAGAI THERVUGAL

The unique diagnostic principle in siddha system of medicine is "**Envagai thervugal".** Somany siddhars describe in many of their literatures about the envagai theruvgal. The following verses reveals this as follows.

"ehb];ghprk; ehepwk; nkhoptpop
kyk; Kj;jpukpit kUj;JtuhAjk;"

-Njiuah;

"nka;f;Fwp epwe; njhdp tpopehtpUkyk; iff;Fwp"

-rpj;j kUj;Jt Neha; ehly; Neha; Kjy; ehly; jpul;Lghfk;-

I> gf;fk; - 270

In Kannusamiyam Parambarai Vaidhiyam., Envagai thervugal have been mentioned as **"Asttavitha paretchai".**

"njhFf;fYw;w ml;ltpjg; ghpl;ir jd;id
Jyf;fKWk; gz;bjNu njspthfg;
Gfh;fpd;w thh;j;ijiag; ghh; ehitg;ghU
tFf;fhpa Njfnkdj; njhl;Lg;ghU
tdkhd rhPuj;jpd; epwj;ijg;ghU
rfpf;fphpa kyj;ijg; ghU ryj;ijg;ghU
rhh;e;jtpop jidg; ghh;j;J njsptha;f;fhNz"

-fz;Zrhkp guk;giu itj;ak;> gf;fk; - 1

Envagai thervugal are,

1. Naadi (Pulse)
2. Sparism (Palpation)
3. Naa (Tongue)
4. Niram (Colour of the skin)
5. Mozhi (Speech)
6. Vizhi (Eyes)
7. Malam (Faeces)
8. Moothiram (Urine)

1. Naadi (Pulse)

“clypy; caph; jhpj;jpUg;gjw;Ff; fhuzkhd rptrf;jp
vJNth mJNt jhJ my;yJ ehb vdg;gLk;”

- Neha; ehly; Neha; Kjy; ehly; jpul;L> gf;fk; - 83

Naadi is the main diagnostic scale of the siddha system. It can be felt at one inch below the wrist on the radial artery by palpation with the tip of index, middle and ring finger correspondent to vaatham, pitham, kabham.

The normal ratio of 1: ½ : ¼: of vaatham, pitham, kabham, is altered in various diseases. In salathamba vaatham, the following naadi are seen commonly.

- ❖ Vaatha pitha naadi
- ❖ Vaatha kabha naadi
- ❖ Pitha vaatha naadi

1. Vaatha Naadi

“fhzg; ghthj kPwpy;
kyQ;ryk; nghUkpf; fl;Lk;”

-mfj;jpah; itj;jpa fhtpak; 1500

“Nktpa thjQ; nra;Aq;
Fze;jid tpsk;gf; Nfsha;
Nrtpa jhJ ehrQ;
rpWj;Jld; rpWePh; tpOk;”

-mfj;jpah; MAh;Ntjk;- 1200

2. Pitha Naadi

“**Vythh; Foyha; gpj;jQ; nra;FWapak; gf;Nfsha;.....**
rpy ePh;f; fLj;J nehe;J rpWnfd tPOkpd;ik”

-kr;rKdpehb

“nfhy;yNt gpj;jkJ NkNywp
nfhbghfy; nfhbaJ NghY}Ukhfpy;
nky;y Nttpah; itaJ mjpfkhfp

kpuf;fNt rpWePh;jhd; fl;bg; NghNk”

-,uhk Njth; ehb

“ghhpe;j gpj;jj;jh nyOe;j Nuhfk;

.....ryf;fLg;G.....”

-mfj;jpah; ehb

3. Vaatha Pitha Naadi

“nghUshd thjj;jpy; gpj;jQ; Nrh;e;J

.....ePupw;.....

rptg;G kyk; gpbj;jYUQ;.....”

-rjf ehb

SPARISAM:

Sparisam means touch. By touching the skin and various part of the body, the physician can rule out various abnormalities, such as temperature of the skin, any abnormal growth, hypersensitivity, thickening of skin, swelling, ulcers etc.

In salathamba vaatham, some patients have increased temperature and tenderness present in the abdominal regions is elicited.

NAA (Tongue)

Colour, coating, paller, dryness, ulcers, fissuer, deviation, movements, variations in taste and the conditions of gum and teeth can be noted by examining the tongue.

In salathamba vaatham, some patient’s tongue are coated, due to the complaint of constipation.

NIRAM (Colour)

Pallor, cyanosis, yellowish and other discolouration of the skin should be noted. The type of the body is confirmed by the skin colour whether in black (vaatha), red or yellow (pitha), white (kabha) and mixed colours (mixed humours).

In salathamba vaatham, the skin colour, depends upon the patient's body condition.

MOZHI (Speech)

In examination of speech, the high or low pitched voice, slurred speech, aphasia, dysarthria, nasal speech, hoarseness of voice can be noted.

In salathamba vaatham, the speech is normal in all patients.

VIZHI (Eyes)

Both motor and sensory disturbances of eyes are noted. Discolouration of eyes, sunking, swelling, lacrimation, ulceration, eye lids swelling, vision, conditions of cornea, conjunctivae and pupils can be noted.

In salathamba vaatham, most of the patient have the complained of burning eyes.

MALAM (Faeces)

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

In salathamba vaatham the faeces is balck or normal in colour and constipation is present. Stools examination may show ova and cyst.

MOOTHIRAM (Urine)

"te;j ePh;f; fhpnail kzk; Eiu vQ;rnyd;
iwe;jpa Ystit aiwFJ KiwNa"

-Njiuah; ePh;f;Fwp nea;f;Fwp E}y;

The urine analysis is done in siddha system according to five parameters. They are,

Niram	-	It indicates the colour of urine
Manam	-	It indicates the smell of urine
Edai	-	It indicates the specific gravity of urine

Nurai - It indicates froth of urine

Enjal - It indicates quantity of urine

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

NORMAL URINE

“kpfj;jbg; Gk;kpfj; NjwYk; ,d;nwdpy;
Rfj;ijj; jUk;nka;r; RghtePh; ed;Nw”

-Njiuah; ePh;Fwp nea;f;Fwp E}y;
rpj;j kUj;Jt Neha;ehly; Neha; Kjdhly; jpul;L
ghfk;-1> gf;fk;-294

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

NIRAM:

According to Yugi Vaidhiya Chinthamani-800

“gz;ghd thjNuh fpf;F Kj;uk;
ghhpj;Jj; njspe;jpUf;Fk; ntz;ikahFk;
gz;ghd gpj;jNuhfpf;F Kj;uk;
ghh;f;fkha; kQ;rspj;Jg; grj;jp Uf;Fk;” -134

-A+fp itj;jpa rpe;jhkzp 800> gf;fk;-50

Yugi describes that vaatha urine may be white, clear coloured and pitha urine may be yellow coloured.

In salathamba vaatham, the humours vaatha and pitha are chiefly aggravated and the colour of urine resembles vaatha urine or pitha urine.

The same has been quoted as follows

“thjNuh fk;njspe;jhd; kQ;rspj;jhd; kw;iwaJ”

-mfj;jpah; kzp 4000

“%j;jpuf; Fwpfs; Nfsha; nkhope;jpLk; thjk; ntz;ik
fhj;jpu %j;j gpj;jQ; rptg;NghL rpWFk; ePUk;”

-mfj;jpah; 2000

MANAM

“nta;aJh;f; fe;jk; tPRePh; Kj;jpug;
igehs kptw;iwg; gw;WGz; FwpNa
mk;nkhop apd;nwdp ddpyNk Kjypa
Kk;kyr; RjNk %ynkd; WzNu”

-Njiuah; ePh;Fwp nea;f;Fwp E}y;
rpj;j kUj;Jt Neha;ehly; Neha; Kjdhly; jpul;L
ghfk;-1> gf;fk;-294

In salathamba vaatham, the urine should be in bad smell as the diseases affect the urinary bladder and ureters.

The bad smell orginates, due to affected vaatha, pitha and kabha.

EDAI:

“mw;gKq; fdkw;wjp njspTW nkdpd;
tw;GW rPjsk; kd;dpf; fdj;Jf;
fgj;ij ,sf;fyhy; fz;l ePh; ,‡Nj”

“,J eph;g;ig ,e;jphpamop ,tw;Wz;
Kjph;Jh;g; gyj;jhd; Kisj; njdf; nfhs;f”

-Njiuah; ePh;Fwp nea;f;Fwp E}y;
rpj;j kUj;Jt Neha;ehly; Neha; Kjdhly; jpul;L
ghfk;-1> gf;fk;-293

The weakness of the urinary bladder produce the urine with low specific gravity. In salathamba vaatham the urine is as per above text.

“kpf;Fj; jbj;J tpONky; kyq;fspd;
ew;Fz tOit ed;NfhJ ePNu”

-Njiuah; ePh;Fwp nea;f;Fwp E}y;
rpj;j kUj;Jt Neha;ehly; Neha; Kjdhly; jpul;L
ghfk;-1> gf;fk;-293

Above verse explains that the high specific gravity indicates the affected vaatha, pitha and kabha.

In salathamba vaatham, the specific gravity of urine is high..

NURAI

“ge;j nka;g; giraps fg;gLk; gUtj;
je;jhg; G+jkha; mzpy Kj;jpuj;jpy;
rk;ge;jg;gLk; jjpEiug; GdNy”

-Njiuah; ePh;Fwp nea;f;Fwp E}y;
rpj;j kUj;Jt Neha;ehly; Neha; Kjdhly; jpul;L
ghfk;-1> gf;fk;-296

When five forms of kabha (ie Avalambagam, Kilethagam, Pothagam Tharpagam and Santhigam) are altered, the air communicating urine produces frothy urine.

In salathamba vaatham, the urine may not be frothy.

ENJAL

According to Thanvanthiri Vaidhiyam

“Xq;fpa thjj;Njhh;f;F ePh;tpOq; FzKiuf;fpw;
G+q;nfhb fLj;J nehe;J rpWj;Jld; nghUkp tpOk;
ghq;Fld; gpj;jj; Njhh;f;Fg; nghrpa ePh; rpte;Jfhl;b
Naq;fNt RWf;fjhf nahpj;Jld; fLj;J tPOk;”

-jd;te;jhp itj;jpak;

Above text explains that oliguria present both in vaatha, and pitha patients. In salathamba vaatham, the quantity of urine is low as vaatha and pitha get affected.

And also haematuria indicates and the presence of red blood cells in the urine.

NEIKURI

“mUe;J khwpujK; mtpNuhjkjha;
m‡fy; myh;jy; mfhyT+d; jtph;e;jow;
Fw;wstUe;jp cwq;fp itfiw
Mbf;fyrj; jhtpNa fhJnga;
njhUK$h;j;jf; fiyf;Fl;gL ePhpd;
epwf;Fwp nea;f;Fwp epUkpj;jy; flNd”

-Njiuah; ePh;Fwp nea;f;Fwp E}y;

rpj;j kUj;Jt Neha;ehly; Neha; Kjdhly; jpul;L

ghfk;-1> gf;fk;-282

METHOD

Prior to the day of urine examination the patient is advised to take a balanced diet and the quantity of food must be proportionate to his appetite and he should have a good sleep.

After waking up in the morning the first urine voided by the patient is collected in a glass container and is subjected to analysis with in 1 ½ hrs.

A drop of gingely oil is dropped into container without shaking. The nature of the neikuri should be noticed in direct sunlight.

OBSERVATION

1. Vaatha Neer

“muntd ePz;bd; m‡Nj thjk;”

When the drop of oil spreads like a snake it indicates vaatha neer.

2. Pitha Neer

“Mop Nghw; gutpd; m‡Nj gpj;jk;”

-Njiuah; ePh;f;Fwp nea;f;FwpE}y;

When the drop of oil spreads like a ring it indicates pitha neer.

3. Kabha Neer

“Kj; njhj;J epw;fpd; nkhoptjd; fgNk”

When the oil drop remains as that of a pearl it indicates kabha neer.

4. Thontha Neer

“mutpyhopAk; Mopapy; muTk;

mutpd; Kj;Jk; Mopapy; Kj;Jk;

Njhw;wpy; njhe;j Njhlq;fshNk”

When the drop of oil show two shapes enclosed within one another it indicates thontha neer.

In salathamba vaatham, neikuri spreads like a ring some times snake and coincidence of shapes.

PROGNOSIS BY NEIKURI

“,utpdpy; tl;by; itj;Nj
Nafpd;w ryj;jpd; kPNj
,UsJ GyUq; fhiy
Vw;fNt vz;nza; nfhz;Nl
xU Jsp tpl;Lg; ghh;f;fpd;
cte;Jld; gutpw; whapd;
cj;jk rhj;a nkd;Nw
Aiuj;jd UyNfhh; Nfl;fg;
guTjy; ke;j khapd;
rhj;jpa ke;j khFk;
gtk‡ Jjf kpjpy;
gutplhf; fl;bahAd;
mudad; Njt uhY
kUj;Jt KdptuhYk;
mrhj;jpa nkd;W nrhd;dhh;
mwpTs; uwpe;J nfhs;tPh;”

-rpj;j kUj;Jthq;f RUf;fk;> gf;fk;-358

By neikuri, we can judge the prognosis of a disease. When the oil spreads well immediately, the disease is cured earlier. when the oil slowly spreads it indicates that the disease is also cured slowly. When the oil does not move in its place, the prognosis is very poor.

THINAI (Land and Place)

The geographical distribution of the land is classified into five regions.

S.NO	LAND	AILMENTS
1.	Kurunji (Mountain region)	Kabha Noigal
2.	Mullai (Forest region)	Pitha Noigal, Vaatha Noigal

3.	Marutham (Fertile region)	No disease
4.	Neithal (Coastal region)	Vaatha Noigal
5.	Palai (Desert region)	Vaatha, Pitha, Kabha Noigal

As **“Salathamba Vaatham”** is casused primarily by the derangement of vaatham.So its occurance is expected to be more in neithal and mullai thnai.

PARUVA KALAM MARUBADU (Seasons)

With reference to the position of sun, the year is divided into six seasons as follows.

S. NO	Seasons & Duration	Deranged Kutram	Samapaduthum Suvai
1.	Karkaalam (Early rainy) Avani –Purattasi Aug 16- Oct 15	Vaatham ↑↑ ↑	Inippu Pulippu Uppu
2.	Koothirkaalam(Late rainy) Iypasi and Karthigai Oct 16-Dec 15	Vaatham - Pitham ↑↑	Inippu Kaippu Thuvarpu
3.	Munpanikaalam (Early winter) Marhazhi and Thai Dec 16-Feb 15	Pitham -	Inippu Pulippu Uppu
4.	Pinpanikaalam (Late winter) Maasi and Panguni Feb 16-April 15	Kabham ↑	Inippu Pulippu Thuvarppu
5.	Elavenilkaalam (Early summer) Chithirai and Vaigasi April 16-Jun 15	Kabham ↑↑	Kaippu Karppu Thuvarpu
6.	Muthuvenilkaalam (Late summer Aani and Aadi June 16-Aug 15	Kabham – Vaatham ↑	Inippu

↑ - Thannilai valarchi

↑↑ - Vetrunilai valarchi

\- - Thannilai adaithal.

As the disease “Salathamba Vaatham” occurs due to the derangement of vaatham, its incidence is expected more during kaarkalam & muthuvenil kaalam.

MUKKUTRANGAL

According to Yugi Vaidhiya Chinthamani,

“ebf;fpd;w thjgpj;j Nrl;g %d;W

eykh tpjpd;gphpd Gl;lf; Nfsha;

tbf;fpd;w thjkJ thAepiy fyq;fp

kj;jpakh kf;fpdpA khh;f;f khNk
khh;f;fkhk; gpj;je;jh df;fp dpia
krf;fpitj;J ka;ifAld; tUj;jp itf;Fk;
J}f;fe;jhd; Nrl;gkJ rykpF ahf;fpj;
Jthuq;f NlhW kpil tplhk dpw;Fk;"

-A+fp itj;jpa rpe;jhkzp> gf;fk;-76

The theory of mukkuttram forms the foundation of siddha. The primary position relegated to the equilibrated state of mukkutram in this definition of a health man indicates their importance in the maintenance of health. It can also be surmised that any disturbance in that equilibrated state leads to the development of disease in the body. They are,

1. Vali (Sustentative)
2. Azhal (Correlative)
3. Iyam (Generative)

Three vital humours occupy the lower, the middle and upper part of the body.

The vayu (or) vaatha refers to all the changes which come under the functions of central and sympathetic nervous system. The word pitha signifies the functions of thermogenesis or heat production and metabolism. Kapha signifies the functions of thermaotaxis on heat regulations. Vaatha, pitha, kabha are act upon each and every cell in the body.

VALI OR VAYU

Vali is not mere wind but also causes motion, energy and sensation of every cell in the body. It is responsible for all movements of the body. Vali controls both kanmendhriyam& gnanendhriyam.

Locomotor function through voluntary muscles are governed by kanmendhriyam and sensory functions are governed by gnanaedhriyam. Vali controls nervous system through "Dhasa Vayu".

SEATS OF VALI

- ❖ Below the navel region (umbilicus)
- ❖ Urinary bladder, motion spermatic cord, umbilical cord, thigh, bone, skin, nerves, joints, muscles, hair follicles, pelvis and ear.

The vali is divided into 10 types according to their location & functions.

S.No	Classification of vaatham	Location	Functions
1.	Pranan	Heart, chest	Respiration, digestion, sneezing coughing
2.	Abaanan	Anus, lower abdomen, hip joint, bladder, genitalia	Defeacation and micturition, expulsion fetus, semen.
3.	Viyaanan	Heart, allover the body	Locomotion, blinking and opening of the eye.
4.	Uthanan	Chest, umbilicus, neck, nose	Controls breathing and speech
5.	Samanan	Duodenum allover GI tract	Secretion of digestive enzyme & juice. Absorption of nutritive material
6.	Naagan	Brain	Learn all things. Blinking movement of the eye, erector pilorum.
7.	Koorman	Soul and mind	Yawning opening and closing of eye ball, vision, lacrimation
8.	Kirukaran	Tongue	Nasal and oral secretion. Hunger, concentration, sneezing and cough.
9.	Devathathan	Anus and genitalia	Fatigue, argument fighting, angry.
10.	Thananjayan	-	Oedema, hyperacousia

In case of salathamba vaatham, abaanan, viyaanan, samanan, kirukaran are affected.

Affected abaanan produces burning micturition, painful micturition, constipation and lower abdominal pain etc.

Affected viyaanan produces low backache, body pain and fatigue as it gives nutrition to all tissues

Affected samanan produces loss of appetite and indigestion.

Affected kirukaran produces loss of appetite, nausea.

AZHAL

It has to be means the functions of correlative, secondarily mean gastric juice, bile, energy, heat, inflammation, anger and irritation. Azhal signifies the function of thermogenesis, metabolism and digestion, formation of various secretions and exceretions and also gives colour to skin and blood.

SEATS OF AZHAL

Pingalai, pranavayu, bladder, heart, head, umbilicus, navel, stomach, sweat, saliva, blood, eye & skin.

According to place and functions azhal can be named as follows,

- Anar pitham
- Ranjaga pitham
- Saathaga pitham
- Alosaga pitham
- Prasaga pitham

VARIETIES OF PITHAM

S.No	Classification of pitham	Location	Functions
1.	Analagam	Stomach, small intestine	Gives appetite, digestion
2.	Ranjagam	Stomach, liver, spleen	Promote haemopoiesis
3.	Saathagam	Heart	Effective efficient
4.	Alosagam	Eyes	Vision
5.	Prasagam	Skin	Complexion of skin

In case of salathamba vaatham, analagam, ranjagam, saathgam are affected.

Affected anarpitham produces loss of appetite. Ranjagam pitham affected in all patients by ingreasing the E.S.R rate

Affeced saathagam produces difficulty in performing usual works.

IYAM

Not only mean phlegm but it really has to be taken to mean the function of thermotasis or heat regulations. It may secondarily mean the formation of various preservative fluids viz. mucous and synovial fluids.

SEATS OF IYAM

Samana vayu, semen, tongue, stomach, bone marrow, fat, blood, nose, chest, nerves, bones, brain, large intestine, eye and joints.

VARIETIES OF IYAM

S.No	Classification of Iyam	Location	Functions
1.	Avalambagam	Heart	Supports all other iyam
2.	Kilethagam	Stomach	Moisters & nourishes the food
3.	Pothagam	Tongue	Gives taste sensation
4.	Tharpagam	Head	Keeps the head cool
5.	Santhigam	Joints	Stability, lubrication, movements of joints

In case of salathamaba vaatham, avalambagam, kilethagam, santhigam are affected.

Avalambagam affected when other forms of kabha get affected.

Affected kilethagam produces indigestion as it helps the digestion by moistening the food.

Affected santhigam produces low backache.

UDARKATTUGAL

They are the basic body structures, which constitute the entire body. They are seven in numbers.

1. Saaram – Chyle (Plasma)

It is responsible for the growth and development. It keeps the individual in good spirit and nourishes the blood.

In salathamaba vaatham, Saaram is affected by producing the tiredness of body.

2. Senneer (Blood)

It imparts colour to the body, it improves intelect and ability.

In the case salathamba vaatham, senneer is affected by the symptoms of haematuria .

3. Oon – (Muscle)

Gives shape to the body according to the functions of the organ.

In salathamba vaatham oon is affected in most of the patients

4. Kozhuppu (Fat)

It gives lubrication to do proper function of organs of the body.

It the case of salathamab vaatham, kozhuppu is not affected.

5. Enbu-(Bone)

It maintans the strcture of body. It gives protection to soft parts and allows free movement of the body.

In salathamaba vaatham enbu is not affected.

6. Moolai (Bone Marrow)

It fills the bone cavity, nourishes semen and imparts strength, endurance and shiny appearance.

In salathamba vaatham, moolai is not affected.

7. Sukkilam or Suronitham – (Sperm & Ovam)

It is responsible for reproduction. In salathamba vaatham, sukkilam is not affected.

PROGNOSIS

The prognosis of the salathamba vaatham is good affer treatment.

DIFFERENTIAL DIAGNOSIS

Moothira Udhira vaatham

“tpsk;gNt tpLKj;jpuk; thapw; Nwhd;W
kPwpNa neQ;Rjdp yod;W NehFk;
epsk;gNt neQ;Rjdpy; tPf;f Kz;lhk;
epj;jpiuapy; yhkNy ntJk;g yhFk;
tsk;gNt tapWjdpy; NehTkhFk;
kfj;jhd tpf;fYl dpUk Yz;lhk;
msk;gNt mbtapW fdj;J NehF
kir Kj;jpu Tjpunkd;w thje;jhNd”

-A+fp itj;jpa rpe;jhkzp

- Pain over the urethra
- Frequency of urination
- Chest discomfort
- Insomnia
- Stomach pain
- Cough, hiccough
- Lower abdominal pain are present

Sala Prameham

“ePh;tU ehsq; fLj;Jj; jLj;jilj;J
epd;W epd;W Jspj;Jspaha; apw;W tPKQ;
rhuKW kyKkjpy; kpfNt tPOe;
jhpahj Ntjidah Aly; kaq;FQ;

NrUePh; ehsKj Ye;jp kl;LQ;
nrUkp nte;J tpjdKld; Gz;ZkhFk;
ghUkpe;jf; Fzq;fs; ryg;gpuNkfj;jpd;
gz;ngdNt FUKdpth; gfh;e;j jhNk ”

-jd;te;jphp itj;ak;> ghfk;-2> gf;fk;-213

- ❖ Pain over the urethra
- ❖ Burning urination
- ❖ Oliguria
- ❖ Frequency of urination
- ❖ Loose stools
- ❖ Pain over the body
- ❖ Fatigue &
- ❖ Sever pain over the abdomen are present

Kalladaippu

According to Yugi vaidhiya Chinthamani

- ❖ Colic pain occurs below the umbilicus
- ❖ Oliguria
- ❖ Constipation
- ❖ Pain in the penis
- ❖ Abdominal distention due to fluid accumulation
- ❖ Nausea sensation
- ❖ Increased Respiration
- ❖ Blood colarish stores are expelled through the urethra
- ❖ Profuse sweating

PININEEKKAM (TREATMENT)

Siddha system of medicine was an unique system of medicine in which treatment is given both for the body and mind so siddha system comprises treatment in three ways

- ❖ Kappu (Prevention)
- ❖ Neekam (Treatment)

- Niraivu (Restoration)

Kappu (Prevention)

“vjpujhf; fhf;Fk; mwptpdhh;f; fpy;iy
mjpu tUtjhk; Neha;”

-jpUf;Fws;

“Kf;fhy; kykJ nghy;yhj tha;T %d;W Jk;ky;
rpf;fh kyhW ryjhiu tpl;Lr; rpWeilAk;
ikf;fhL nfhz;l tpopaha; kdpjh;f;F tha;g;gnjdpy;
vf;fhy Kg;gpzp thuhj fhak; ,Uk; nghf;FNk”

-rpj;j kUj;Jthq;fhr; RUf;fk;> gf;fk; : 192

The above two text describe the general preventive measure one should evacuate gas and stools for at least one time, sneeze for 3 times and pass urine for 6 times. If follow this, one should never be diseased.

“J}q;fp tpopj;jpTld; Rj;Njh jfkUe;jpy;
xq;fp epd;w gpj;jk; xoptjd;wpf; - Njq;F
kyKj; jpue;jq;fh thjhjp Ae;jk;
jy khj;jpu %yTe; jhd;”

-gjhh;j;j Fz rpe;jhkzp

Early morning intake of pure water neutralizes Vaatha, Pitha and Kabha prevents constipation and urinary obstruction.

Neekam (Treatment)

A good physician should know about the derangement of kutram and should treat the patient on the basis of altered kuttram.

Treatment is based on,

- To bring the tridhosham to normal
- To treat the disease according to its symptoms through medicines
- To increase the natural immunity

To normalize tridhosham:

“tpNur;rdj;jhy; thjk; jhOk;
tkdj;jhy; gpj;jk; jhOk;
erpa mQ;rdj;jhy; fgk; jhOk;”

Vaatha diseases can be brought down by viraesonam, by giving laxatives and purgatives according to the patient’s condition.

Since salathamba vaatham is one of the vaatha disease, So to neutralize the exaggerated Vaatha, laxative or purgative is given initially before the treatment.

For Purgation:

Vellai ennai ½ to 1 ounce (14-18 ml) for 2 days early morning.

Then the next day, the trial medicine Santhanaathy choornam 0.5gm Bd with water.

Nerunchil – Kothamalli kudineer 40 ml Bd are given.

DIET:

“nrq;fOePh; Nfhl;le; Njd;kpsF ey;nyz;nza;
jq;F ngUq; fhae; jOjhio naq;nfq;Fk;
$l;LrpW Kj;Jnea; Nfhjp xOe;jpitfs;
thl;Lkep yj;ij kjp”

-gjhh;j;j Fz rpe;jhkzp> gf;fk; : 362

Water lilly root tuber, costusroot, peppe,. Sesame oil, asafoetida, cledodendron phlomoides, castor oil and black gram are advised vaatha patients.

“khl;Lg; gwq;fptq;f khKUq;if nts;stiu
ehl;Lq; $ug;gpQ;R ew;fUiz ehl;LSiw
khfUiz aq;fUtpy; thje; njOe;J te;j
NjfUiz ew;fwpahe; Njh;”

-gjhh;j;j Fz rpe;jhkzp

gwq;fpf;fha;> kh> KUq;if> nts;stiu> ghfy;> fUiz Mfpa fha;fs; thj Neha;fis ePf;ff; $bait MFk;.

Niraivu (Resturation)

Resturation of health is maintained by simplified yoga practice and good morality.

YOGASANAS:

- Dhanurasanam
- Salabasana
- Bujangasana
- Haalasana
- Sarvangasana
- Karppasana
- Pathahasthasana
- Savasana

About all asanas, stimulate the endocrine glands of abdominal regions and gonads there by preventing constipation, urinary obstruction, diabetes, menstrual problems, leucorrhoea, abdominal and uterine diseases.

Reassurance is given to all the patients for quick recovery.

MEDICAL ADVICE :

- Avoid denial of urine and semen
- Avoid excessive and extra marital coitus
- Avoid heavy work and travel
- To take water above 3 liters per day
- To take water containging vegetables and fruits
- Regular emptying of bladder by 3 hours interval
- Empty the bladder before and after coitus
- Follow good genital hygiene
- Avoid alcobol and tobacco products consumption

This regime is started after completion of curative course of treatment and continued for several months.

ANATOMY OF THE URINARY TRACT

Introduction to urinary system:

The organs of the body that are concerned with the formation of urine and its elimination from the body are referred to as urinary organs. They consists of the right and left kidney, in which urine is formed, the right and left ureters, the urinary bladder in which urine is stored temporarily and is also concentrated and the urethra which carries urine from the urinary bladder to the exterior.

The urinary tract is divided into,

1. Upper urinary tract
2. Lower urinary tract

Upper urinary tract consists of,

Kidneys

Ureters-(abdominal)

Lower urinary tract consists of,

Ureter –(pelvic)

Bladder

Urethra

KIDNEYS

The kidneys excrete the final products of metabolic activities and excess of water and salts from the blood and maintain its PH. They also have endocrine functions producing and releasing erythropoietin, renin, 1.25-hydroxy cholecalciferal and various other soluble factors.

SITUATION:

The kidneys are situated dorsal part of the abdomen, one an either side of the vertebral column, covered by the peritoneum and surrounded by a mass of fat

and loose areolar tissue. Superiorly, they are level with the upper border of the twelth thoracic vertebra, inferiorly with the third lumber.

The right kidney is usually slightly more caudal than the left, probably due to presence of the liver.

Colour : Reddish brown in the fresh state

Shape : Bean-shaped

Length : About 11.5 Cm

Breath : 5 to 7.5 Cm

Thickness : About 2.5 Cm

The left is some what longer and narrower than the right.

WEIGHT:

In the adult male, the kidney is weights 125 to 170 gm, in the adult female 115 to 155 gms..

Each kidney has two poles, two surfaces and two borders.

POLES:

Superior poles - each is related to it's supra renal gland.

Inferior poles - extend to within 5 Cm of the iliac crests.

SURFACES:

Anterior surface / ventral surface

Posterior surface / dorsal surface

BORDERS:

Lateral border – it is convex

Medial border – it is concave. It's middle part show a dipression called hilus or hilum

HILUM:

It is bounded by anterior and posterior lips and containing the renal vessels and nerves and renal pelvis of the ureter.The hilum leads into acentral renal sinus,

lined by the renal capsule and almost filled by the renalpelvis and vessels,numeros renal papillae indent the wall of the sinus.

RENAL CALYCES AND PELVIS:

Within the renal sinus, the kidney consists of the minor and major calyces and the renal pelvis.

The minor calyces are attached to the renal parenchyma around the bases of the variable number (4 to 13) of conical renal papillae which forms the tips of the renal pyramids. Each minor calyx is a trumpet – shaped structure which surrounds either single papillae or more.

The minor calyces unite or form two to possibly three larger chambers, the major calyces.

GENERAL RENAL STRUCTURE

The kidney is composed of an internal medulla and external cortex.

The renal medulla consists of pale, striated, conical renal pyramids. Each pyramid is upped by cortial tissue to form a renal lobe.

The renal cortex is subcapsular, arching over the bases of the pyramids and extending between them towards the renal sinus as renal columns: the peripheral regions are cortical arches and are tranversed by medullary rays, separated by the convoluted part.

RENAL MICRO STRUCTURE

The kidney is composed of many tortuous, closely packed uriniferous tubules.

Each tubule consists of two distinct parts,

- A secreting nephron
- A collecting tubule

NEPHRON:

The structural and functional unit of the kidney is the nephron. Each kidney has over a million of nephrons. The length of the nephron varies form about 4-6.5 Cms. Nephron comprises a renal corpucles and a renal tubule.

RENAL CORPUSCLE:

Renal corpuscles, small rounded masses averaging about 0.2 mm in diameter are visible in the renal cortex columns except in a narrow peripheral cortical zone.

There are 1 to 2 million renal corpuscles in each kidney, decreasing with age. Each has a central glomerulus of vessels and a membranous glomerular capsule (of bowman) the commencement of a renal tubule.

RENAL TUBULE:

A renal tubule consists of

- Glomerular capsule
- Proximal convoluted tubule
- Loop of henle
- Distal convoluted tubule
- Junctional (connecting) tubule
- Collecting duct

COLLECTING TUBULE

Collecting tubules carry fluid from several renal tubules to a terminal papillary duct (of Bellini) opening into a minor calyx at the apex of a renal papilla.

JUXTA GLOMERULAR APPARATUS:

It formed by 3 different structures.

- Macula densa
- Extra glomerular messangial cells
- Juxta glomerular cells.

BLOOD SUPPLY:

Blood how to the two kidneys is normally about 22% of the cardial out put, 1100ml/min. The renal artery arises from the abdominal aorta at the level of L1,L1 near the hilum, it divides into an anterior and posterior division.

VENOUS DRAINAGE

- Stellate veins
- Inter lobular veins
- Inter lobar veins
- Renal veins

Right and left renal veins drain into interior vena cava.

LYMPHATIC DRNINAGE

- Para aortic lymph nodes

NERVE SUPPLY

- Renal plexus

URETERS

Ureters are a pair of narrow, thick- walled muscular tubes which convey urine from the kidneys to the urinary bladder. They lie deep to the peritoneum, closely applied to the posterior abdominal wall in the upper part, and to the lateral pelvic wall in the lower part.

LENGTH

28 to 34cm. The right being about 1cm shooter than the left.Its diameter varies from 1mm to 1cm.

The ureters have 3 parts.

- Abdominal part
- Pelvic part
- Intramural part

ABDOMINAL PART

It begins from the pelvis of kidney, run downwards, terminates with the pelvic part of the ureter.

PELVIC PART

The pelvic part lies in both sexes in extra peritoneal areolar tissue. At first it descends posterior laterally on the lateral wall of the pelvis, along the anterior border of the greater sciatic notch.

In male, the ureter is crossed by the vas-deferens

In females, it forms the posterior boundary of the ovarian fossa.About 2 Cm lateral to the cervix it passes between the uterine and vaginal arteries.

The left ureter crosses anterior to the vagina before opening into the bladders.

INTRA MURAL PART:

Within the bladder wall, it is about 2 Cm long and opens at the ipsilateral trigonal angle. In the distended bladder in both sexes, the ueteric opening are about 5 Cm a part, and less when the bladder is empty. In it oblique course, though the wall of the bladder, the ureter is compressed and flattened as the bladder distends, preventing regurgitation.

BLOOD SUPPLY

- ❖ Renal artery
- ❖ Abdominal aortic artery
- ❖ Testicular / ovarian artery
- ❖ Common iliac artery
- ❖ Internal iliac artery
- ❖ Superior and inferior vesical artery
- ❖ Uterine artery

VENOUS DRAINAGE

- ❖ Veins drains into corresponding veins

LYMPHATIC DRAINAGE

- ❖ Para aortic lymph nodes

- External iliac lymph nodes
- Internal illiac lymph nodes

NERVE SUPPLY:

The ureter is supplied by symphathetic (T_{10}-L_1) and para sympathetic (S_2-S_4) nerves. The reach the ureter through the renal,aortic and hypogastric plexuses. All the nerves are sensory in function.

CONSTRICTIONS OF THE URETER:

There are 3 main constrictions in the ureter,

- At pelvi ureteral junction
- At the brim of the lesser pelvis
- Where ureter pierces the bladder wall.

URINARY BLADDER

The urinary bladder is a musclomebranous sac. That act as a reservoir of the urine. As its size, position and relations vary according to the amount of fluid it contains.

When empty it is tetrahedral and it has a fundus, neck, apex and superior and two interiolateral surfaces and 4 borders -2 lateral, 1anterior and 1 posterior.

When a bladder is full, it is ovaid in shape .Apex directed upwards towards the umbilicus, neck is directed downwards and it has 2 surfaces anterior & posterior.

INTERIOR OF THE BLADDER:

In an empty bladder, the greater part of the mucosa shows irregular folds due to its loose attachments to the muscular coat.

In a small triangular are over the lower part of the base of the bladder, the mucosa is smooth due to its firm attachment to the muscular coat. This area is known as the trigone of the bladder. The apex of the trigone is directed downwards and forwards. The internal urethral orifice is located here. The ureters

open at the postero-lateral angles of the trigone. A slight elevation on the trigone immediately posterior to the urethral orifice (produced by the median lobe of the prostate) is called the uvula vesicae. The base of the trigone is formed by the interureteric ridge produced by the continuation of the inner longitudinal muscle coats of the ureters the ridge extends beyond the ureteric openings as the ureteric folds over the interstial parts of the ureters.

LIGAMENTS OF THE BLADDER

True ligaments

1. Lateral true ligament, 2. Lateral puboprostatic ligaments, 3. Medial pubo prostatic ligaments, 4. Pubo vesical ligaments – female, 5. Median umbilical ligaments, 6. Posterior ligaments

False ligaments (peritoneal folds)

1. Median umbilical fold, 2. Medial umbilical fold, 3. Lateral false ligament, 4.Posterior false ligament

BLOOD SUPPLY

Superior vesical artery, Middle vesical artery, Inferior vesical artery, Obturator artery, Inferior gluteal artery, In females additional brancehes are derived form the, uterine artery & vaginal artery.

VENOUS DRAINAGE:

These forms a complicated plexus on the infero lateral surface and end in the internal iliac veins.

LYMPHATIC DRAINAGE:

Internal and external iliac nodus.

NERVE SUPPLY:

Bladder is supplied by vesical plexus of nerves. It contains both sympathetic and parasympathetic components.

MALE URETHRA

The male urethra is from 17.5 Cm to 20 Cm long and extends from an internal orifice in the urinary bladder to an external opening at the end of the penis.

It is divided into 3 portions, prostatic, membranous and spongiose parts. The urethral canal is a merely slit. The slit is transversely arched in transverse section of the prostatic part, it is stellate in the membranous part, and transverse in the spongiose portion.

PROSTATIC PART

This portion the widest and most dilatable part of the canal is about 3 Cm long.

MEMBRANOUS URETHRA:

It is the shortest, least dilatable and the narrowest section of the urethra. It is situated in deep perineal pouch. Anteriorly the membranous urethra is about 2 Cm long, while posteriorly it is only 1.25 Cm.

SPONGIOSE PART (Penile Portion)

It is the longest part of the urethra and is continued in the corpus spongiosum. It is about 15 Cm long and extends from the end of the membranous urethra to the external urethral orifice on the glans penis.

URETHRAL SPHINCTERS

Two urethral sphincter,

- Sphincter vesicae (internal)
- Sphincter urethrea (external)

FEMALE URETHRA

The female urethra is a narrow membranous canal about 4 cm long and 6 mm in diameter. It begins at the internal urethral orifice of the bladder, approximately opposite the middle of the symphysis pubis and runs antero inferiorly behind the symphysis pubis, embedded in the anterior wall of the vagina.

It traverses the peritoneal membrane and ends at the urethral orifice, an antero posterior. Slit with prominent margins, which is situated directly anterior to the opening of the vagina and about 2.5 cm behind the glans clitoridis

Except during the passage of urine, the anterior and posterior walls of the urethra are in oppostition and the epithelium is thrown into longitudinal folds. One of which on the posterior wall of the cannal is termed the “urethral Crest”.

PHYSIOLOGY

FUNCTIONS OF KIDNEYS

Kidney performs vital function. By excreting urine, kidneys play principal role in the maintance of internal environment. In addition, kidney performance other functions as described below,

- Regulation of water and electrolyte balances
- Regulation of body fluids osmolality and electrolyte concentrations.
- Regulation of acid-base balance
- Regulation of arterial pressure
- Excretion of metabolic waste products and foreign chemicals
- Secretion, metabolism and excretions of hormones
- Gluconeogenesis

URINE FORMATION

It includes three processes: They are

- Glomerular filtration
- Tubular reabsorption
- Tubular secretion

Filtration is the function of the glomerulus and reabsorption and secretion are the functions of tubular portion of the nephron.

GLUMERULAR FILTRATION

When the blood passes through the glomerular capillaries, the plasma is filtered into the Bowman's capsule. All the substanus of plasma are filtered except the plasma proteins due to their larger molecular size. During filtration, the substances pass through a filtering membrane which is formed by three layers of structures.

The glomerular filtration is called ultra-filtration because even the minute particles are filtered. Glomerular filtration rate (GFR) is the total quantity of filtrate formed in all the nephrons of both the kidneys in the given unit of time.

The normal GFR is 125 ml per minute or about 180 Liters per day.

SELECTIVE REABSORPTIN / TUBULAR REABSORPTION

When the glomerular filtrate flow is through the tubular portion of nephron, both quantitative and qualitative changes occur. Large quantity of water (more than 99%) electrolytes and other substances are reabsorbed by the tubular epithelial cells. The reabsorbed substances are move into the intestitial fluid of renal medulla. And from here, the substances move into the blood in peritubular capillaries.

Since the substances are taken back into the blood from the glomerular fitrate, the entire process is called tubular reabsorption.

MECHANISM OF REABSORPTION

The basic transport mechanism involved in tubular reabsorptions are of two types,

- Active reabsorption
- Passive reabsorption

ACTIVE REABSORPTION:

Active reabsorption is the movement of molecules against the electro chemical (uphill) gradient. It needs liberation of energy which is derived from ATP. Substances reabsorbed actively from the renal tubuleare sodium, calcium, potassium, phosphates, sulfates, bicarbonates, glucose, amino acids, ascorbic acid, uric acid and ketone bodeis.

PASSIVE REABSORPTION:

In this, the molecules move along the electrochemical (down hill) gradient. This process does not need energy. The substances reabsorbed by passive transport are chloride, urea and water.

REGULATION OF TUBULAR REABSORBTION

Tubular reabsorption is regulated by 3 factors.

1. Glomerulotubular balance
2. Hormonal factors
3. Nervous factors

TUBULAR SECRETION:

In addition to reabsorption from the renal tubules, some substances are also secreted into the lumen from the peritubular capillaries through the tubular epithelial cells. It is known as tubular secretion or tubular excretion.

In experimental conditions, the dye phenol red was the first substance found to be secreted were found to be secreted such as:

- Para – Aminohippuric acid (PAH)
- Diodrast
- Hydroxy indole acetic acid
- Amino derivatives
- Penicillin

TRANSPORT OF URINE FROM THE KIDNEY THROUGH THE URETERS AND INTO THE BLADDER

Urine flowing from the collecting ducts into the renal calices stretches the renal calices and increases their inherent pace maker activity, which in turn initates peristaltic contractions that spread to the renal pelvis and then downward along the length of the ureter, thereby forcing urine from the renal pelvis towards the bladder. The walls of the ureters contain smooth muscle and are innervated by both sympathetic and parasympathetic neurons as well as an intramural plexus of nervous and nerve fibers that extends along the entire length of the ureters. As with other visceral smooth muscle, peristaltic contractions in the ureter are enhanced by parasympathetic stimulation and inhibited by sympathetic stimulation.

Each peristaltic wave along the ureter increases the pressure within the ureter.

FUNCTIONS OF THE BLADDER:

The urinary bladder has dual functions continence of urine and micturition.

CONTINENCE OF URINE:

The bladder acts as a passive reservoir to achieve urinary continence because the forces acting on the urethra produce on intra-urethral pressure greater than the bladder pressure. Either active or passive contribution several tissue components generate this urethral resistance.

In males a distinct collar of circularly oriented non striated muscle occurs in the bladder neck and pre prostatic urethra, intra mural collagen and elastic fibers within the wall of the bladder neck, proximal urethra and prostate generate passive forces to close the urethral lumen.

In females, active smooth muscle contraction is an important factor in continence. The bladder neck and proximal urethra possess innumerable elastic fibers within their walls produce passive occlusion of the urethral lumen.

In both sexes, the external urethral sphincter within its wall plays an important role in producing urethral occlusion by maintaining tone over relatively long periods without fatigue.

The peri-urethral muscle (the medical parts of the levator ani) in both sexes are related to urethral wall in the maintenance of continence.

The pelvic floor musculature plays an important role (esp in females) in continence particularly in increased intra abdominal pressure events.

MICTURITION:

Micturition is the process by which the urinary bladder empties when it becomes filled.

This involves two main steps.

- The bladder fills progressively until the tension in its wall rises above a threshold level.
- A nervous reflex called the "micturition reflex" occurs that empties the bladder or if this fails, at least causes a conscious desire to urinate.

MICTURITION REFLEX:

The micturition reflex is a single complete cycle of (1)progrossive and rapid increase of pressure (2)a period of sustained pressure and (3)Return of the pressure to the basal tone of the bladder.

As the bladder fills, may micturition contractions begin,as a results of a stretch reflex initiated by **"sensory stretch receptors",** in the bladder wall The posterior urethra begins to fill with urine by activation of sensory receptors in the posterior urethra.Sensory signals are conducted from the bladder stretch receptors to the sacral segments of the cord through the pelvic nerves and reflexively back again to the bladder through the parasympathetic nerve fibers by way of these same nerves

As the bladder continues to fill, the micturition reflexes become more frequent and cause greater contractions of the detrusor muscle,once a micturition reflex begins, it is self regenerative.

The cycle is repeated again and again until the bladder has reached a strong degree of contraction.the. The powerful micturition reflex causes another reflex, which passes through the “pudental nerves” to the external sphincter to inhi bit it.

If this inhibition is more potent in the brain than the voluntary constrictor signals to the external sphincter, urination will occur.

NORMAL CONSTITUENTS OF URINE

VOLUME:

1 to 1.5 liters per day. The quantity of urine is variable according to the quantity of fluid & food intake exercise reduces the volume of urine.

REACTION:

Usually, acidic in nature. An average Ph in 6.0 but Ph range is from 4.8 – 7.5. It may be variable according to the type of diet.

SPECIFIC GRAVITY:

1.008 – 1.030. But usually it is within the limits of 1.015 – 1.025.

COLOUR:

Fresh urine is slightly yellow or straw colored or amber yellow. This is due to the presence of urochrome.

ODOUR:

Aromatic odour.

TURBIDITY:

Clear and transparent when voided. On standing faintly clouding flocculence.

COMPOSITION OF 24 HOURS URINE:

a. Water 95%
b. Inorganic constituents

CATIONS:

Sodium	-	4.0 – 6.0 gm
Potassium	-	1.5 – 3.0 gm
Ammonium	-	1.0 – 1.8 gm
Calcium	-	0.2 – 0.5 gm
Magnesium	-	0.1 – 0.2 gm

ANIONS:

Chloride	-	6.0 – 9.0 gm
Inorganic (So_4)	-	0.6 – 1.8 gm
Phosphate	-	0.7 – 1.6 gm

c. ORGANIC CONSTITUENTS:

Nitrogenous	-	20 – 40 gm
Urea	-	18 – 35 gm
Creatinine	-	1.0 – 1.8 gm
Creatine	-	0.06 – 0.15 gm
Ammonia	-	1.0 – 1.8 gm
Amino acids	-	0.8 – 2.5 gm
Uric acid	-	0.3 – 1.0 gm
Indican	-	0.04 – 0.15 gm

d. OTHERS:

Organic sulfates	-	0.06 – 0.2 gm
Phenols	-	0.02 – 0.05 gm
Oxalates	-	0.01 – 0.02 gm
Ketone bodies	-	0.01 – 0.1 gm

e. ENZYMES:

Traces of many enzymes are excreted in the urine. Eg. Panceatic amylase, pepsin, trypsin and lipase.

f. HORMONES:

Hormones like sex hormones are found in the urine. The pregnancy test is depending on the hormonal excretion in the urine.

Abnormal constituents of urine

- Protein
- Sugar
- Acetone
- Bile pigments
- Bile
- Blood
- Porphyrin
- Urobilin

URINARY TRACT INFECTION

DEFINITION

It is an infection in any part of the Urinary tract. This syndrome is defined by the demonstration of pathogenic organisms in urine.

Acute infections of the Urinary tract can be subdivided in to two general anatomic categories.

1. Lower tract infection

- Urethritis
- Cystitis
- Prostatitis

2. Upper Tract Infection

- Acute Pyelonephritis
- Internal and perinephric abscesses

Infections at these various sites may occur together or independently and may either be asymptomatic or symptomatic. Infections of Urethra and bladders are often considered superficial<or mucosal> infections, while prostatitis, pyelonephritis and renal suppuration signify tissue invasion.

Urinary tract infection exists when pathogenic microorganisms are detected in the urine urethra, bladder, kidney or prostate. In most instances, growth of morethan 10^5 organisms per milliliter from a properly collected midstream 'clean-catch' urine sample indicates infection. However significant bacteriuria is lacking in some cases of true urinary infection.

In symptomatic patients, a smaller number of bacteria < 10^2 to 10^4 per millimeter of midstream urine may signify infection.

In urine specimens obtained by supra-pubic aspiration or 'in and out' catheterization and in samples from a patient with an indewelling catheter, colony counts of 10^2 to 10^4 per millimeter generally indicates infection.

Conversely, colony counts in excess of 10^5 per millimeter of midstream urine are occasionally due to specimen contamination

REINFECTION

Infections that recur after therapy can be due to the persistence of the originally infecting strain or to re-infection with a new strain.

Persistent vaginal or intestinal colonization leads to rapid reinfection of the bladder.

RELAPSE

'Same strain' recurrent infections after therapy can be the result of renal or prostatic infection (termed as rlaps)

EPIDEMIOLOGY

Epidemiologically, urinary tract infections should be subdivided into 2 types. They are

(1) Catheter-associated infections {nosocomial}

(2) Non-catheter-associated infections {community acquired}

Infection in either category may be symptomatic or asymptomatic.

Acute infection are very common in non catheterized patients and more so among women than among men .These infections occur in 1to 3%of school girls and then increase markedly in incidence with the onset of sexual activity in adolescence. The vast majority of acute symptomatic infections involve young women.

Acute symptomatic urinary infections are unusual in men under the age of 50. The development of a symptomatic bacteriuria parallets that of symptomatic infection and is rare among men under50 but common among women between 20 and 50.

Asymptomatic bacteriuria is quite common among elderly men and women, with rates as high as 40 to 50 % in some studies

ETIOLOGY:

Many different micro organisms can infect the urinary tract, but by far the most common agents are the gram-negative bacilli.

Escherichia coli cause approximately 80% of acute infection in patients without catheters, urologic abnormalities, or calculi.

Other gram-negative rods especially,

- Proteus
- Klebsiella and occasionally
- Enterobacter, account for a smaller proportion of un complicated infections.

These organisms, plus serratia and pseudomonas, assume increasing importance in recurrent infections and in infections associated with urologic manipulation, calculi, or obstruction. They play a major role in nosocomial catheter-associated infections.

Proteus species by virtue of urease production, and klebsiella species, through the production of extra cellular slime and poly saccharides, predispose to stone formation and are isolated more frequently from patients with caliculi .

Gram-positive cocci play a lesser role in urinary tract infections. However, staphylococcus, saprophyticus,sa novobiocin-resistant, coagulase-negative staphylo coccus, accounts for 10 to 15% of acute symptomatic urinary tract infection in young females.

Enterococci occasionally cause acute un complicated cystits in women. More commonly, entercocci and staphylococcus aureus cause infection in patients with renal stones or previous instrumentation. Isolation of s. aureus from the urine should arouse suspicion of bacteremic infection of the kidney.

In women with urethral syndrome who are symptomatic and have in significant number of bacterial or completely sterile culture, low quantities of typical bacterial uropathogens such as E.coli,s.saprophyticus, klebsiella or proteus are found.

In young sexually active women with new sexual partners, sexually transmitted urethritis producing agents such as,

- Chlamydia trachomatis
- Neisseria gonorrheae
- Herpes simplex virus is etiologically important.
- Ureaplasma urealyticum
- Mycoplasma hominis are probably responsible for acute pylonephritis and prostatitis
- Adenoviruses cause acute hemorrahagic cystitis in children and in some young adults
- Candida and other fungal species are common in the urine of catheterized patients or diabetics.

PATHOGENESIS

UTI may be complicated or uncomplicated

- ❖
- ❖ UNCOMPLICATEDAnatomically and physiologically normal urinary tract
- ❖ Normal renal function
- ❖ No associated disorder which impaires defense mechanisms

COMPLICATED

- ❖ Abnormal urinary tract Eg.
    - Obstruction
    - Calculi
    - Vesico ureteriec reflux
    - Neurological abnormality
    - Indwelling catheter
    - Chronic prostatitis
    - Cystic kidney
    - Analgesic nephropathy
    - Renal scarring
- ❖ Associated disorder or treatment that predisposes to UTI Eg.
    - Diabetes mellitus
    - Immunosupressive therapy

PATHOGENESIS AND SOURCES OF INFECTION

The urinary Tract should be viewed as a single anatomic unit that is united by a continous column of urine extending from the urethra to the kidney. In the vast majority of UTI's bacteria gain access to the bladder via the urethra.Ascent of bacteria from the bladder may follow is probably the pathway for most renal parenchymal infections.

In females, the feacal organisms colonize the vaginal introitus the periurethral skin and the distal urethra .Periurethral bacteria gain entry to the bladder frequently facilitated by urethral massage during intercourse.

Instrumentation of the bladder may also introduce organisms.

Multiplicationn of organisms in bladder depends on inter acting effect of the pathogenicity of strain, the inoculum size and the local and systemic host defense mechanisms.

FACTORS LIMITING MULTIPLICATION OF ORGANISM

Urine is a good culture medium. Multiplication of organism in urinary bladder depends on the size of inoculum and the virulence of the organisms. Certain factors normally play an important role is limiting their multiplication.

- A high rate of urine flow
- High urea concentration.
- Constant dilution of residual urine in the bladder by inflow from kidney
- Regular complete bladder emptying
- Mucosal defences {IGA} act by rapid clearing of bacteria from the mucosa
- Local antibody complement and lysozyme may also give protection
- Secretions of prostate and periurethral glands possess antibacterial activity.
- Urinary glycosamino glycans (Tamm-Horstall mucoprotein) which may bind to E-coli thus preventing their attachment to uroepithelium.
- Antibacterial drugs in urine.

If above mechanisms fail the ascent of bacteria from bladder may follow upto renal parenchyma. Haematogenous pyelonephritis occur in debiliated patients who are chronically ill are receiving immuno suppressive therapy.

Metastatic staphylococcal or candidal infection of the kidney may follow bacteremia or fungemia, spreading from distant foci of infection in the bone skin, endothelium or elsewhere

FACTORS FAVOURING MULTIPLICATION OF ORGANISMS

The ability of urine to support the growth of bacteria depends on PH osmolality and chemical constituents.

(i) PH-6.0-7.0 favours bacterial growth

(ii) Osmolality

Lowered osmolality of urine encourages bacterial multiplication and decreases with the return of increasing concentrating ability

(iii) Glucose provides source of energy for bacterial growth

(iv) Obstruction to urine flow

HYDRO KINETIC DEFENSIVE

It refers to the wash out of bacteria by periodic voiding and dilution by the flow of urine from the kidney.

CONDITIONS AFFECTING PATHOGENESIS

1. Gender and sexual activity

Females are affected more than males.

Risk factors for UTI

S.No	FEMALES	MALES
1	Short urethra (about 4 cm)	• Prostatitis and urethral obstruction due to prostatic hyper trophy are important facators predisposing to bacteriurea
2	Proximity of urethra to the anus & its termination beneath the labia	• Homosexually (due to rectal intercourse) increases risk of cystitis
3	Introduction of bacteria into the bladder during sexual intercourse	• Men infected with HIV who have CD4+TCell counts of <200/Ml increased risk of both bacteriuria and symptomatic UTI
4	Use of a diaphragm and or a spermicide dramatically alters the normal introital bacterial flora	• Lack of circumcision is a risk factor in neonates and young men.
5.	Post menopausal oestrogen deficiency.	

2. Pregnancy

- ❖ 2 to 8% of pregnant women are affected due to socio-economic status.
- ❖ 20-30% of pregnant women with asymptomatic bacteriuria subsequently develop pyelonephritis.
- ❖ Predisposition of upper tract infection results from decreased ureteral tone and peristalsis and temporary incompetence of the vesico-ureteral valves.

- ❖ Bladder catheterization during or after delivery causes additional infections
- ❖ UTI in pregnancy increases prevalence of premature delivery and new born mortality.

3. Obstruction

Any impediment to the free flow or urine

- ❖ Tumor, stricture, stone, prostatic hypertrophy-results in hydro nephrosis and a greatly increased frequency of UTI
- ❖ Infection superimposed on urinary tract obstraction leads rapid destruction of renal tissue.

4. Neurogenic Bladder Dysfunction

Interference with the nerve supply to the bladder, as in spinal cord injury, tabes dorsalis, multiple sclerosis, diabetes and other diseases may be associated with UTI.

The infection is initiated by catheterization and prolonged stasis of urine in the bladder

Bone demineralization due to immobilization which causes hypercalciuria calculus formation and obstructive uropathy

5. Vesicoureteral Reflux

Defined as reflux of urine from the bladder cavity up into the ureters and some times into the renal pelvis, vesicoureteral reflux occurs during voiding or with elevation of pressure in the bladder.

In practice, this condition is demonstrated by the finding of retrograde movement of radiopague or radioactive material during a voiding cystourethrog ram. An Anatomically impaired vesicoureteral junction facilitates reflux of bacteria and thus upper tract infection.

VUR is common among children with anatomic abnormalities of the urinary tract. Reflux disappears with advancing age.

BACTERIAL VIRULENCE FACTORS

These markedly influence the likelihood that a given strain once introduced into the bladder will cause urinary tract infection

Most strains that cause symptomatic urinary tract infectionsin non catheterized patients belong to a small number of specific O, K and H sero groups, produce hemolysis and share other uropathogenic properties.

GENETIC FACTORS

Increasing evidence suggests that host genetic factors influence susceptibility to urinary infection. Many of these structures are components of blood group antigens and are present on both erthrocytes and uroepithelial cells.

For example, P.fimbriae mediate attachment of Ecoli to p.positive erthrocytes and are found on nearly all strains causing acute un complicated pyelonephritis.

CLINICAL MANIFESTATION

- Dysuria
- Frequency of micturition
- Burning urination
- Scalding pain is felt in the urethra during micturition
- Supra-pubic pain during and after voiding
- After the bladder emptying there is an intense desire to pass more urine.
- Passage of cloudy and occasionally blood tinged urine.
- Fever with rigors, Nausea and vomiting
- Malaise
- Supra-pubic tenderness is often present.
- The urine may have an unpleasant odour appear cloudy
- Gross haematuria may occur

CYSTITIS

Inflammation of the urinary bladder is called cystitis,

It is more common in female. In male prostatic obstruction is a frequent course of cystitis. Some women with cystitis have only 10^2 to 10^4 bacteria per milliliter of urine.

The normal bladder epithelium is quite resistant to infection. Cystitis may occur by spread of infection from upper urinary tract (or) may spread from urethra such as instrumentation.

ACUTE CYSTITIS

The bladder mucosa is red swollen and haemorhagic.

There may be supportive exudates or ulcers on the bladder muscle.

CHRONIC CYSTITIS

- ❖ Mucosal epithelium is thickened, granular with formation of polypoid masses
- ❖ The submucosal and muscular coat shows fibrosis
- ❖ The bladder wall is thickened and shrunken cavity.

SYMPTOMS

- ❖ Dysuria
- ❖ Frequency of micturition
- ❖ Urgency of micturition
- ❖ Supra pubic pain
- ❖ Urine grossly cloudy and malodorous bloody

Physical examination:-Tendernessof urethra (or) supra pubic area

Other special forms of cystitis are

Interstitial cystitis

Cystitis cystica

Malakoplakia

Urethritis and the urethral syndrome

Chlamdia trochamatis, N.gonororrhoea and occasionally HSV cause symptomatic urethritis is known as the ‘urethral syndrome’

It is characterized by 'internal dysuria' (usually without urinary urgency or frequency) and pyuria. Urethritis is classified into.

(i) Gonococcal urethritis

It is an acute supportive condition caused by an organism neisseria gonorrhoeae. Mucosa and submucosa are eventually converted into granulation tissue.

(ii) Non Gonococcal uretheritis

It is more common, frequently caused by E.Coli. Urethritis is one of the component in the triad of Reiter's syndrome. The other features include arthritis, conjunctivitis

CATHETER -ASSOCIATED URINARY TRACT INFECTION

Bacteriuria develops in at least 10 to15 % of hospitalized patients with indwelling urethral catheters.

The risk of infection is about 3 to 5 % per day of catheterization proteus pseudomonas, klebsiella and serratia, in addition to E.coli usually cause these infections.

Factors increasing risk are female sex, prolonged catheterization and severe underlying illness, disconnection of the catheter and drainage tube, other types of faulty catheter care and lack of systemic antimicrobial therapy

Bacteria reach the bladder by one of two routes.

- By migrating through the column of urine in the Catheter lumen (Intraluminal route)
- By moving up the mucous sheath outside the catheter (periurethral route)

Bacteria usually enter the catheter system at the catheter - collecting tube junction or at the drainage bag portal. The organism then ascends intraluminally into the bladder within 24 to 72 hours.

Recent studies have demonstrated the importance of the attachment and growth of bacteria on the inner surface of the catheter in the pathogenesis.

Catheter related bacteriuria increases the risk of Gram negative bacteremia.

Prevention depends on sterile insertion closed drainage systems and prompt catheter removed.

PROSTATITIS

The term prostatitis has been used for various inflammatory conditions affecting the prostate, including acute and chronic infections with specific bacteria or no specific organisms can be detected.

Prostatitis can be classified as

- Acute Bacterial prostatitis
- Chronic bacterial prostatitis
- Non Bacterial prostatitis
- Prostutodynia

Acute Bacterial Prostatitis

Generally affects young men however, it may also be associated with an indwelling urethral catheter.

It is characterized by fever, chills, dysuria and a tense or boggy, extremely tender prostate. In non - catheter associated cases, the infection is generally due to Gram negative pathogens (E.coli, klebsiella)

In catheter associated cases the spectrum of etiologic agents is broader including hospital acquired-gram-negative rods and entero cocci.

Acute infection may result in abscess formation, epididymoorchitis, seminal vesiculitis, septicemia and residual chronic bacterial prostatitis.

CHRONIC BACTERIAL PROSTATITIS

This entity is infrequent but should be considered in men with a history of recurrent bacteriuria. Symptoms are usually lacking and the prostate usually feels normal on palpation. Obstructive symptoms or perineal pain develops in some patients.

Intermittently, infection spreads to the bladder producing frequency, urgency and dysuria. A pattern of lapsing infection in a middle aged man strongly suggests chronic bacterial prostatitis.

Diagnosis is estsablished by culture of E-coli, klebsiella , proteus or other uropathogenic bacteria from the expressed prostatic secretion or post massage urine in higher quantities than are found in first void of midstream urine.

NON-BACTERIAL PROSTATITIS

Patients who are present with symptoms and signs of prostatitis increased leukocytes in expressed prostatic secretion and post massage urine, no bacterial growth in cultures and no history of recurrent episodes of bacterial prostatitis.

Infectious etiology of this condition remains unidentified u.urealyticum and C.trachomatis may be the causative agents.

PROSTATODYNIA

Patients who have symptoms and signs of prostatitis but no evidence of prostatic inflammation (normal leukocytes counts) and negative urine cultures are classified as having prostatodynia.

ACUTE PYELONEPHRITIS

Symptoms of acute pyelonephritis generally develop rapidly over a few hours or a day and include a temperature of $\geq 39.4^{o\ c}$ ($\geq 130^{o}$) shaking chills, nausea, vomiting and diarrhea.

Symptoms of cystitis may or may not develop. Physical examination reveals, high pyrexia, tachycardia and marked tenderness on deep pressure in one or both costo vertebral angles or on deep abdominal palpation.

In some patients, sign and symptoms of gram negative septicemia predominate.

Most patients have significant leukocytosis, pyuria with red cells, leukocyte casts in the urine and bacteria detectable in gram-stained unspun urine.

INVESTIGATIONS:

S.NO	INVESTIGATIONS	INDICATIONS
1.	Culture to MSU or urine obtained by supra pubic aspiration	All patients
2.	Microscopic examination of urine for red blood cells and white blood cells and casts	All patients
3.	Dipstic examination of urine for blood, glucose and protein	All patients
4.	Full blood count, blood urea, creatinine. Electrolytes, creatinine clearence.	Acute Pyelonephrities, Recurrent, UTI. Prostatitis, children, infants.
5.	Blood culture	Rigor, high fever (or) evidence of septicemia.
6.	Pelvic examination	Women with recurrent UTI
7.	Rectal examination	Men to examine prostate.
8.	Renal ultra sonography	To identify obstruction, cysts, caliculai. Infants, children, men after single UTI, women who have (1) Acute pyelonephritis, (2) Recurrent UTI after urinary tract treatment, (3) had UTI or covert bacteriuria in pregnancy (IVU 6 weeks after delivery)
9.	Intravenous urography (IVU) including film of bladder after voiding, to identify physiological and anatomical abnormalities.	Alternative to ultrasound, particularly image collecting system and water.
10.	Micturating cysto-urethrography (mcu) to identify and quantitate VUR and disturbed bladder emptying	Infants, children with abnormal IVU any patient through to have disturbance of bladder emptying.
11.	Cystos copy	Patients with chronic haematuria, patients with a suspected bladder lesion.

PROGNOSIS

In uncomplicated cystitis, or pyelonephrities, treatment results complete resolution of symptoms.

Lower tract infections in women are concerned mainly because they cause discomfort, morbidity, loss of time from work and substantial health care cost.

Upper tract infections, bacteremia or renal impairment occur in cystitis.

Acute uncomplicated pyelonephrities in adults rarely progresses to renal functional impairement and chronic renal disease.

When repeated episodes of cystitis occure, they are nearly always reinfections, not relapses.

Repeated symptomatic urinary tract infections in children and in adults with obstructive uropathy, neurogenicbladder, structural renal disease, or diabetes progress to cbronic renal disease with unusual frequency.

COMPLICATIONS

- Bacteremia
- Fungemia
- Uraemia
- Hypertension
- Renal functional impairment
- Hydronephrosis in obstructive uropathy
- Papillary necrosis
- Chronic renal diseases
- Premature delivery and new born mortality in pregnancy

PROPHYLAXIS

- Fluid intake of at least 2 lit/day.
- Regular emptying of bladder (3 hr intervals by day and before retiring)
- Ensure complete emptying of bladder.
- Double micturition if reflux is present (the patient should be advised, particularly before retiring for the night, to empty the bladder and then

attempt to empty the bladder a second time approximately 10-15 minutes later).

- ❖ Emptying bladder before and after intercourse.
- ❖ Application of 0.5% cetrimide cream to periurethral area before intercourse.
- ❖ Avoiding nylon underwear's, strong antisepticlotions and creams.
- ❖ This regime is started after completion of causative course of treatment an d continued for several months.

MATERIALS AND METHODS

The clinical study on salathamba vaatham was doen in post-graduate department of maruthuvam of the Govt. Siddha.Medical College attached to Aringnar Anna Hospital of Indian Medicine, Chennai. The study involved 40 patients of either sex.

SELECTION OF CASE:

- Patients with following criteria were screened and selected for study
- Burning micturition
- Painful micturion
- Frequent micturition
- Urgency of micturition
- Fever
- Rigors
- Constipation
- Yellowish discoloration & Reddish Yellow discoloration of the urine.
- Unpleasant odour.
- Nausea & vomiting
- Lower abdominal pain
- Polyuria

EXCLUDING CRITERIA:

- Renal calculi
- Urinary tract infection due to diabetes mellitus
- Venereal disease

EVALUATION OF CLINICAL PARAMETERS:

A detailed history of patient's age, occupation, socio-economic status, personal habits, complaints and its duration, previous illness, and previous treatment are recorded in the case sheet for each and every patient at the time of admission or first visit.

INVESTIGATIONS:

After the history had been taken the patients were subjected to detailed systemic examination, lab investigations like routine blood investigation of TC, DC, ESR, Hb, Sugar, Urea and Serum Cholesterol, Creatinine were done. Routine motion test and complete urine analyses were also done to the patient.

SPECIAL INVESTIGATIONS:

Urine culture and ultra sonogram of the abdomen and pelvis were done.

Clinical diagnosis is based on both siddha system and allopathy system. The following parameters were followed for the diagnosis of the disease on the basis of siddha system.

- Poriyaal Arithal
- Pulanaal Arithal
- Vinaathal
- Envagai Thervugal
- Uyir Thaathukkal
- Udal Thaathukkal

PREPARATION AND ADMINISTRATION OF THE TRIAL MEDICINES:

The medicines selected for study were

1. Santhanaathy Chooranam (Ref: Sarabedra Vaidhiya Rathina Vali, Page No:19).
2. Nerunchil – Kothamalli Kudinneer (Ref: Gunapatam – Mooligai Vagupppu, Page No: 474).

SANTHANAATHY CHOORNAM:

Ingredients:

- Santhanam – Santallum Album
- Athimadhuram – Glycyrrhiza Glabra
- Nellimulli – Phyllanthus Embliga
- Vilamichchuver – Plectranthus amboinicus
- Sirunagapu – Mesua ferrea
- Koraikizhangu – Cyperus rotandus
- Perichangai – Phoenix dactilifera
- Thirachaipalam – Vitis vinifera
- Kostum – Costus specisous
- Thippili – Piper longum
- Eluppaipoo – Bassia latifolia

All the above drugs are purified and powdered finely and mixed with equal amount of sugar. Then filtered through a thin cloth (vastrirakaayam) Then it was kept in a bottle.

Dosage : 0.5 gm twice daily with water.

NERUNCHIL-KOTHAMALLI KUDINEER:

Nerunchikkai 68 gm

Kothamalli 8 gm

Water 680 gm above were mixed and boiled in a container until it was reduced to one half of portion. Then filtered it.

Dosage : 40 ml twice a day

EVALUATION OF TRIAL MEDICINE:

The trial medicines were subjected to pre clinical analysis like,

- ❖ Pharmacological Studies
- ❖ Toxicological Studies
- ❖ Qualitative Studies
- ❖ Microbiological Studies

The first three studies were conducted in the department of pharmaceutical education and research Institute Dr.C.L.Baid Metha College of Pharmacy, Thorappakkam, Chennai. Details depicted in pre-clinical study heading.

Microbiological screenings of trial medicines were done in the department of biotechnology, Periyar Maniammai University, Vallam Thanjavur. Details are depicted in pre-clinical study heading.

The trial medicines were also evaluated by the statistical analysis of clinical study (Biostatistics).

PROPERTIES OF TRIAL MEDICINES

re;jdk;

Botanical Name : Santalum album

Family : Santlaceae

Part used : Heart wood, oil

- Suvai : Kaippu, Siru Thuvarppu
- Thanmai : Thatpam, Veppam
- Pirivu : Enippu, Karppu

Actions

- Alterative
- Diuretic
- Diaphoretic
- Stimulant
- Disinfectant
- Astringent
- Cooling

nghJ Fzk;;

“Nfhjpy; re;jdQ; rPNjh\;zq; nfhz;bUf;Fk;
thj gpj;jk; Iak; kdg;gpuiik – XJRuk;
Nkfk; jdpj;jhfk; ntg;G nrhwp Ak;Nghf;Fk;
Mfe; jdf;FWjp ahk;”

mfj;jpaH Fzthflk;

re;jdkuf;fl;ilapdhy; Kf;Fw;wk;> kdf;fyf;fk;> cl;#L> xOf;F nts;is> ehtwl;rp> eikr;ry; ,it ePq;Fk; cly; td;ik ngWk;.

Chandana is used in burning sensation, burning micturition, cystitis, gonorrhoea, Oligomerrhoea, Spermatorrhoea, Dysuria, Goutypain, Toxicosis, dysmenrrhoea, leucorrhoea, oil is astringent and disinfectant to the mucous membranes of the genito Urinary and branchial tracts.

Data base on Medicinal plants used in Ayurveda Page No. 184

&

The India Metria Medica with Ayurveic, Unani and Homeo remedies Page No.1099

mjp kJuk;

Botanical Name	:	Glycyrrhiza Glabra
Family	:	Fabaceae
Part used	:	Roots
▪ Suvai	:	Enippu
▪ Thanmai;	:	Seetham
▪ Pirivu	:	Enippu

Actions

- Emollient
- Demulcent
- Mild Expectorant
- Laxative
- Tonic

nghJ Fzk;;:

“fj;jpahp Kg;gpzpahy; tUk;Gz; jhfq;
fz;Nzha;cd; khjk; tpf;fy; typntz;; Fl;lk;
gpj;jnkYk; GUf;fp fphpr;ruk; MtHj;j

Fj;jpUky; Mrpaq;fk; ,jo; Neha; ,e;J
Fag;GZk; Nghk; kJ}f nkdf; $Wq;fhNy”

NjiuaH Fzthflk;

mjpkJuk;> Kg;gpzpahy; tUk; Gz;> ePH Ntl;if> fz; Neha;fs;> ntwpNeha;> tpf;fy;> ntz;Gs;sp> vYk;G gw;wpa Neha;> rpWePH vhpr;ry;> eQ;Rfs;> fhkhiy> ntg;G Neha;fs;> vd;Dk; Neha;fspd; td;ikiaf; Fiwf;Fk;.

Roots are useful in ulceration of Urinary Tract, retention of Urine, fever, intrinsic hemorrhage.

PHARMACOLOGICAL ACTIVITIES

Smooth muscle depressant, anti microbial, antiviral, hepatoprotective, spasmolytic, antipyretic, anti inflammatory.

- Data base on medicinal plants used in Ayurved, Page No. 561, 562, 563

Glycerrhiza – Aqueous extract showed Anti – inflammatory activity like cortisone

- Compendium of Indian Medicinal plants vol.4, Page No. 340

Rhizomes and roots are used in irritable conditions of the membranes of Urinary organ.

The useful plants of India Page No. 240

tpyhkpr;R NtH;

Botanical Name	:	Plectranthus amboinicus
Family	:	Lamiaceae
Part used	:	Roots
▪ Suvai	:	Kaippu
▪ Thanmai;	:	Seetham
▪ Pirivu	:	Enippu

Actions

- Refrigerant
- Antipitha

“Nkfk; tpopnahpr;ry tPwpuj;j gpj;jnkhL
jhfkj %Hr;ir gpj;je; js;kaf;fk; - NrhfQ;
rpuNeha; ,itNaLFQ; nra;atpyh kpr;Rf;
nfhpRuKk; ,y;iy apir”

Fzk;;

tpyh kpr;rk; NtUf;F >ePhpopT> fz;nzhpT> FUjpaypNeha;> ePH Ntl;if> ntwp> kaff;k;> %Hr;ir> Nrhig> jiytoy;> jPr;Ruk;Nghk;

In plectoranthus psecis, Antimicrobial activity of essential oil determined against ninepathgenic bacteria, activity of 10 mg of essential oil, against staphylo coccus aureus was the same as that of 10 units of penicillin.

- ❖ Compondium of Indian medicinal plants Vol. I

ney;ypKs;sp;

Botanical Name	:	Phyllanthus Emblica
Family	:	Euphorbiaceae
Part used	:	Leaves, flowers, Bark, Root, Seeds
▪ Suvai	:	Puzhippu, Thuvarppu, Enippu
▪ Thanmai;	:	Thatpam
▪ Pirivu	:	Enippu

Actions

- ▪ Astringent

nghJ Fzk;;

“Mftd yQ;rrpm rpHf;nfd;G Uf;fpfz;Nzha;
jhf Kjpu gpj;je; jhJ e\;lk; - Nkfdj;jpd;
,y;ypKs;sp NghyUfy; vz;fhkpa tpaq;fk;
ney;ypKs;sp ahw;Ngh epid”

-NjiuaH Fzthflk;

nghUs;:

ehTf;Fr; Ritiaj; jUfpd;w ney;yp Ks;spahy; cl;#L> vYk;GUf;fp Neha;> FUjpaoy; Neha;> ngUk;ghL> ntwpNeha;> ePuUfy;> the;jp> nts;is> Mz;Fwpf;nfhg;gGsk; Mfpa ,itfs; tpyFk;. ,ij miuj;J jiy KOff; fz; FspUk.;

Fruits sour and astringent, cooling, diuretic, laxative. Arich source of Vitamin C contaning twenty times as much Vitamin C as orange juice.Fruits, bark and leaves are rich in tannin. Their tanain content being 28%, 8.21% and 22% respectively.

The useful plants of India Page No.195

Fruits are beneficial in Urinary Troubles.

- The treatise of Indian Medicinal Plants Volume 3, Page No.33

Pharmacological activity

Spasmolytic, mild CNS depressant, antimicrobial, anti Oxidant, Immuno modulatory, anti fungal, anti – inflammatory, anti bacterial, Antiulcers, HIV – reverse trnscriptase inhibitory action.

- Data Base on Medicinal plants used in Ayurveda page No.14

rpWehfg;g+

Botanical Name	:	Mesua ferrea
Family	:	Clusiaceae
Part used	:	Leaves, flowers, Bark, Root, Seeds
▪ Suvai	:	Siru Kaippu, Thuvarppu
▪ Thanmai;	:	Thatpam
▪ Pirivu	:	Karppu

Actions

- Astringent
- Carminative

nghJ Fzk;;

“rpWefhg; g+tpdJ nra;ifjidr; nrhy;Nthk;
FwpahFk; Nkfj;ijf; nfhy;Yk;-newptpl;Lj;
jPjha;r; nry;thAitAe; jPh;f;FkpU kw;Nghf;Fk;
Nfhjha;, ,ijawpe;J nfhs;”

Fzk;:

nts;is> ,Uky;> fopr;ry; ,itfisg; Nghf;Fk;. NkYk;> ePuilg;G> FUjpg; Nghf;F> Gz;> nfhg;Gsk;> fhnyhpr;ry; Mfpait Nghf;Fk;.

- ❖ Chemical studies on mesuol, revised structure proposed two new pigments, mesuaxanthone A and mesuaxanthone-B and euxanthone isolated from heartwood. First two compounds characterized as 1, 5 dihydroxy, 3-methoxyxanthone and ferruol A from trunk bark.

BIOLOGICAL ACTIVITY

Mesuol and mesuone showed antibiotic activity, mesuol was more active than mesuone against mycobacterium pblei.

-Compondium of Indian medicinal plants. Vol-I, page no: 273-274

Nfhiuf;fpoq;F:

Botanical name	:	Cyprus rotandus
Family	:	Cyperaceae
Part used	:	Tuber

Actions:

- ❖ Astringent
- ❖ Stimulant
- ❖ Tonic
- ❖ Diuretic
- ❖ Diaphoretic
- ❖ Demulcent
- ❖ Emmenagogue
- ❖ Vermifuge

nghJf;Fzk;:

“rPj Rue;jPh;f;FQ; nrk;Gdy; gpj;jk; NghFk;
thj Rue;jzpf;Fk; itafj;jpy; - Ntijnra;a
te;j gpzpianayhk; thl;L Kj;jf;fhR
Nfhe;JyTk; thh;FoNy, $W”

-mfj;jpah; Fzthflk;

Fzk;:

,jdhy; esph;Ruk;> FUjpaoy; Neha;> Rutiffs;> ePh;Ntl;if> Kg;gpzp> fopr;ry;> gapj;jpa Njhlk;> gpj;jjhfk;> fgNuhfk;> Fjpf; fhiyg; gw;wpa thA> the;jp Mfpa ,itfs; Nghk;.

- They are useful in hypodipsia, anorexia, dyspepsia, flatulance, colic, vomiting, inflammations, renal and vesical calculi, optithalmic disorders and general debility.

Pharmacological Activities:

Tranquillizing, anti-inflammatory, antipyretic, diuretic, estrogenic, anti-emetic, smoth muslerelxant, anti microbial and juvenile hormone mimikcing activity.

-Data base on medicinal plants used in ayurvdha page no 404-405

Dried tuberous roots known as soucher are aromatic. Accredited with diuretic, diaphroretic and as astringent used in stomach and bowel complaints.

-The useful plants of India page no: 158

Nghpr;rq;fha;

Botanical name	:	Phoenix dactilifera
Family	:	Arecaceae
Part used	:	Fruit, Gum, Nut
❖ Suvai	-	Enippu
❖ Thanmai	-	Veppam
❖ Pirivu	-	Karppu

Actions:

- ❖ Stomachic
- ❖ Aphrodisiac

nghJf;Fzk;:

“thapYz;lh Kw;wiy khw;Wk; grpapy;iy
ahapYz;lh Yz;lh kJNkf – NehAs;
ngUePh; kWf;FkpDk; ngz;fisf; $by;
jUePh;ik #uf;fha; jhd;”

-mfj;jpah; Fzthflk;

Fzk;:

ckpo; ePh;g; ngUf;ifAk;> ePuopitAk;> fopr;ry; tiffisAk; Nghf;Fk;. grpj;jPiaf; J}z;Lk;.

jpuhl;irg; gok;:

Botanical name	:	Vitis vinifera
Family	:	Vitaceae
Part used	:	Leaves, fruit
❖ Suvai	-	Enippu
❖ Thanmai	-	Thatpam
❖ Pirivu	-	Enippu

Actions:

- ❖ Laxative
- ❖ Refrigerant
- ❖ Diuretic
- ❖ Nutritive

nghJf;Fzk;:

“fhl;b YWe; Njdpw; fz;L gjKWNt
$l;Le; jpul;rpaJ nfhz;lhh;f;F-thl;Lfpd;w
rpf;F kyj;NjhL gpj;jk; rPWko whnshopAk;
njhf;F Sjpu kpFQ; nrhy;”

-mfj;jpah; Fzthflk;

Fzk;:

Njdpy; gjkhf Cwg; Nghl;Lyh;j;jpa jpuhl;irg; goj;ij cz;zg; gioa kyj;ij ntspahf;Fk;. Nkf moiyj; jzpf;Fk;. cjpug;ngUf;if Az;lhf;Fk;.

- ❖ It is madhura, amla and sheeta, pacifies deranged pitta, beneficial in burning sensation and urinary troubles, appetizing, aphrodisiac and highly palatable.

Nfh\;lk;:

Botanical name	:	Costus speciosus
Family	:	Costaceae
Part used	:	Root
❖ Suvai	-	Kaippu, Viru viruppu
❖ Thanmai	-	Veppam

- ❖ Pirivu - Karppu

Actions:

- ❖ Stomachic
- ❖ Expectorant
- ❖ Tonic
- ❖ Stimulant
- ❖ Diaphoretic

nghJf;Fzk;:

“ehl;bYW ntl;il eLf;fk; vDk; Neha;fs;
Nfhl;lnkdr; nrhd;dhy; FiyAq;fhz;-$l;bw;
RuNjhle; njhz;ilNeha; Njhyhj gpj;jk;
guNjrk; NghNk gwe;J”

-mfj;jpah; Fzthflk;

Fzk;:

,jdhy; fz;> jhil> tapW> fOj;J> jiy> eh> tha;> ,t;tplj;jpYz;lhFk; Neha;fs;> Ruk;> mijg;G> thA> %y%is> Gz;> ,iug;G> vyp> ghk;G Kjypaitfspd; eQ;Rfs;> Nkff;fl;b gapj;jpak; ,it Nghk;.

- ❖ Methyl 3-(4-hydroxy phenyl) -2 E - propenoate isolated from rhizomes.

Biological Activities:

Methyl 3-(4-hydroxy phenyl) -2 E - propenoate inhibited growth of aspergillus niger, cladusporium cladus purioides, colletotrichum gloespurioidus and glueos porium magniferae.

-Compendium of Indian Medicinal plants vol-4, page no: 224-225

jpg;gpyp:

Botanical name : Piper longum

Family : Piperaceae

Part used : Root

- ❖ Suvai - Enippu
- ❖ Thanmai - Veppam

❖ Pirivu - Enippu

Actions:

❖ Carminative

❖ Stimulant

nghJf;Fzk;:

“,Uky; Fd;kk;> ,iug;G fag;gpzp

----

thjk; MjpKj;NjhlQ; Ruq;Fsph;

ngUkhiyg;Ghp Nkfg; gplfKk;

NgUe; jpg;gpypg; Nguq; Fiuf;fNt”

-fl;lisf;fypg;gh

❖ ,jdhy; ,Uky;> Fd;kk;> ,iug;G> Iag;gpzp> <is> ghz;L> kaf;fk;> Ritapd;ik> nghUky;> jiytyp> %h;r;ir> ePNuw;wk;> <uy;fl;b> fopr;ry;> ngUtapW> Kg;gpzp> Fsph;Ruk;> Nkff;fl;b njhz;ilNeha;> %f;F> fhJ> fz; Neha;fs;> GONeha;fs;> fz; ,Lf;F Mfpait epq;Fk; ePw;wtpe;J ,WFk;.

❖ Pharmacological activity:

It has antibacterial, anti inflammatory, insecticidal, antimalarial, antispasmodic.

-Data base on medicinal plants used in ayurveda page no: 184.

,Yg;igg;G+:

Botanical name	:	Bassia Latifolia
Family	:	Sapotaceae
Part used	:	Leaves, flowers, fruit, seed, ghee, stem & root bark.

❖ Suvai - Enippu

❖ Thanmai - Thatpam

❖ Pirivu - Enippu

Actions:

❖ Stimulant

- ❖ Refrigerant
- ❖ Tonic
- ❖ Demulcent

nghJf;Fzk;:

“Fd;wh tpYg;igapd; G+ $h;kJug thridahe;
jpd;whw; gapj;jpaKQ; NrUq;fhz;-kd;wYWe;
jhh;FoNy, gpj;j Ruk; jhfe; jzpe;J tpLk;
thh;jaf;f nka;Jk; tOj;J”

-mfj;jpah; Fzthflk;

Fzk;:

G+tpdhy;> jPr;Ruk;> ePh;Ntl;if ePq;Fk;> moiy cz;lhFk;.

- ❖ The flowers mixed with milk are useful in impatence due to general debility as they have, at once a cooling, demulcent, tonic, nutritive and stimulant properties. The dried flowers are used as a fomentation in orchities.

-Indian plants and drags nadkarni, page no: 36

- ❖ Mahua flowers are rich in sugars used in the preparation of distilled liqueurs and vinegar. Also used to making syrup spent flowers as a feed. Flowers considered demulcent and tonic.

-The useful plants of India page no: 347

neUQ;rpy;:

Botanical name	:	Tribulus terrestris
Family	:	Zygophyllaceae
Part used	:	Whole plant
❖ Suvai	-	Thuvarppu, Enippu
❖ Thanmai	-	Seetham
❖ Pirivu	-	Enippu

Actions:

- ❖ Refrigerant
- ❖ Diuretic
- ❖ Demulcent

- ❖ Tonic
- ❖ Aphrodisiac
- ❖ Astringent

nghJf;Fzk;:

“ey;y neLQ;rpyJ ehSq;fp hpr;rhuj;ij
ty;y Rukdiy khw;Wq;fhz; - nky;ypaNy,
khepyj;jpy; fy;yilg;Gk; thq;fhj ePh;f;fl;Lk;
$Dnka; thjKk; Nghf;Fk;”
“Nkf ntl;il ePh;r;RWf;F tPWjphp Njhlk;Gz;
Ntfh Ru jhfntg;gk; tpl;NlhopAk;”

-mfj;jpah; Fzthflk;

Fzk;:

,jdhy;> nrhl;L ePh;> Ru ntJk;gy;> fy;yilg;G> ePuilg;G> KlthA> nts;is> rpWePh; vhpr;ry;> Kf;Fw;wk;> ePh; Ntl;if> ntg;gk; Mfpaitfs; ePq;Fk;.

neUQ;rpy; tpj;jhy; rpWePh; vhpr;ry;> rijailg;G> fy;yilg;G Mfpait ePq;Fk;.

The roots and fruits are sweet cooling, diuretic, aphrodisiac, emallient, appetiser, digestive, anthelimintic, expectorant, anodyne, anti-inflammatory, alterant, laxative, cardiotonic, styptic, lithotriptic and tonic.

They are useful in strangury dysuria, gonnorhea, gleet, chronic cystitis, urinary disorders, renal and vesical calculai, albuminuria, phasphaturia.

Pharmacological Activities:

Hypotensive, CNS stimulant, spasmogenic, analgesic, vasodepressant, muscle relaxant, cardiotonic, diuretic.

The ash of the whole plant is good for external application in Rh arthritis.

-Data base on medicinal plants used in ayurveda page no: 229.

- ❖ The fruits are useful in urinary complaints, painful micturition and impotence.

-Hand book of medicinal plants, page no: 353

- Fruits (dried) aphrodisiac, demulcent, diuretic and tonic, decoction / infusion efficacious in chronic cystitis, gonorrhea, gout, gravel, impotence, kidney diseases and painful micturition.

  -The treatise on Indian medicinal plants, vol-3, page no: 128-129

- Fruits, tonic and diuretic, used in painful micturition and calculus affections, also prescribed in bright's disease leaves stomachic, used as lithotriptic.

  -The useful plants of India page no: 648

nfhj;jky;yp:

Botanical name	:	Coriandrum sativum
Family	:	Apiaceae
Part used	:	Leaves, Seeds
❖ Suvai	-	Karppu
❖ Thanmai	-	Seetham, Veppam
❖ Pirivu	-	Karppu

Actions:

- ❖ Stomachic
- ❖ Carminative
- ❖ Stimulant
- ❖ Diuretic

nghJf;Fzk;:

"nfhj;jky;yp ntg;gk; Fsph; fha;r;ry; gpj;jke;jQ;
rh;j;jp tpf;fy; jhfnkhL jhJel;lk; - fj;jpnaOk;
thj tpfhh;klh; td;fh;j;j gptpuzk;
G+jyj;jpy; yhjfw;Wk; Nghw;W"

-mfj;jpah; Fzthflk;

Fzk;:

Tpijapdhy; cl;#L> esph;Ruk;> gapj;jpa Neha;> nrhpahik> the;jp> tpf;fy;> tul;rp> ngU Vg;gk;> Gz; ,itfs; Nghk;.

- Coriander fruit is aromatic, stimulant, carminative and an antispasmodic. The seeds are generally chewed to correct foul breath, roasted seeds are useful in dyspepsia, cold infusion of seeds or powder of fried seeds is very useful in colics of children.

  -Indian plants and drugs nadkarni, page no: 120

- The polyherbnl formulation of coriandrum showed significant inhibitory activity against inflammatory bowel disease induced in both the experimental models. The activity was comparable with prednisolone the standard drug.

  -Medicinal & Aromatic plants abstracts, page no: 128-129

- Gnaphaloside A, gnaphaloside B, quercetin, iso rhamnetin, rutin and luteolin isolated from fruits. To new isocoumarins-coriandrin – and dihydrocoriandrin isolated and characterised by X-ray analysis.

  -Compendium of Indian Medicinal plants vol-4, page no: 220.

Preclinical pharmacological & Toxicological studies of Santhanathi Choornam (SNC) and Nerinchil – Kothamalli Kudineer (NKK) for Analgesic, Antiinflammatory, Anti pyretic activities in experimental animals

INDEX

1.0 MATERIALS AND METHODS

1.1 Test Medicines

The following medicines were used in the study were collected and processed by the methods prescribed in standard text books of siddha medicines.

1. Santhanaathy Choornam (SNC)

2. **Nerunchil – Kothamalli Kudineer (NKK)**

1.2 Preparation of drug for dosing

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

1.3 Medicines and chemicals

Carrageenan 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. Diclofenac sodium was gifted by Madras Pharmaceuticals, Chennai.

1.4 Experimental animals

Colony inbred animals strains of wistar rats of either sex weighing 200 - 250 g and swiss albino mice of either sex (18-25 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 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 mice of either sex weighing 25 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 behavioural 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

1. Santhanaathy Choornam (SNC)

2. Nerunchil – Kothamalli Kudineer (NKK) in the ratio of 2 : 1

Group I : Control animals received 1% Sodium carboxy methyl cellulose (CMC), 2 ml/kg/p.o. for 21 days

Group II : Medicines suspended in CMC was given at the dose level of 500 mg/kg/p.o. for 21 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 21 days treatment all the animals were sacrificed by over dosage of ether anaesthesia. Blood was collected and used for haematological 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

Urea was assayed using the commercial kit (Span Diagnostics) by the method of Coulambe *et al*., (1965).

1.8 Haematological studies

Erythrocyte count

Erythocyte 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 method of Ghai (1995).

1.9 Analgesic, Anti inflammatory, Antipyretic studies

Analgesic activity

Hot plate test

The test was performed using Eddy's hot plate maintained at a temperature of 55 ± 1°C. The basal reaction time of all animals was recorded. The animals which showed fore paw licking or jumping response within 6-8 secs were selected for the study. 60 min after the administration of test and reference compounds, the animals in all the six groups were individually exposed to the hot plate maintained at 55°C. The time taken in secs for fore paw licking or jumping was taken as reaction time. A cut off period of 15 secs is observed to avoid damage to the paws. Analgesic activity was recorded at hourly intervals of 2 hours after drug administration.

Antipyretic activity

Rats selected for the study were fasted overnight allowing water *ad libitum*. Initial rectal temperature was recorded using Hick's clinical thermometer. Pyrexia was induced by subcutaneous injection of TAB vaccine 1 ml/kg body weight. Six hrs later pyrexia was assessed and those animals that did not show a minimum rise of 1.5^{o}C were rejected. The animals thus found fit for the study were divided into

6 groups as described above and medicines were administered. Pyrexia was recorded at hourly intervals for 3 hrs after drug administration.

Anti inflammatory activity

Anti inflammatory activity was evaluated in both acute and chronic models of inflammation.

Acute model

a. 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.

Chronic model

b. Cotton pellet granuloma

Sterile cotton pellets (weighing 10 ± 2 mg) were implanted subcutaneously along the flanks of axillae and groins of wistar albino rats (Swingle and Shideman *et al*., 1972). The extracts, reference drug and the control vehicle (distilled water) were administered as per protocol to rats everyday for a period of 7 days. On day + 8 the rats were sacrificed by cervical decapitation and cotton pellets were removed surgically, freed from extraneous tissue and weighed immediately for wet weight. One half of the pellets were dried in an incubator at 60ºC until a constant weight was obtained.

1.11 In Vivo Antioxidant study

Samples of serum collected from rats treated with test medicines were assayed for GSH (Moron *et al*, 1979) 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 medicines showed the presence of phytoconstituents and minerals as depicted in (Table 1).

2.2 Acute oral toxicity study

SNC and NKK (2:1 ratio) 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 21 days

Test drug SNC and NKK (2:1 ratio) at the dose of 500 mg/kg/po when administered orally for 21 days in rats did not show toxicity in renal functions. However the drug did not show any significant elevation of marker enzyme levels of liver (Table6).

2.4 Analgesic, Antiinflammatory and Antipyretic studies

SNC and NKK (2:1 ratio) at the dose of 500 mg/kg/po showed significant analgesic, antipyretic activities in rats (Table 2,3,4 and 5). SNC and NKK did not exhibit significant anti-inflammatory activity in the first two hours after the induction of inflammation with carrageenan. However the medicines showed significant reduction in the edema volume at the end of 4 hrs ($P<0.001$) and highly significant reduction at the end of 24 hrs ($P<0.001$), when compared to control animals. However standard drug Diclofenac sodium showed a persistent reduction in the edema volume starting from the 30^{th} minute of induction with the carrageenan to the end of study (Table 4).

SNC and NKK (2:1 ratio) showed significant reduction in the dry weight of cotton pellet granuloma in rats when compared to control. Test medicines exhibited significant ameliorating effect in the proliferation stage of inflammation than the exudative phase of inflammation (Table5).

SNC and NKK (2:1 ratio) exhibited significant anti pyretic activity in TAB Vaccine induced pyrexia in rats. The antipyretic activity lasted for nearly 4 hrs with maximum activity at the end of 120 and 240 mts when compared to control. The standard drug diclofenac sodium also showed consistent antipyretic activity when compared to control.

SNC and NKK (2:1 ratio) also exhibited analgesic activity in thermal pain using Eddy's hot plate method. The drug treated animals (500 mg/kg/po) showed significant latency ($P<0.001$) in withdrawing and licking the paws when compared to control animals. The standard drug diclofenac sodium also showed highly significant withdrawal latency than the test medicines.

In acute oral toxicity studies, test medicines did not show evidence of toxicity. The drug was safe upto the dose level of 2000 mg/kg/po (OECD – Unclassified). In 21 days repeated oral toxicity study (500 mg/kg/po) test medicines did not exhibit evidence of toxicity in vital organs, haemopoietic systems as evidenced by biochemical investigations (Table 6).

The 21 days repeated dose (500 mg/kg/po) study of the test drug incidentally showed a significant increase in the GSH level in the serum of test groups when compared to control. The enhanced antioxidant status of GSH in serum of treated animals, evidently proves the antioxidant activity and this parameter has got a lot of significance in its therapeutic efficacy on chronic infections and oxidative damage of tissues.

2.6 Antioxidant activity

At the end of 21 days 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 (Table 7).

Discussion

SNC and NKK are used in the siddha system of medicine for UTI. In the present study SNC:NKK (2:1 ratio) exhibited anti-inflammatory, analgesic & antipyretic activations. In carrageenan induced edema, the medicines did not show any significant reduction in edema volume for the first 4 hrs. However at the end of 15 hrs there was significant reduction in edema volume. Probably the oral absorption of the medicines are very poor on the secondary metabolite(s) of the medicines may be more active than prodrug (Table 4).

In cotton pellet granuloma method the medicines showed significant reduction in the dry weight of cotton pellet at (500 mg/kg/po) which was similar in efficacy to that of standard reference drug Diclofenac sodium (5 mg/kg/po)(Table 5). The medicines SNC : NKK (2:1 ratio) exhibited significant analgesic activity. Both these activities are comparable to that of Diclofenac sodium.

Antiinflammatory, analgesic and antipyretic profiles of the drug have good correlation with the results obtained from the clinical study. Inflammation, algia and pyrexia are concurrent pathological conditions in UTI and amelioration of these state will have better therapeutic importance in the treatment of UTI.

The drug combination is form toxic effects as evidenced by both acute and chronic toxicity studies. The medicines were non toxic upto 2000mg/kg/po (OECD - Unclassified). The medicines at the dose of 500 mg/kg/po (2:1 ratio) did not exhibit any toxic episodes as evidenced by biochemical studies (Tables 6).

At the end of 21 days study an elevated level of GSH was found in the serum which may be accounted for its antioxidant activity.

The present preclinical study has got good correlations with the clinical data generated from the study.

Preliminary acid, basic radicals and phytochemical screening

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

Table 2

Effect of SNC and NKK (2:1 ratio) on Analgesic parameters after dosing (500 mg/kg/po) in rats

Animals	**0' min (Sec)**	**30' min (Sec)**	**60' min (Sec)**	**90' min (Sec)**
Control	3.21± 0.543	3.20 ± 0.672	3.04 ± 0.254	3.34 ± 0.652
SNC and NKK (2:1 ratio)	3.04 ± 0.243	3.54 ± 0.359	3.92 ± 0.377**	5.47 ± 0.692**
Standard (Di. Sodium 5mg/kg/p.o)	3.97 ± 0.735	4.67 ± 0.958	4.93 ± 0.854 **	5.97 ± 0.85**

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

**P<0.003 as compared with that of control.

Table 3

Effect of SNC and NKK (2:1 ratio) antipyretic activity of using Digital rectal thermometer (500 mg/kg/po) in rats

Animals	**0' min ^{o}C**	**30' min ^{o}C**	**60' min ^{o}C**	**90' min ^{o}C**
Control	35.90 ± 1.18	37.23 ± 1.24	38.27 ± 0.34	37.20 ± 1.08
SNC and NKK (2:1 ratio)	36.75 ± 0.629^{ns}	33.75± 0.859***	32 ± 0.707***	31.47 ± 0.577***
Standard (Diclofenac Sodium 5mg/kg.p.o)	35.8 ± 0.97^{ns}	33.96± 0.95***	32.87± 0.65***	32.34 ± 0.52***

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

*P<0.001, ***P<0.001 as compared with that of control.

Table 4

Anti inflammatory activity of SNC and NKK (2:1 ratio) 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**
Control	0.881±0.038	10795±0.132	2.231±0.078	2.245±0.077	2.28±0.059
SNC and NKK (2:1 ratio) 500mg/kg/p.o	0.945±0.103	1.885±0.104	1.673±0.241**	1.341±0.345**	1.101±0.135**
Standard Diclofenac sodium 5 mg/kg/po	0.956±0.078	1.728±0.296	1.351±0.257**	1.14±0.126**	1.041±0.059**

N=6; Values are expressed as mean ±S.D followed by Students Paired 'T' Test;

**P<0.003 as compared with control was considered as significant.

Table 5

Anti inflammatory activity of SNC and NKK (2:1 ratio) in Cotton Pellet Granuloma in rats

Groups	Cotton pellet Granuloma method
	Dry Weight (mg)
Control	188.33 ± 4.944
SNC and NKK (2:1 ratio) 500 mg/kg/p.o	80.33 ± 4.136***
Standard Diclofenac sodium 5 mg/kg/po	72.64 ± 9.23***

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

***P<0.001 as compared with that of control.

Table 6

Effect of SNC and NKK (2:1 ratio) on Biochemical markers of liver and kidney after 21 days repeated dosing (500 mg/kg/p.o) in rats

Groups	ALP (K.A.Units)	AST (IU/L)	ALT (IU/L)	Urea (mg/100ml)	BUN (mg/ 100ml)
Control	2.76±0.37	72.16±1.16	26.91±1.19	11.25±0.67	4.92±0.74
SNC and NKK (2:1 ratio)	2.58±0.39^{ns}	72.58±1.64 ^{ns}	27.17±1.09 ^{ns}	12.08±0.85 ^{ns}	5.16±0.21 ^{ns}

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

ns - Non significant as compared with control

Table 7

Antioxidant activity of SNC and NKK (2:1) after 21 days repeated oral dosing (500 mg/kg/ b.wt)

Groups	GSH
Control	28.66 ± 0.632
SNC+NKK	66.16 ± 0.339

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

***P<0.001 as compared with that of control.

CHEMICAL ANALYSIS OF HERBAL PREPARATION

Preparation of Extract

5 gm. of **Santhanaathy** choornam is weighed accurately and placed in a 250 ml clean beaker and added wit 50ml of distilled water. Then it is boiled well for about 10 minutes. Then it is cooled and filtered in a 100 ml volumetric flask and made upto 100ml with distilled water.

SL. NO	EXPERIMENT	OBSERVATION	INFERENCE
1	**I .Test for Acid Radicals.**		**Medicine - 1**
	1.**Test For Sulphate**:		
a)	2 ml of the above prepared extract is taken in a test tube. To this add 2 ml of 4% Ammonium Oxaiate soiution	Presence of white colour precipitate.	Presence of sulphate
b)	2 ml of Sodium carbonate extract is added with 2 ml of dilute Hydrochloric acid is until the effervescence ceases off .Then 2 ml of barium chloride solution is added.	Presence of white colour precipitate.	Presence of Sulphate.
2.	**Test for Chloride:** 2 ml of Sodium carbonate extract is added with dilute Nitric acid till the effervescence ceases .Then 2 ml of Silver Nitrate solution is added.	Formation of Cloudy white precipitate.	Presence of Chloride.
3.	**Test for Phosphate :** 2 ml of the extract is treated with 2 ml of Ammonium	Absence of yellow precipitate.	Presence of phosphate.

	Molybdate solution and 2 ml of concentrated Nitric acid.		
4.	**Test for Carbonate:** 2 ml of the extract is treated with 2 ml of Magnesium sulphate solution.	Presence of white precipitate.	Presence of Carbonate.
5.	**Test for Sulphide:** 1 gm of the substance is heated with 2 ml of the concentrated Hydrochloric acid	Absence of rotten egg smelling gas.	Absence of Sulphate.
6.	**Test for Nitrate:** 1 gm of the substance is heated with copper turnings and concentrated Sulphuric acid and viewed the test tube vertically down.	Absence of reddish brown gas.	Absence of Nitrate.
7. a)	**Test for Fluoride and Oxalate:** 2 ml of the extract is added with 2 ml of dilute Acetlic acid and 2 ml of Calcium chloride solution and heated.	Absence of white colour precipitate.	Absence of fluoride & oxalate
b)	5 drops of clear solution is added with 2 ml of dilute of Sulphuric acid and slightly warmed. To this, 1 ml of dilute Potassium permanganate solution is added	KmNo4 is not discolourised	Presence of fluoride & oxalate

8.	**Test for Nitrite :** 3 drops of the extract is placed on a filter paper. On that, 2 drops of Acetic acid and 2 drops of Benzidine solution is placed.	Absence of yellowish red colour.	Absence of Nitrate.
9.	**Test for Borate:** 2 pinches of the substance is made into paste by using Sulphuric acid and Alcohol (95%) and introduced into the blue flame.	Absence of green tinged flame.	Absence of Borate.
II	**Test for Basic Radicals:**		
10.	**Test For Lead:** 2 ml of the extract is added with 2 ml of Potassium Iodide solution.	Absence of yellow precipitate.	Absence of lead.
11. a)	**Test of Copper:** One pinch of substance is made into paste with concentrated Hydrochloric acid in a watch glass and introduced into the nonluminous part of the flame.	Presence of bluish green colour flame.	Absence of copper.
b)	2 ml of the extract is added with excess of Ammonia solution.	Presence of deep blue colour.	Absence of copper.
12.	**Test for Aluminium:** To the 2 ml of extract Sodium hydroxide solution is added on drops to excess.	Presence of white precipitate.	Presence of Aluminium.

13. a)	**Test for Iron:** To the 2 ml of extract 2 ml of Ammonium thiocyanate solution is added.	Absence of blood red colour.	Absence of Ferric Iron.
b)	To the 2 ml of extract 2 ml of Ammonium thiocyanate solution and 2 ml of concentrated Nitric acid added.	Absence of blood red colour.	Presence of Ferrous Iron.
14.	**Test for Zinc:** To the 2 ml of extract Sodium hydroxide solution is added in drops to excess.	Presence of white precipitate.	Presence of Zinc.
15.	**Test for calcium :** 2 ml of the extract, is added with 2 ml of 4% Ammonium Oxalate solution.	Presence of white precipitate.	Presence of Calcium.
16.	**Test for Magnesium:** To 2 ml of extract, Sodium hydroxide solution is added in drops to excess.	Absence of white precipitate.	Absence of Magnesium.
17.	**Test for Ammonium:** To 2 ml of extract few ml of Nessler's reagent and excess of Sodium hydroxide solution are added.	No colour precipitate.	Absence of Ammoniun.
18	**Test for Potassium:** A pinch of substance is treated with 2 ml of Sodium nitrite solution and then treated with 2	Presence of yellowish precipitate.	Presence of potassium.

	ml of Cobalnitrate in 30% glacial Acetic acid.		
19.	**Test for Sodium:** 2 pinches of the substance is made into paste by using Hydrochloric acid and introduced into the blue flame.	Presence of yellow coloured flame.	Presence of sodium.
20.	**Test for Mercury:** 2 ml of the extract is treated with 2 ml of Sodium hydroxide solution.	Absence of yellow precipitate.	Absence of mercury.
21.	**Test for Arsenic:** 2 ml of extract is treated with 2 ml of Silver nitrate solution.	Absence of yellow (or) brownish precipitate.	Absence of Arsenic.
III	**MISCELLANEOUS:**		
22.	**Test for Starch:** 2 ml of extract is treated with weak Iodine solution.	Blue colour developed.	Presence of starch.
23.	**Test for reducing sugar:** 5 ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and added 8 to 10 drops of the extract and again boiled for 2 minutes. The colour changes are noted.	Presence of green colour.	Presence of reducing sugar.
24. a)	**Test for alkaloids:** 2 ml of the extract is treated with 2 ml of Potassium iodide solution.	Absence of red colour.	Presence of alkaloids.

b)	2 ml of extract is treated with 2 ml of Picric acid.	Absence of yellow colour.	Presence of alkaloid.
c)	2 ml of the extract is treated with 2 ml of Phosphotungstic acid.	Presence of white precipitate.	Presence of alkaloids.
25.	**Test for Tannic acid:** 2 ml of the extract is treated with 2 ml of Ferric chloride solution.	Presence of black colour.	Presence of Tannic acid.
26.	**Test for unsaturated compound:** To 2 ml of the extract 2 ml of Potassium Permanganate solution is added.	Decolourised.	Presence of unsatured compound.
27.	**Test for Aminoacid:** 2 drops of the extract is placed on a filter paper and dried well. After drying 1% Ninhydrine is sprayed over the same and dried well.	Absence of violet colour.	Absence of Amino acid.
28.	**Test for Albumin:** 2 ml of the extract is added with 2 ml of Esboch's reagent.	Presence of Yellow precipitate.	Absence of Albumin.
29.	**Test for Type of compound:** 2 ml of the extract is treated with 2 ml of Ferric chloride solution.	Absence of green colour precipitate.	Absence of type of compound.

RESULTS:

The given sample contain:

Carbonate, Sulphide, Chloride, Copper, Calcium, Potassium, Sodium, Strach, Reducing sugar, Alkaloids, Tannic acid, Albumin, Unsaturated compound.

ACID RADICALS:

Carbonate, Sulphide, Phaspate.

BASIC RADICALS:

Copper, Calcium, Potassium, Sodium, Magnesium.

MISCELLANEOUS:

Starch, Reducing sugar, Alkaloids, Tannic acid.

CHEMICAL ANALYSIS OF HERBAL PREPARATION

Preparation of Extract

5 gm. of **Nerunchil-Kothamalli Kudineer** is weighed accurately and placed in a 250 ml clean beaker and added wit 50ml of distilled water. Then it is boiled well for about 10 minutes. Then it is cooled and filtered in a 100 ml volumetric flask and made upto 100ml with distilled water.

SL. NO	EXPERIMENT	OBSERVATION	INFERENCE
1	**I .Test for Acid Radicals.**		**Medicine - 1**
	1.**Test For Sulphate**:		
a)	2 ml of the above prepared extract is taken in a test tube. To this add 2 ml of 4% Ammonium Oxaiate soiution	Absence of white colour precipitate.	Presence of sulphate
b)	2 ml of Sodium carbonate extract is added with 2 ml of dilute Hydrochloric acid is until the effervescence ceases off. Then 2 ml of barium chloride solution is added.	Presence of white colour precipitate.	Presence of Sulphate.
2.	**Test for Chloride:** 2 ml of Sodium carbonate extract is added with dilute Nitric acid till the affervescence ceases. Then 2 ml of Silver Nitrate solution is added.	Sence of Cloudy white precipitate.	Presence of Chloride.
3.	**Test for Phosphate :** 2 ml of the extract is treated	Absence of yellow precipitate.	Absence of phosphate.

	with 2 ml of Ammonium Molybdate solution and 2 ml of concentrated Nitric acid.		
4.	**Test for Carbonate:** 2 ml of the extract is treated with 2 ml of Magnesium sulphate solution.	Presence of white precipitate.	Absence of Carbonate.
5.	**Test for Sulphide:** 1 gm of the substance is heated with 2 ml of the concentrated Hydrochloric acid	Presence of rotten egg smelling gas.	Absence of Sulphate.
6.	**Test for Nitrate:** 1 gm of the substance is heated with copper turnings and concentrated Sulphuric acid and viewed the test tube vertically down.	Absence of reddish brown gas.	Absence of Nitrate.
7. a)	**Test for Fluoride and Oxalate:** 2 ml of the extract is added with 2 ml of dilute Acetlic acid and 2 ml of Calcium chloride solution and heated.	Absence of white colour precipitate.	Absence of fluoride & oxalate
b)	5 drops of clear solution is added with 2 ml of dilute of Sulphuric acid and slightly warmed. To this, 1 ml of dilute Potassium permanganate solution is added	KmNo4 is not discolourised	Presence of fluoride & oxalate

8.	**Test for Nitrite :** 3 drops of the extract is placed on a filter paper. On that, 2 drops of Acetic acid and 2 drops of Benzidine solution is placed .	Absence of yellowish red colour.	Absence of Nitrate.
9.	**Test for Borate:** 2 pinches of the substance is made into paste by using Sulphuric acid and Alcohol (95%) and introduced into the blue flame.	Absence of green tinged flame.	Presence of Borate.
II	**Test for Basic Radicals:**		
10.	**Test For Lead:** 2 ml of the extract is added with 2 ml of Potassium Iodide solution.	Absence of yellow precipitate.	Absence of lead.
11. a)	**Test of Copper:** One pinch of substance is made into paste with concentrated Hydrochloric acid in a watch glass and introduced into the nonluminous part of the flame.	Presence of bluish green colour flame.	Presence of copper.
b)	2 ml of the extract is added with excess of Ammonia solution.	Presence of deep blue colour.	Absence of copper.
12.	**Test for Aluminium:** To the 2 ml of extract Sodium hydroxide solution is added on drops to excess.	Absence of white precipitate.	Absence of Aluminium.

13. a)	**Test for Iron:** To the 2 ml of extract 2 ml of Ammonium thiocyanate solution is added.	Absence of blood red colour.	Presence of Ferric Iron.
b)	To the 2 ml of extract 2 ml of Ammonium thiocyanate solution and 2 ml of concentrated Nitric acid added.	Absence of blood red colour.	Presence of Ferrous Iron.
14.	**Test for Zinc:** To the 2 ml of extract Sodium hydroxide solution is added in drops to excess.	Absence of white precipitate.	Presence of Zinc.
15.	**Test for calcium :** 2 ml of the extract, is added with 2 ml of 4% Ammonium Oxalate solution.	Presence of white precipitate.	Presence of Calcium.
16.	**Test for Magnesium:** To 2 ml of extract, Sodium hydroxide solution is added in drops to excess.	Absence of white precipitate.	Absence of Magnesium.
17.	**Test for Ammonium:** To 2 ml of extract few ml of Nessler's reagent and excess of Sodium hydroxide solution are added.	No colour precipitate.	Presence of Ammoniun.
18	**Test for Potassium:** A pinch of substance is treated with 2 ml of Sodium nitrite	Presence of yellowish precipitate.	Presence of potassium.

	solution and then treated with 2 ml of Cobalnitrate in 30% glacial Acetic acid.		
19.	**Test for Sodium:** 2 pinches of the substance is made into paste by using Hydrochloric acid and introduced into the blue flame.	Presence of yellow coloured flame.	Absence of sodium.
20.	**Test for Mercury:** 2 ml of the extract is treated with 2 ml of Sodium hydroxide solution.	Absence of yellow precipitate.	Absence of mercury.
21.	**Test of Arsenic:** 2 ml of extract is treated with 2 ml of Silver nitrate solution..	Absence of yellow (or) brownish precipitate.	Absence of Arsenic.
III	**MISCELLANEOUS:**		
22.	**Test for Starch:** 2 ml of extract is treated with weak Iodine solution.	Blue colour developed.	Absence of starch.
23.	**Test for reducing sugar:** 5 ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and added 8 to 10 drops of the extract and again boiled for 2 minutes. The colour changes are noted.	Presence of green colour.	Presence of reducing sugar (trace).
24. a)	**Test for alkaloids:** 2 ml of the extract is treated with 2 ml of Potassium iodide	Absence of red colour.	Presence of alkaloids.

	solution.		
b)	2 ml of extract is treated with 2 ml of Picric acid.	Absence of yellow colour.	Presence of alkaloid.
c)	2 ml of the extract is treated with 2 ml of Phosphotungstic acid.	Presence of white precipitate.	Presence of alkaloid.
25.	**Test for Tannic acid:** 2 ml of the extract is treated with 2 ml of Ferric chloride solution.	Presence of black colour.	Presence of Tannic acid.
26.	**Test for unsaturated compound:** To 2 ml of the extract 2 ml of Potassium Permanganate solution is added.	Decolourised.	Presence of unsatured compound.
27.	**Test for Aminoacid:** 2 drops of the extract is placed on a filter paper and dried well. After drying 1% Ninhydrine is sprayed over the same and dried well.	Absence of violet colour.	Presense of Amino acid.
28.	**Test for Albumin:** 2 ml of the extract is added with 2 ml of Esboch's reagent.	Presence of Yellow precipitate.	Absence of Albumin.
29.	**Test for Type of compound:** 2 ml of the extract is treated with 2 ml of Ferric chloride solution.	Absence of green colour precipitate.	Absence of type of compound.

RESULTS:

The given sample contain:

Carbonate, Sulphide, Copper, Calcium, Potassium, Sodium, Strach, Reducing sugar, Alkaloids, Tannic acid, Albumin, Unsaturated compound.

ACID RADICALS:

Carbonate, Sulphide.

BASIC RADICALS:

Zinc, Calcium, Ammonium, Potassium.

MISCELLANEOUS:

Starch, Reducing sugar, Alkaloids, Tannic acid.

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ANTI MICROBIAL STUDY OF SANTHANAATHY CHOORNAN AND NERUNCHIL- KOTHAMALLI KUDINEER

The extract of the trial medicines were tested with the following organisns

Escherichia – coli

Klebsiella

Proteus vulgaris

Enterobacter

Strepto coccus faecalis

Staphylococcus aureus

Pseudomonas aeruginosa

Candida albicans

TYPE OF METHOD : DISC DIFFUSION METHOD

For antibacterial activity, a 90 mm peri plate of Muller- Hinton Agar (M.H.A) medium was used. For each organism, one, M.H.A was poured on the M.H.A plate and allowed to spread uniformly. The excess brothe was drained aseptically.

The disc which contain 20 ml and 40 mg concentration of drug was placed on the M.H.A and inoculated at 37^0C for 24 hours.

INTERPRETATION:

Readings were taken after 24 hours of inoculation. The inhibitory zone diameter was measured in millimeter scale.

RESULTS:

Santhanaathy choornam, nerunchil – kothamalli kudineer were compared with standard antibiotics (ampicillin). The medicine was well sensitive against E-coli klebsiella, enterobacter and candida albicans.

CASE SHEET PROFORMA FOR SALATHAMBA VAATHAM

Govt. Siddha Medical College & Hospital, Chennai – 106

P.G. DEPARTMENT, BRANCH – I MARUTHUVAM

Ward. No.	:	Nationality	:
O.P / I.P. No.	:	Religion	:
Bed No.	:	Occupation	:
Name	:	Income	:
Age	:	D.O.Admission	:
Sex	:	D.O.Discharge	:
Permanent Address	:	Diagnosis	:
Temporary Address	:		

Govt. Siddha Medical College & Hospital, Chennai – 106

Medical Officer's Signature:

Complaints and Duration :

History of present illness :

History of previous illness :

Personal History :

Personal Habits : Veg/Non Veg/Smoker/Alcoholic/Tobacco Chewer

Family History :

General Examination

1. Consciousness :
2. Decubitus :
3. Anaemia :
4. Clubbing :
5. Cyanosis :
6. Jaundice :
7. Jugular venous pulsation :
8. Lymph adenopathy :
9. Pulse rate :
10. Heart rate :
11. Respiratory rate :
12. Temperature :
13. Blood pressure :

Siddha Aspects:

Nilam

Kurunchi (Mountain and their adjoining areas) :

Mullai (Forest and their adjoining area) :

Marutham (Fertile and their adjoining area) :

Neithal (Sea and their adjoining area) :

Palai (Desert and their adjoining area) :

Paruvakaalam

Elavenil Kaalam (Chithirai-Vaigasi) :

Mudhuvenil Kaalam (Aani-Aadi) :

Kaar Kaalam (Aavani-Puratasi) :

Koothir Kaalam (Ippasi-Karthigai) :

Munpani Kaalam (Maargazhi-Thai) :

Pinpani Kaalam (Maasi-Panguni) :

Yaakai(Udal Nilai)

Vaatha Udal :

Pitha Udal :

Kabha Udal :

Kalappu Udal :

Iym Pori / Pulangal (Gnanendriyam)

Mei (Unarthal) :

Vaai (Suvaithal) :

Kan (Paarthal) :

Mooku (Mugarthal) :

Sevi (Kettal) :

Kanmenthiriyam / Kanmavidayam

Kai (Koduthal) :

Kaal (Nadaththal) :

Vaai (Pesal) :

Eruvai (Kazhiththal) :

Karuvai (Ananthithal) :

Pira Urupukalin Nilai

Moolai :

Iruthayam :

Puppusam :

Eraippai :

Kalleeral :

Manneeral :

Siruneeragam :

Siruneerpai :

Karuppai :

Uyir Thathukkal

A. Vali (or) Vatham

Praanan :

Abaanan :

Uthanan :

Viyaanan :

Samanan :

Naagan :

Koorman :

Kirugaran :

Devathathan :

Thanajeyan :

B. Pitham

Analaga Pitham :

Ranjaga Pitham :

Saadhaga Pitham :

Aalosaga Pitham :

Prasaga Pitham :

C. <u>Kabhaam</u>

Avalambagam :

Kledagam :

Pothagam :

Tharpagam :

Sandigam :

D. <u>Udal Thaathukal</u>

Saaram :

Senneer :

Oon :

Kozhuphu :

Enbu :

Moolai :

Sukkilam/Suronitham :

XI. <u>Ennvagai Thervu</u>

1. Naa :

2. Niram :

3. Mozhi :

4. Vizhi :

5. Sparisam :

6. Malam- Niram :

Edai :

Irugal :

Illagal :

7. Moothiram

a. Neerkuri 1. Niram :

2. Manam :

3. Edai :

4. Enjal :

5. Nurai :

b. Neikuri

8. Naadi :

CLINICAL PARAMETERS AT TIME OF DISCHARGE

SL NO.	Clinical Parameters	1st Day	3rd Day	7th Day	11th Day	15th Day	18th Day	22nd Day
1.	Burning Micturition							
2.	Painful Micturition							
3.	Frequent Micturition							
4.	Urine – Reddish Yellow (or) Yellow discolouration (haematuria)							
5.	Polyuria							
6.	Fever							
7.	Rigor							
8.	Chills							
9.	Nausea & Vomiting							
10.	Lower abdominal pain							
11.	Constipation							
12.	Polyuria							
13.	Unpleasant Odour							

'+' = Present

'–' = Absent

MODERN ASPECT

I. Mictrition :

Burning :

Painful :

Frequency :

Urgency of urine, intense desire to pass more urine, scanty urine.

II. Pain :

Supra pubic pain / costovertebral angle pain-intermittent / continous

III. Tenderness :

Supra pubic pain / costovertebral angle pain / Along urethera.

IV. Fever :

V. Rigor :

VI. Nausea, Vomitting :

VII. Urine Odour :

Normal (Aromatic / Unpleasant / Ammonia)

VIII. Appearance :

Normal / Cloudy.

IX. Colour :

Pale Yellow (Normal)

Yellow

Reddish Yellow

X. External Genitalia Examination :

MALE

Penis

Perineum

Testis

Uretheral Orifice

Discharge

FEMALE

Vagina

Uretheral Orifice

Perineum

Vaginal Discharge

Pruritis

Per – Rectal Examination

Male – Tender Prostate

INVESTIGATIONS

Blood

TC

DC

ESR

HB%

Blood Sugar F

PP

R

Serum Cholesterol :

Serum Creatinine :

VDRL :

Urine :

Quantity :

Colour :

Odour :

Specific Gravity :

Reactions :

Microscopic : Bacteria

Albumin : Crystals

Sugar : Phosphates

Deposits :

RBC :

WBC :

Epithelial :

Casts :

STOOL EXAMINATION

Ova :

Cyst :

Occult Blood :

Differential Diagnosis :

Progress of the patient :

Case Summary :

Final Diagnosis :

Medicines :

1. Santhanaathy Choornam 0.5gm twice a day with hot water
2. Nerunchil – kothamalli kudineer 40 ml Bd

Medical Advice :

CASE SHEET PROFORMA FOR SALATHAMBA VAATHAM

DISCHARGE CASE SHEET

Govt. Siddha Medical College & Hospital, Chennai – 106

P.G. DEPARTMENT, BRANCH – I MARUTHUVAM

I.P. No.	:	Nationality	:
Ward. No.	:	Religion	:
Bed No.	:	Occupation	:
Name	:	Income	:
Age	:	D.O.Admission	:
Sex	:	D.O.Discharge	:
Permanent Address	:	Diagnosis	:

Govt. Siddha Medical College & Hospital, Chennai – 106

Medical Officer's Signature:

CLINICAL PRESENTATION AT THE TIME OF ADMINISSION

CLINICAL PARAMETERS

SL NO.	Clinical Parameters	During Admission	During Discharge
1.	Burning Micturition		
2.	Painful Micturition		
3.	Frequent Micturition		
4.	Urine – Reddish Yellow (or) Yellow discolouration (haematuria)		
5.	Polyuria		
6.	Fever		
7.	Rigor		
8.	Chills		
9.	Nausea & Vomiting		
10.	Lower abdominal pain		
11.	Constipation		
12.	Polyuria		
13.	Unpleasant Odour		

'+' = Present

'–' = Absent

INVESTIGATION DONE : Done

TREATMENT GIVEN :

1. Santhanaathy Choornam 0.5gm twice a day with hot water
2. Nerunchil – kothamalli kudineer 40 ml Bd

RESULTS AND OBSERVATION

A total of 40 patients with signs and symptoms of salathamba vaatham were treated in both the outpatient and inpatient department of post graduate maruthuvam department, government siddha medical college attached to arignar Anna hospital of Indian medicine, Chennai out of 40 cases, 20 patients were admitted in the In – patient ward and the remaining 20 patients were treated in the O.P department.

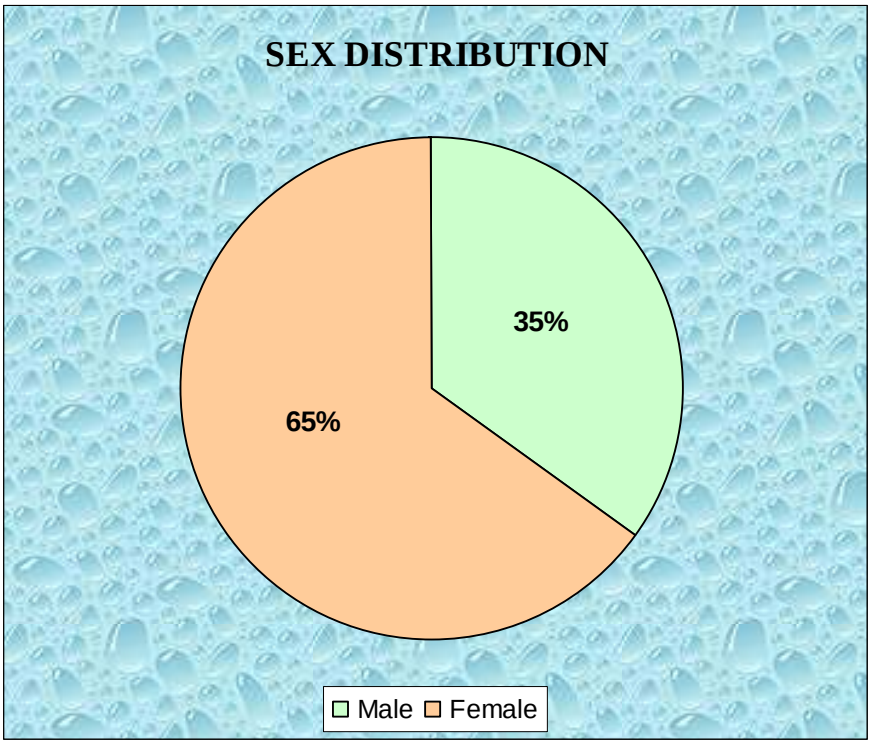
The observations were recorded and tabulations were made with reference to the following features

- Sex distribution
- Age distribution
- Religious distribution
- Socio – economic status
- Kaalam distribution
- Distribution of thinai
- Paruvakaalam
- Occupation
- Diet reference
- Duration of illners
- Etialogical factor
- Clinical features
- Disturbance of mukkuttram
- Udal thaathukkal
- Envagai thervugal
- Neerkuri
- Neikuri
- Clinical response
- Urine culture study
- Gradation of results

SEX DISTRIBUTION

TABLE-1

S.NO	Sex	Number of cases	Percentage (%)
1.	Male	7	35
2.	Female	13	65



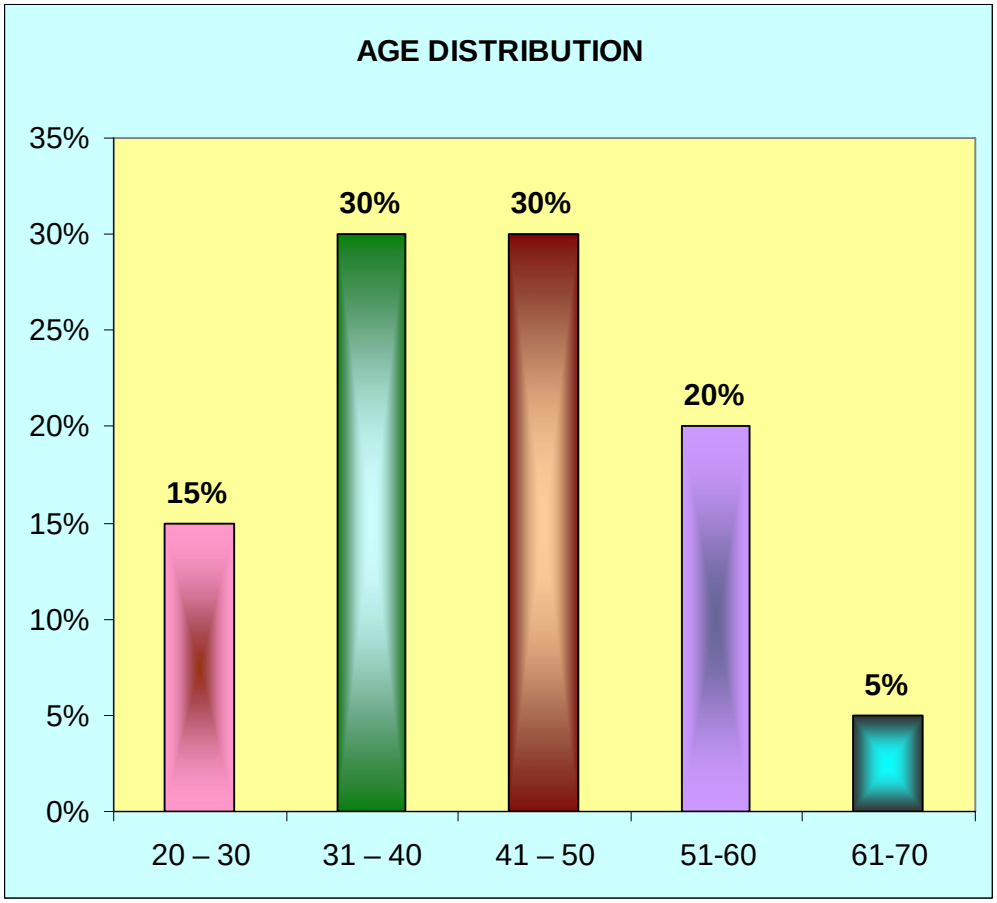
INFERENCE:

Among 20 inpatients 35% were males and 65% were females.

AGE DISTRIBUTION

TABLE-2

S.NO	Age in years	Number of cases	Percentage (%)
1.	20 – 30	3	15
2.	31 – 40	6	30
3.	41 – 50	6	30
4.	51-60	4	20
5.	61-70	1	5



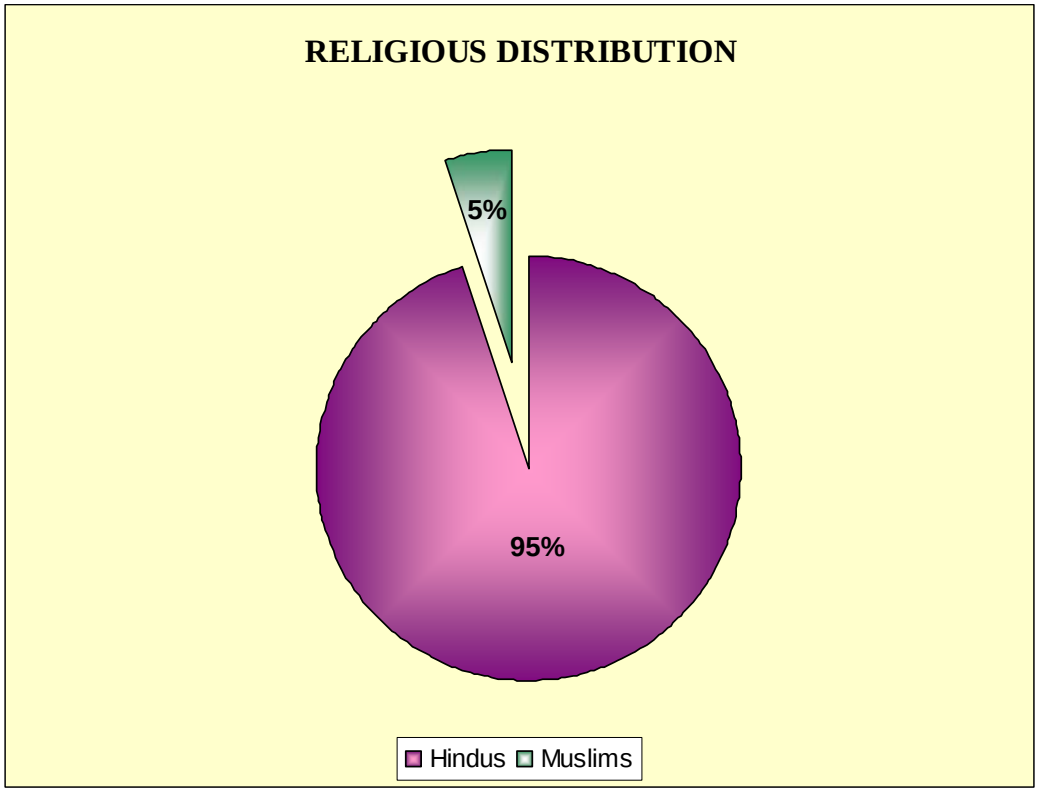
INFERENCE:

In my clinical study, 15% were in the age group of between 20 – 30 years, 30 % were in the age group of between 31 – 40 years, another 30% were in the age group of between 41 – 50 years, 20% were in the age group of between 51-60 years, 5% were in the age group of between 61-70.

RELIGIOUS DISTRIBUTION

TABLE – 3

S.NO	Religion	Number of cases	Percentage (%)
1.	Hindus	19	95
2.	Christians	-	-
3.	Muslims	1	5



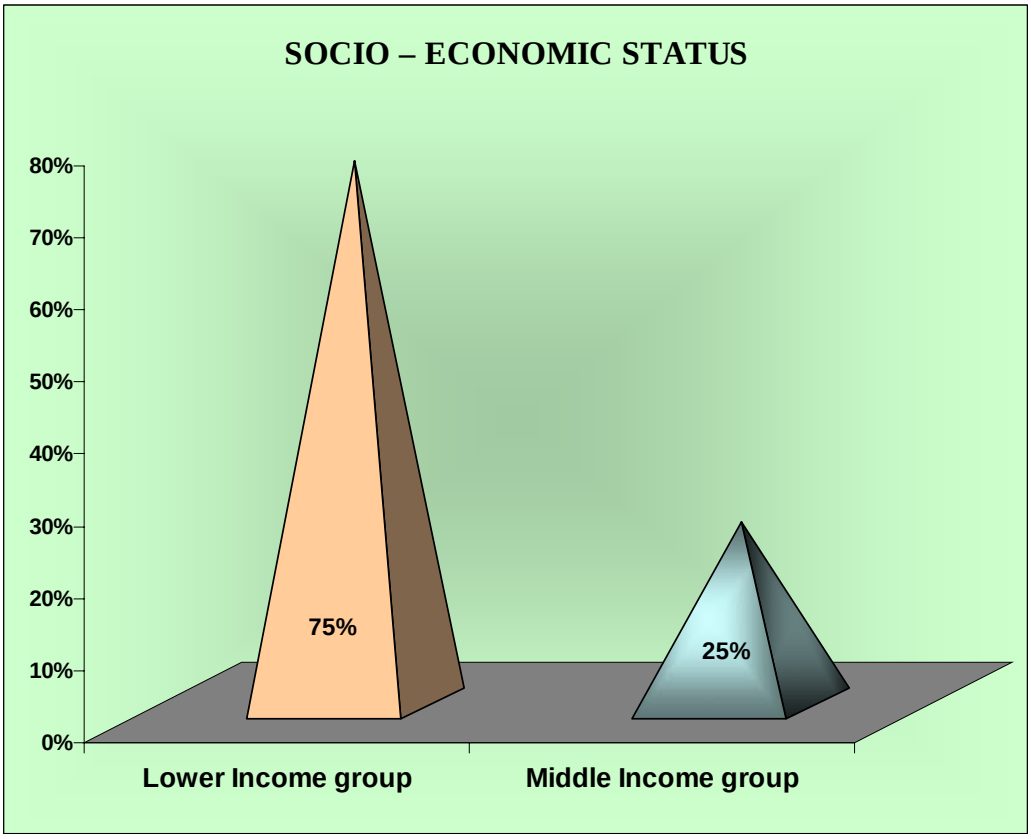
INFERENCE:

In my observation, 95 % were hindus, 5% were muslims.

SOCIO – ECONOMIC STATUS

TABLE – 4

S. NO	Socio-Economic Status	Number of cases	Percentage (%)
1.	Lower Income group	15	75
2.	Middle Income group	5	25



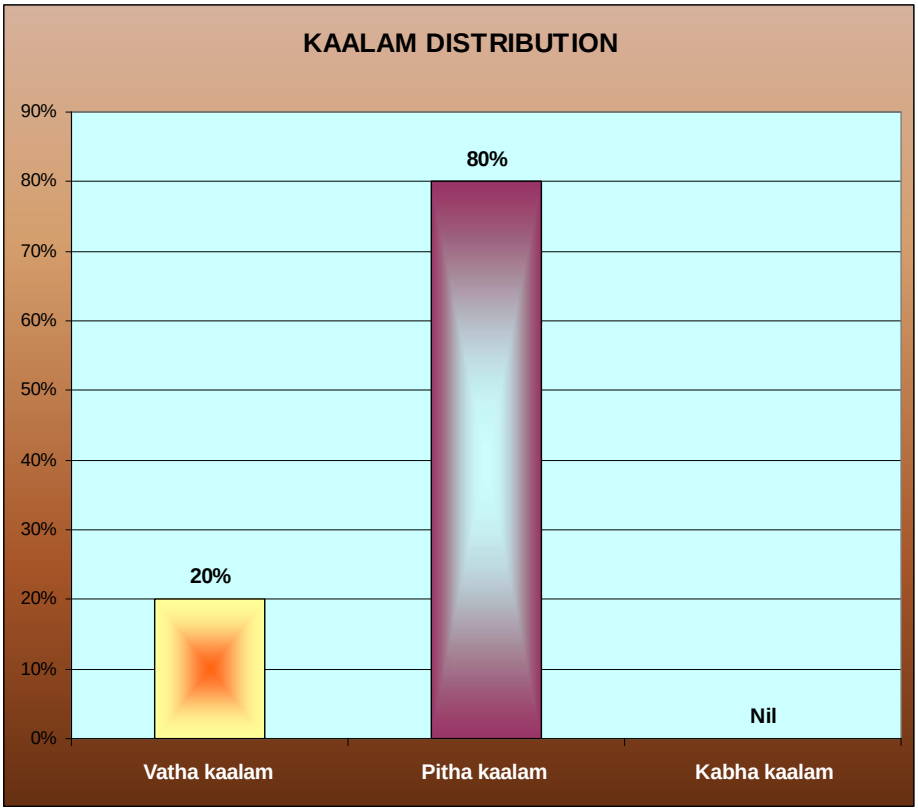
INFERENCE:

In my observation 75 % of cases belong to lower income group and 25% belong to middle income group.

KAALAM DISTRIBUTION

TABLE – 5

S. NO	Kaalam in years	Numbers of cases	Percentage (%)
1.	Vatha kaalam (upto 33yrs)	4	20
2.	Pitha kaalam (34-66 yrs)	16	80
3.	Kabha kaalam (67-100 yrs)	-	-



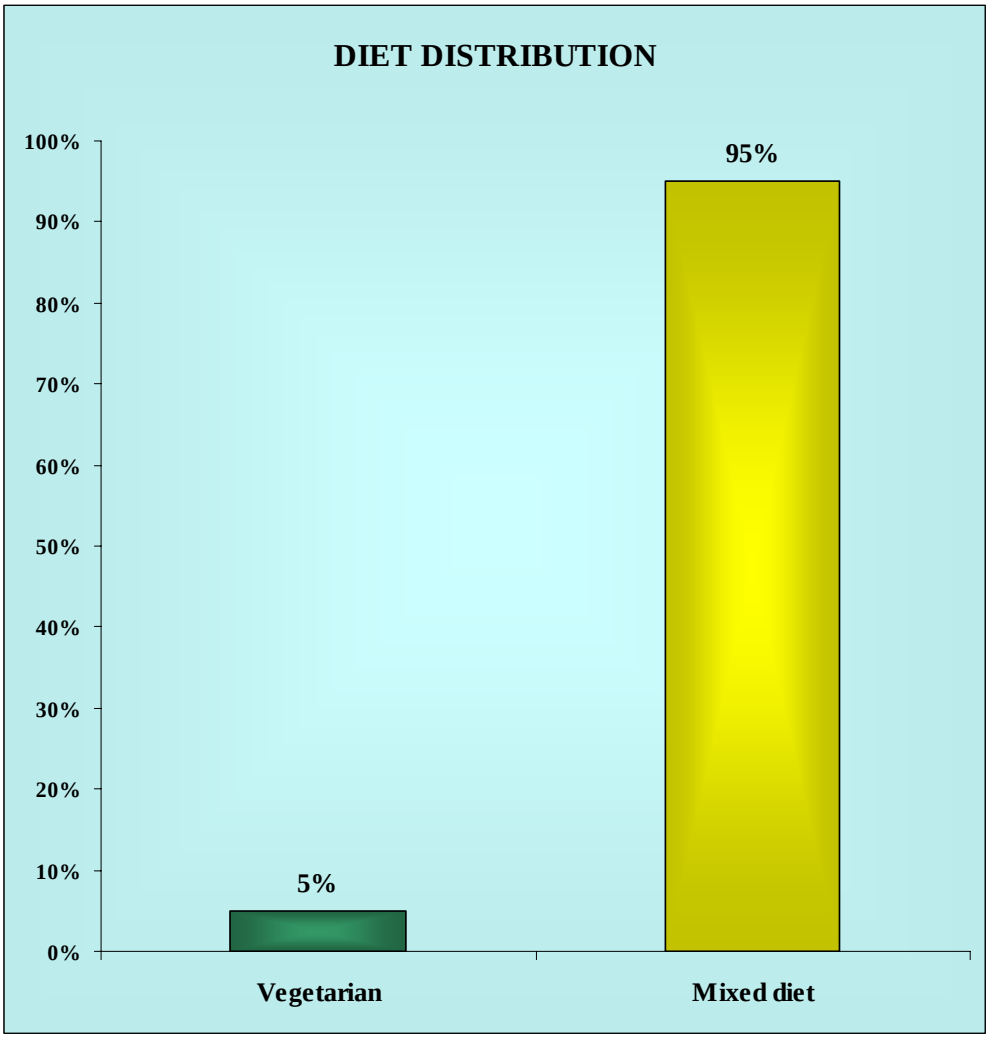
INFERENCE:

According to siddha literature human life can be classified into three periods each of having approximately 33 years age with respect to vaath, pitha and kabha. Considering this account, out of the 20 cases taken, most of them (80%) were in pitha kaalam, 20% in vaatha kaalam.

DIET DISTRIBUTION

TABLE – 6

S. NO	Diet	No of cases	Percentage (%)
1.	Vegetarian	1	5
2.	Mixed diet	19	95



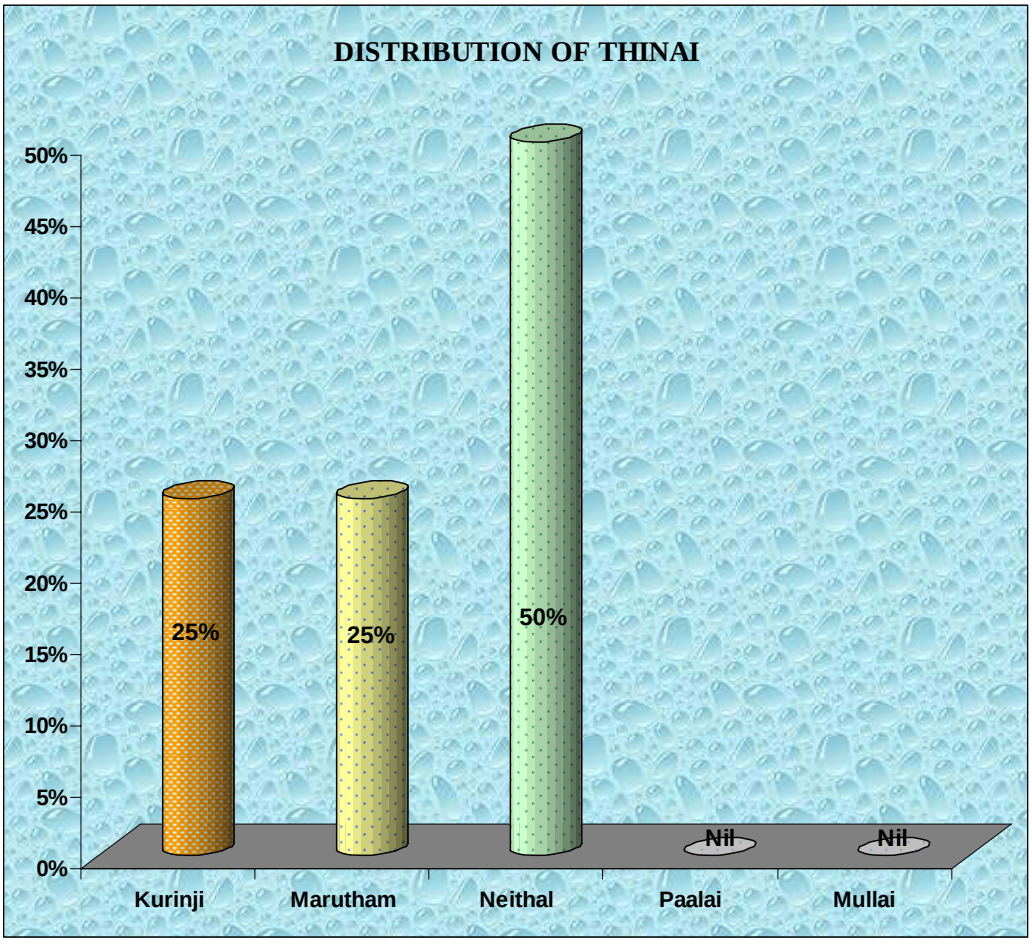
INFERENCE:

In my observation 90 % of cases were taken mixed type of diet. Only 5% were taken vegetarian diet.

DISTRIBUTION OF THINAI

TABLE – 7

S. NO	Thinai	Number of cases	Percentage (%)
1.	Kurinji	5	25
2.	Marutham	5	25
3.	Neithal	10	50
4.	Paalai	-	-
5.	Mullai	-	-



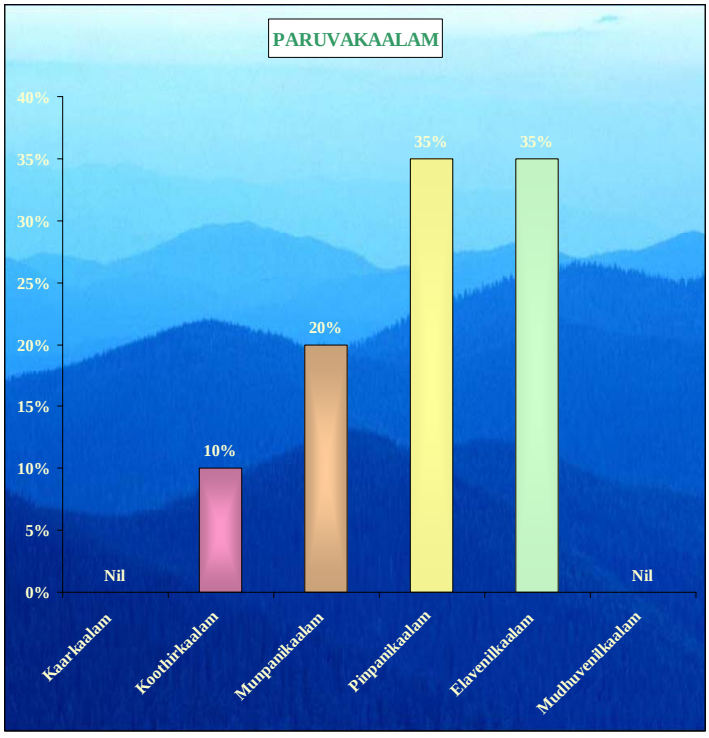
INFERENCE:

Most of the patients (50%) were from in and around Chennai. So they belonged to Neithal thinai. 25% of patients belong to kurinji and another 25% of patients belong to marutham thinai.

PARUVAKAALAM

TABLE – 8

S. NO	Paruvakaalam	Number of cases	Percentage (%)
1.	Kaarkaalam (Aug16-Oct-15)	-	-
2.	Koothirkaalam (Oct16-Dee15)	2	10
3.	Munpanikaalam (Dec16-Feb15)	4	20
4.	Pinpanikaalam (Feb16-Apr15)	7	35
5.	Elavenilkaalam (Apr16-June15)	7	35
6.	Mudhuvenilkaalam (June16-Aug15)	-	-



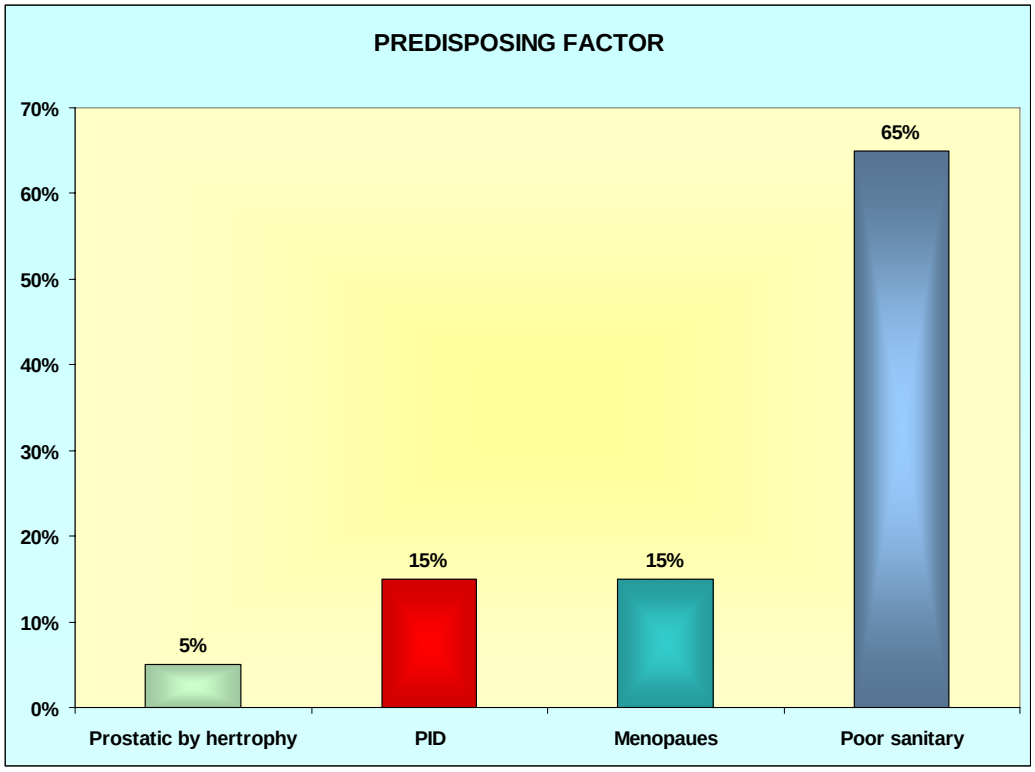
INFERENCE:

10% patients were affected in Koothirkaalam, 20% patients were affected in Munpanikaalam, 35% patients were affected in Pinpanikaalam, 35% patients were affected in Elavenilkaalam.

PREDISPOSING FACTOR

Table-9

S. NO	Predisposing factor	Number of cases	Percentage (%)
1.	Prostatic by hertrophy	1	5
2.	PID	3	15
3.	Menopaues	3	15
4.	Poor sanitary	13	65



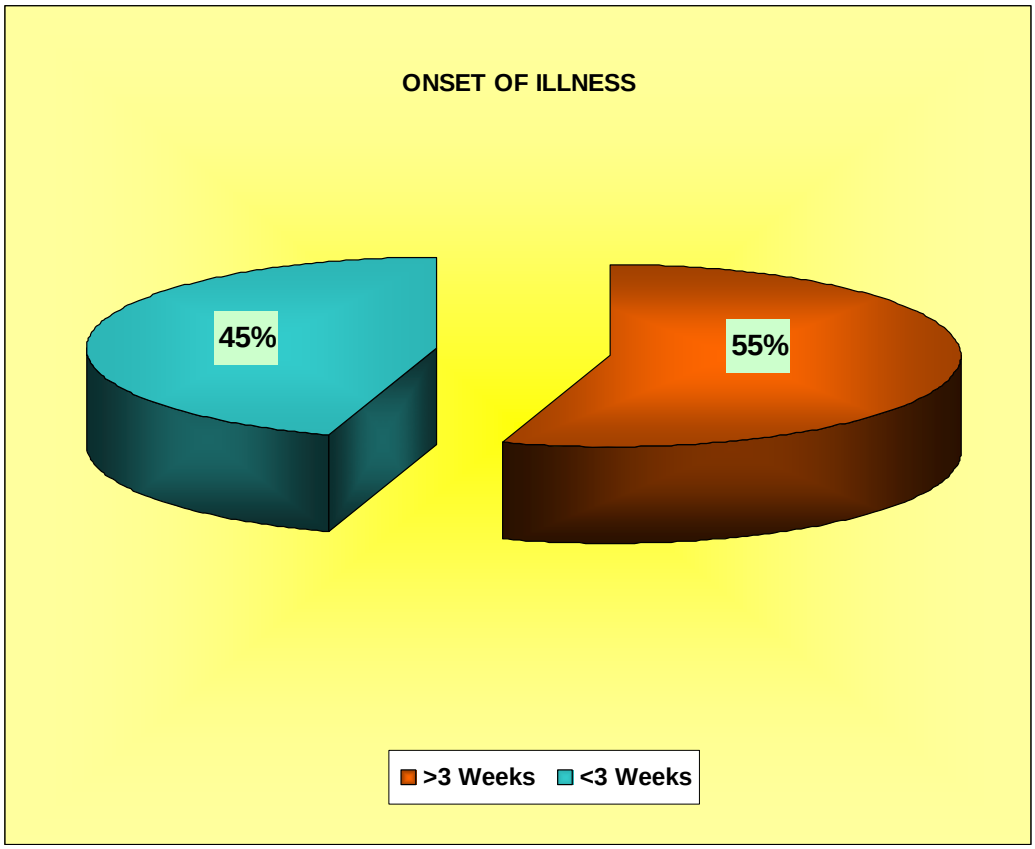
INFERENCE:

In my observation, 5% had prostatic hypertrophy. 15% had pelvic Intflammatory diseases. Another 15% were attained menopause, most of the cases 65% had poor sanitary life style.

ONSET OF ILLNESS

Table-10

S. NO	Onset of illness	Number of cases	Percentage (%)
1.	>3 Weeks	11	55
2.	<3 Weeks	9	45



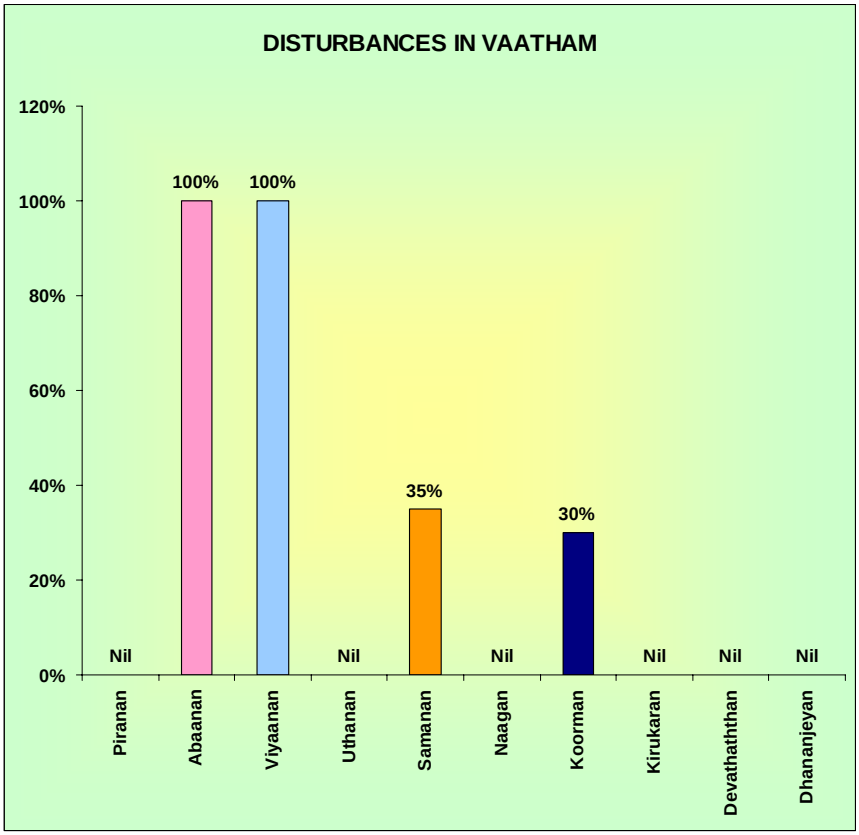
INFERENCE:

Among 20 patients 55% of patients suffered from acute illness. 45% patients suffered from chronic illness.

DISTRIBUTION OF MUKKUTRAM
Table -11

a) Disturbances in vaatham

S. NO	Vaatham	Number of cases	Percentage (%)
1.	Piranan	-	-
2.	Abaanan	20	100
3.	Viyaanan	20	100
4.	Uthanan	-	-
5.	Samanan	7	35
6.	Naagan		
7.	Koorman	6	30
8.	Kirukaran	-	-
9.	Devathaththan	-	-
10.	Dhananjeyan	-	-

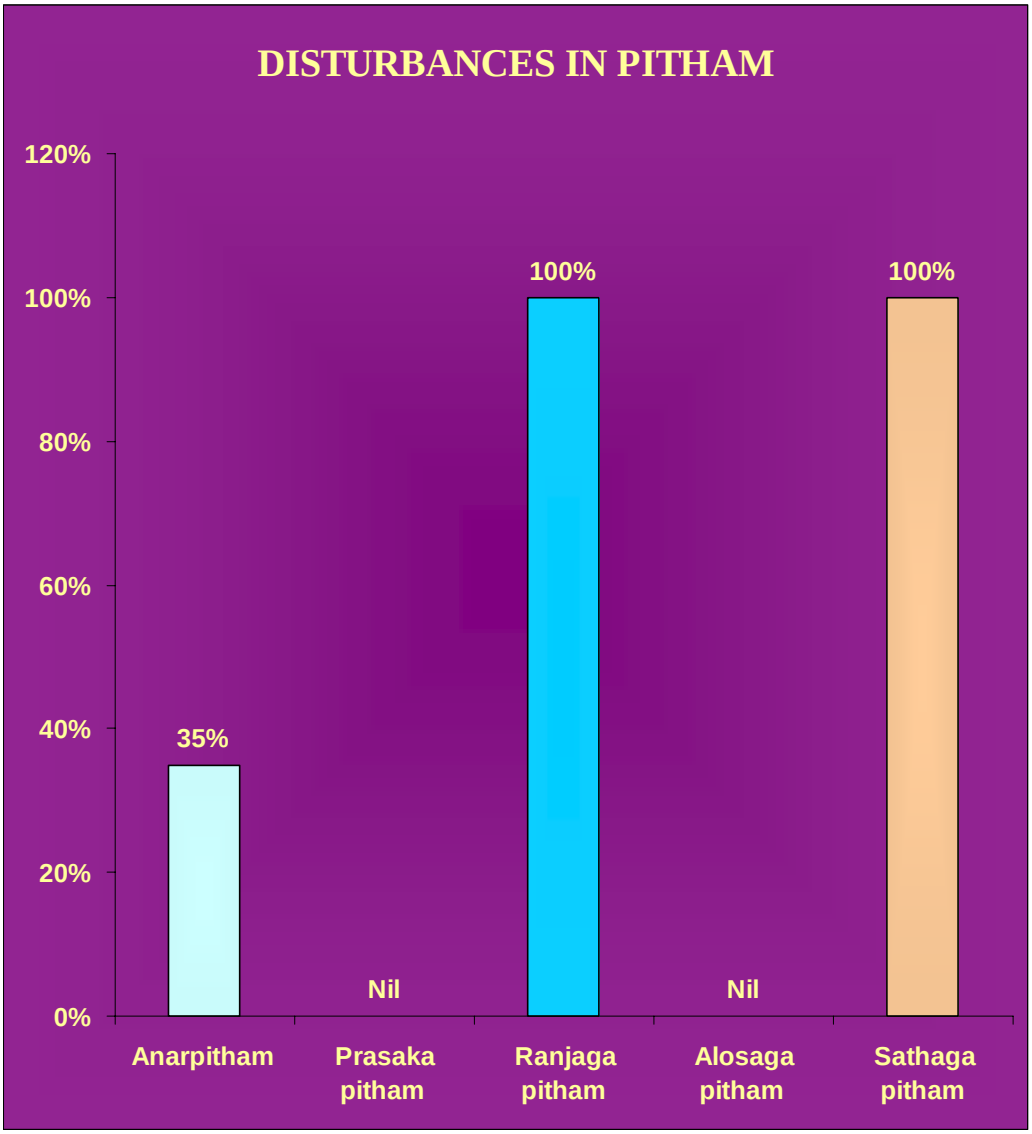


INFERENCE:

In my observation abaanan and viyaanan were affected 100%, Koorman was affected 30% of patients. Saamanan was affected in 35% of patients.

b) DISTURBANCES IN PITHAM:

S. NO	Pitham	Number of cases	Percentage (%)
1.	Anarpitham	7	35
2.	Prasaka pitham	-	-
3.	Ranjaga pitham	20	100
4.	Alosaga pitham	-	-
5.	Sathaga pitham	20	100

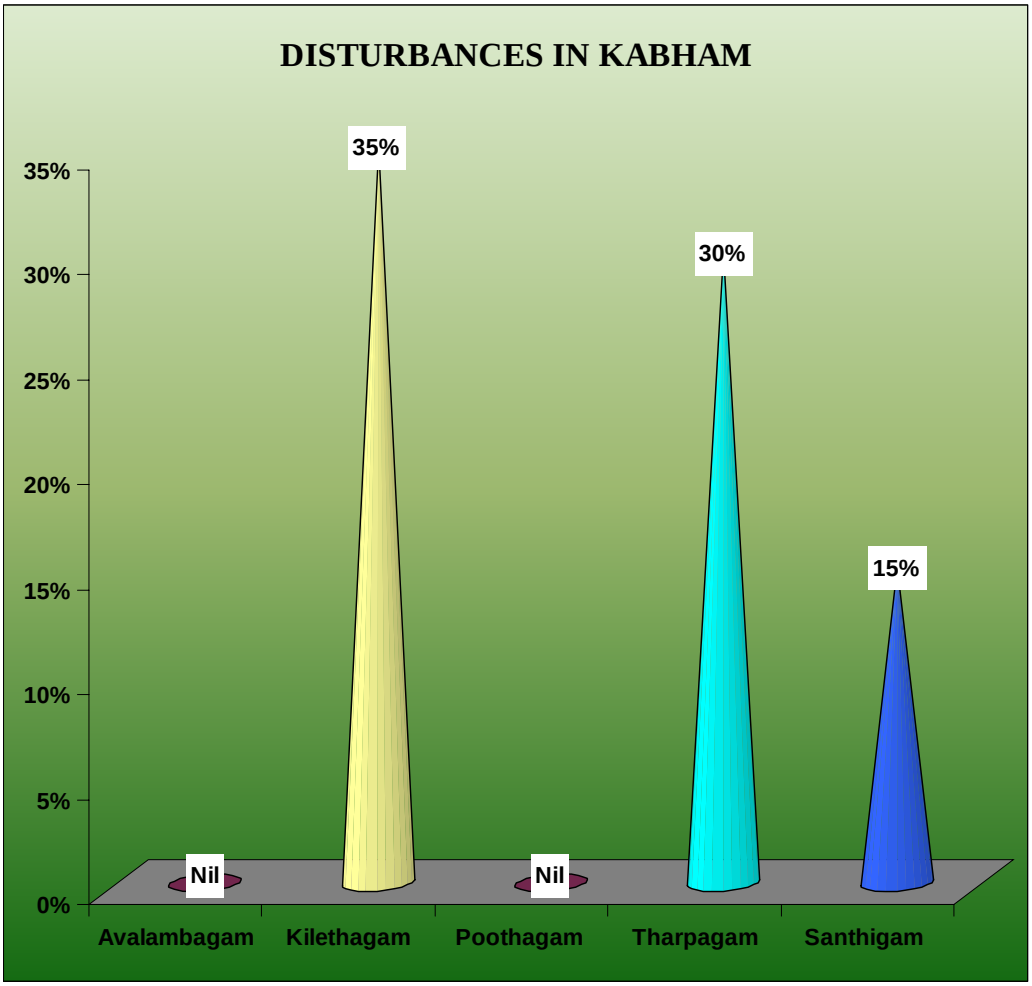


INFERENCE:

In my study, in 35% of patients Anarpitham was affected. Ranjaga pitham and Sathaga pitham was affected in 100% of patients.

c) DISTURBANCES IN KABHAM :

S. NO	Kabham	Number of cases	Percentage (%)
1.	Avalambagam	-	-
2.	Kilethagam	7	35
3.	Poothagam	-	-
4.	Tharpagam	6	30
5.	Santhigam	3	15

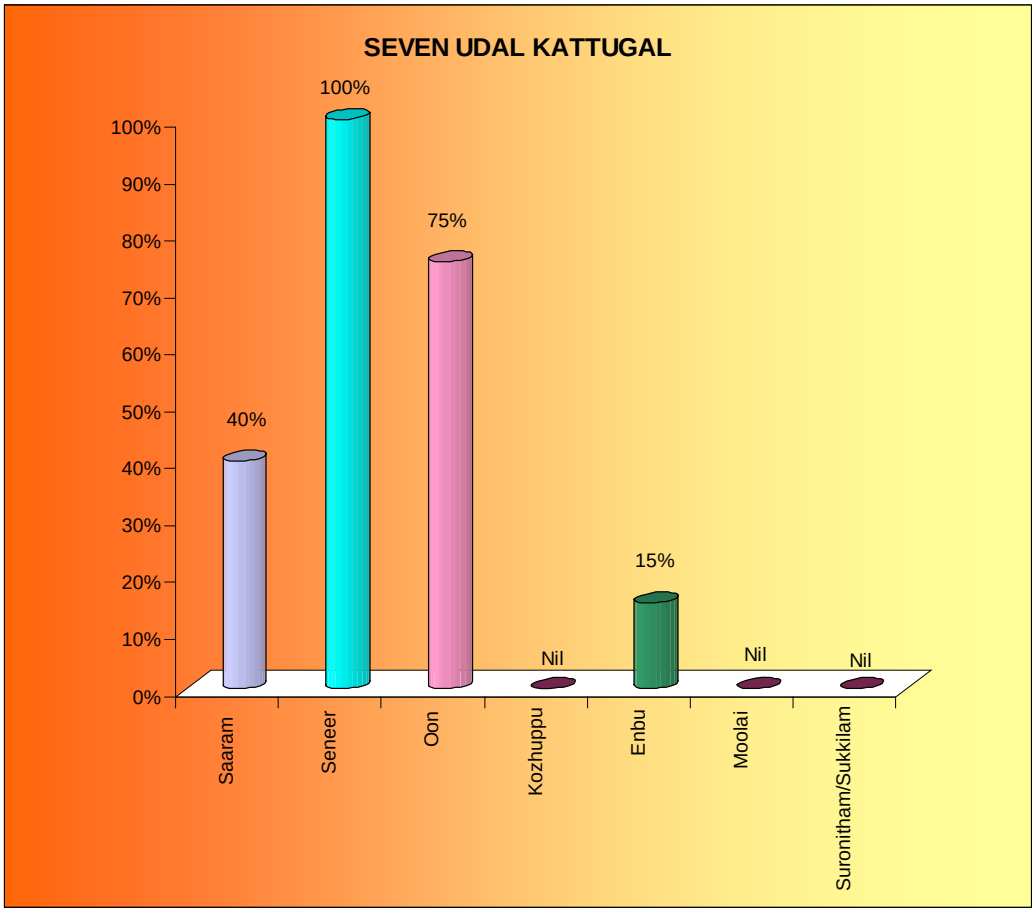


INFERENCE:

In my observation, kilethagam was affected in 35%, of patients, tharpagam was affected in 30% of patients. Santhigam was affected in 15% of patients.

SEVEN UDAL KATTUGAL
Table – 12

S. NO	Seven Udal Kattugal	Number of cases	Percentage (%)
1.	Saaram	8	40
2.	Seneer	20	100
3.	Oon	15	75
4.	Kozhuppu	-	-
5.	Enbu	3	15
6.	Moolai	-	-
7.	Suronitham/Sukkilam	-	-



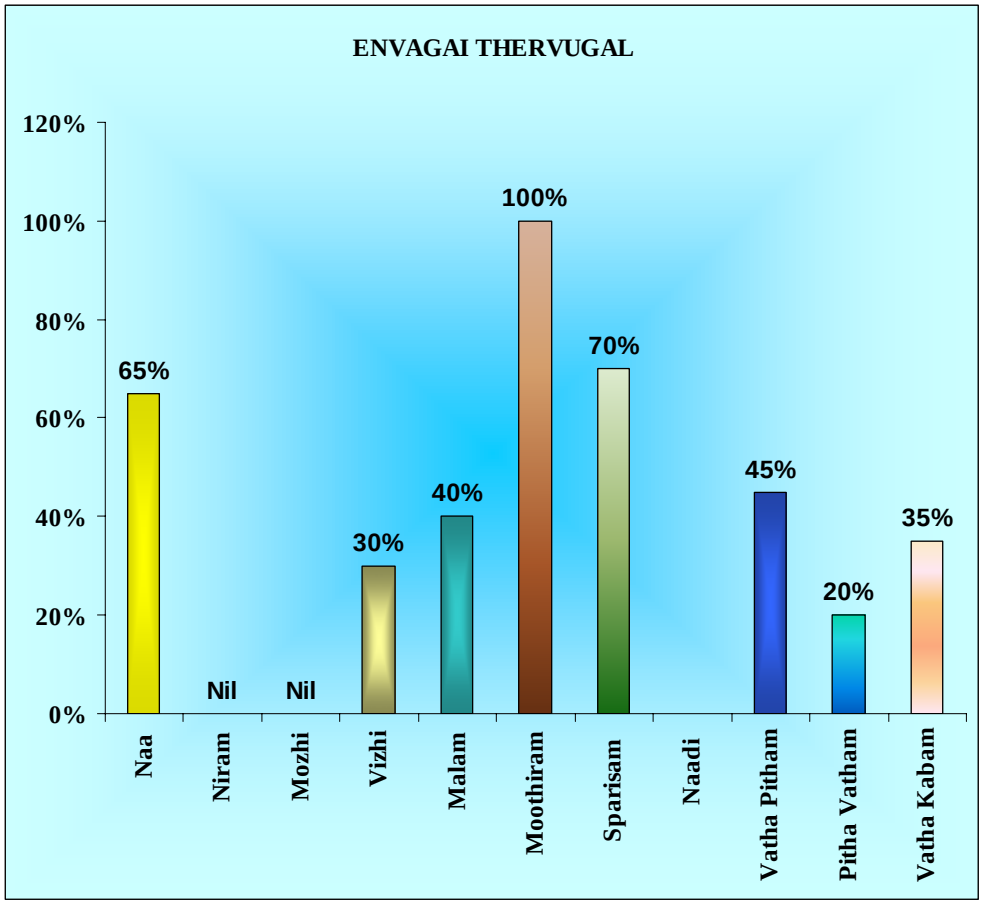
INFERENCE:

In my clinical observation saaram was affected in 40%, of patients sencer was affected in100%, of patients oon was affected in 75%, of patients enbu was affected in 15% of patients.

ENVAGAI THERVUGAL

TABLE – 13

S. NO	Envagai Thervugal	Number of cases	Percentage (%)
1.	Naa	13	65
2.	Niram	-	-
3.	Mozhi	-	-
4.	Vizhi	6	30
5.	Malam	8	40
6.	Moothiram	20	100
7.	Sparisam	14	70
8.	Naadi		
	Vatha Pitham	9	45
	Pitha Vatham	4	20
	Vatha Kabham	7	35



INFERENCE:

In my observation naa was affected in 65% of patients, vizhi was affected in 30% of patients, malam was affected in 40% of patients, moothiram was affected in 100% of patients, sparisam was affected in 70% of patients.

In 45% of cases the naadi was vaatha pitham

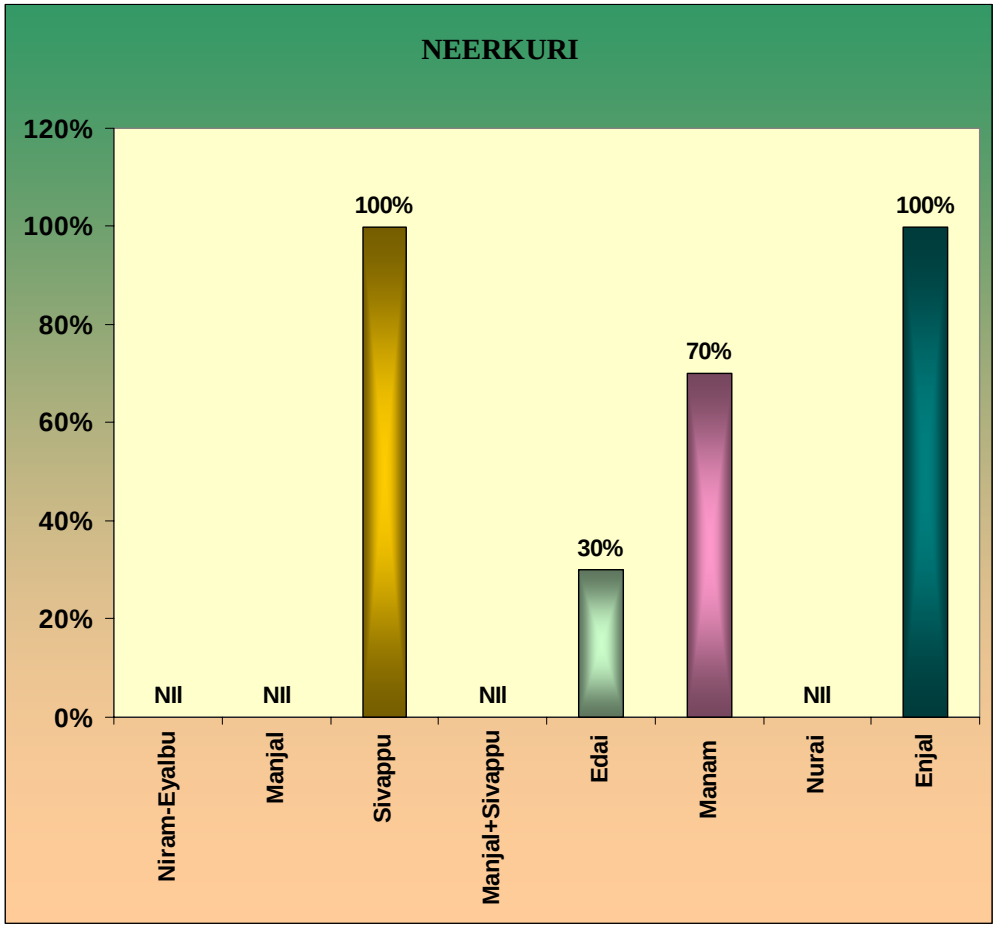
In 35% of cases the naadi was vaatha kabham

In 20% of cases the naadi was pitha vaatham

NEERKURI

Table – 14

S. NO	Neerkuri	Number of cases	Percentage (%)
1.	Niram-Eyalbu -Manjal -Sivappu Manjal+Sivappu	- 15 - 5	100%
2.	Edai	6	30%
3.	Manam	14	70%
4.	Nurai	-	-
5.	Enjal	20	100%



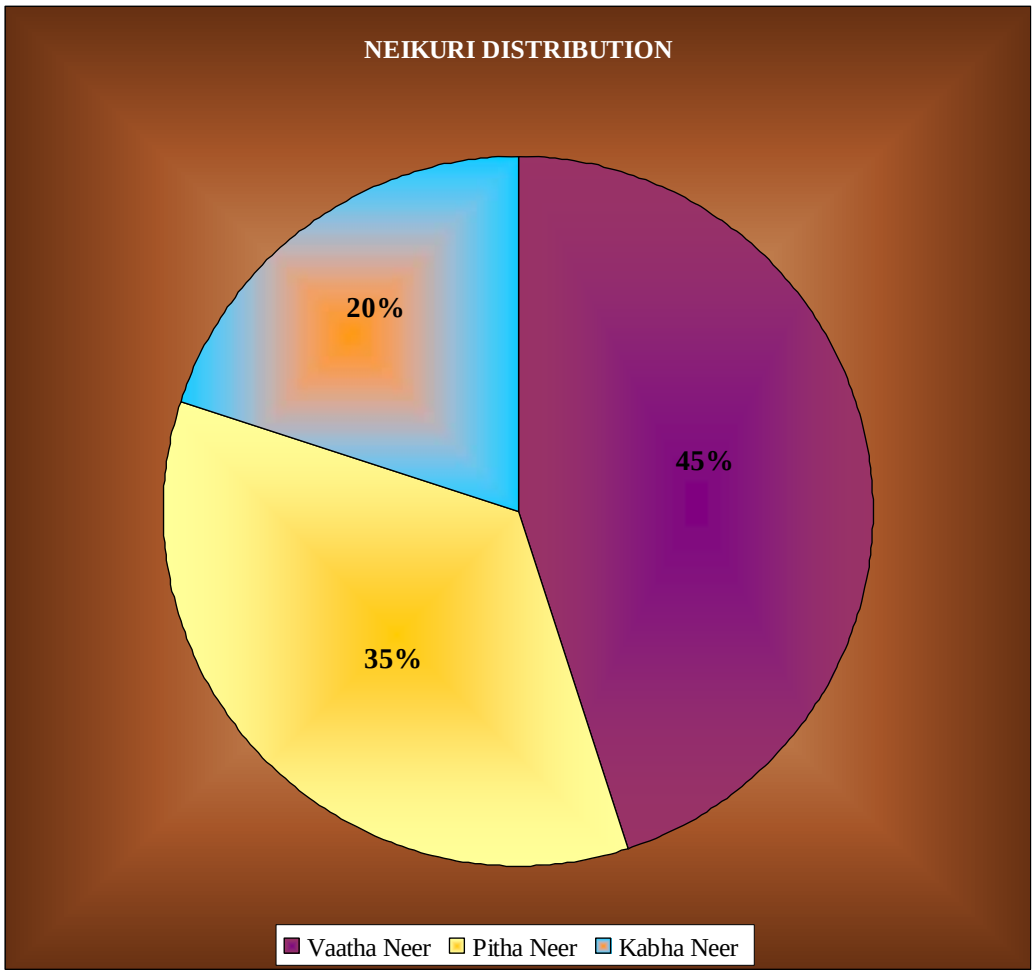
INFERENCE:

In my observation, urine colour was affected in 100% of patients, (15 patients had manjal niram, 5 patients had manjal+sivappu niram) Edai was affected in 30%, manam was affected in 70%, 100% of patients had urinary deposits

NEIKURI DISTRIBUTION

TABLE – 15

S. NO	Neikuri	Number of cases	Percentage (%)
1.	Vaatha Neer (Spreads like a Snake)	9	45
2.	Pitha Neer (Spreads like a Ring)	7	35
3.	Kabha Neer (Spreads like a Pearl)	4	20

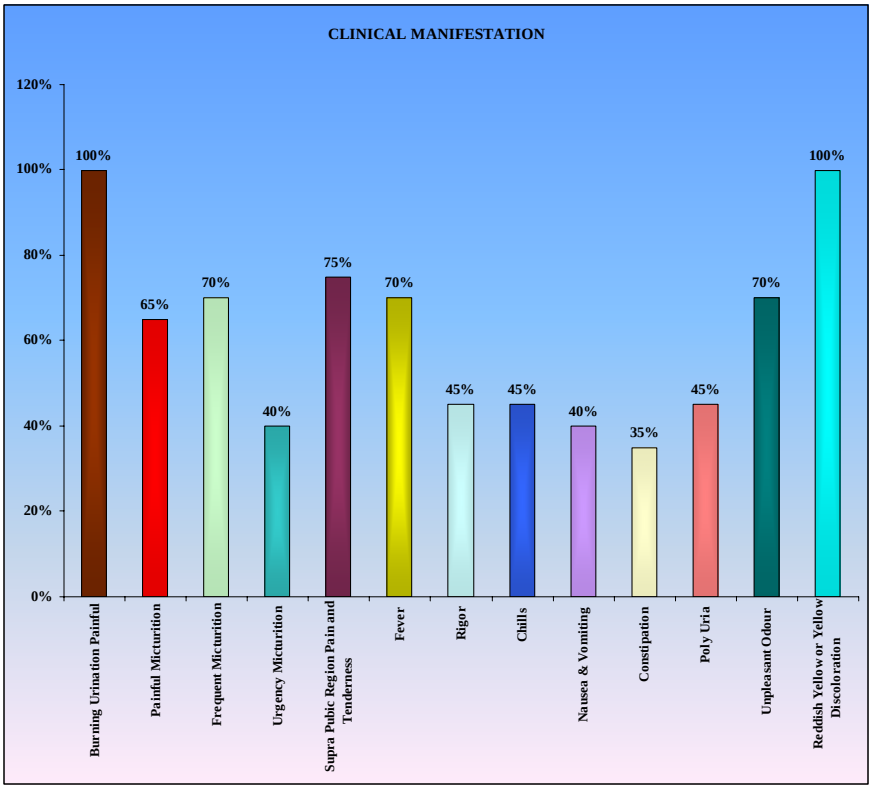


INFERENCE:

In my observation, 45% of patients had vaatha neer. 35% of patients had pitha neer. 25% of patients had kabha neer.

CLINICAL MANIFESTATION
TABLE – 16

S. O	Symptoms	Number of cases	Percentage (%)
1.	Burning Urination Painful	20	100
2.	Painful Micturition	13	65
3.	Frequent Micturition	14	70
4.	Urgency Micturition	8	40
5.	Lower abdominal pain	15	75
6.	Fever	14	70
7.	Rigor	9	45
8.	Chills	9	45
9.	Nausea & Vomiting	8	40
10.	Constipation	7	35
11.	Poly Uria	9	45
12.	Unpleasant Odour	14	70
13.	Yellow Discoloration	20	100

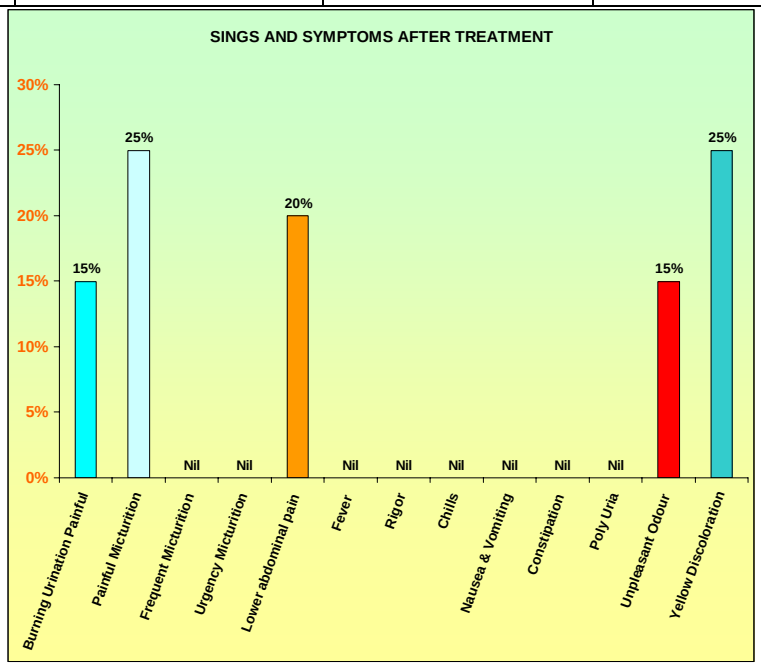


INFERENCE:

100% of patients had burning urination,65%of patients had painful micturition, 75% of patients had frequent micturition, 40% of patients had urgency micturition, 75% of patients had lower abdominal pain, 70% of patients fever, 45% of patients had rigor, another 45% of patients had chills, 40% of patients had nausa & vomiting, 35% of patients had constipation, 45% of patients had polyuria, 70% of patients had unpleasant odour of urine, 100% of patients had yellow discoloration of urine.

SINGS AND SYMPTOMS AFTER TREATMENT
Table - 17

S. NO	Symptoms	Number of cases	Percentage (%)
1.	Burning Urination Painful	3	15
2.	Painful Micturition	5	25
3.	Frequent Micturition	-	-
4.	Urgency Micturition	-	-
5.	lower abdominal pain	4	20
6.	Fever	-	-
7.	Rigor	-	-
8.	Chills	-	-
9.	Nausea & Vomiting	-	-
10.	Constipation	-	-
11.	Poly Uria	-	-
12.	Unpleasant Odour	3	15
13.	Yellow Discoloration	5	25



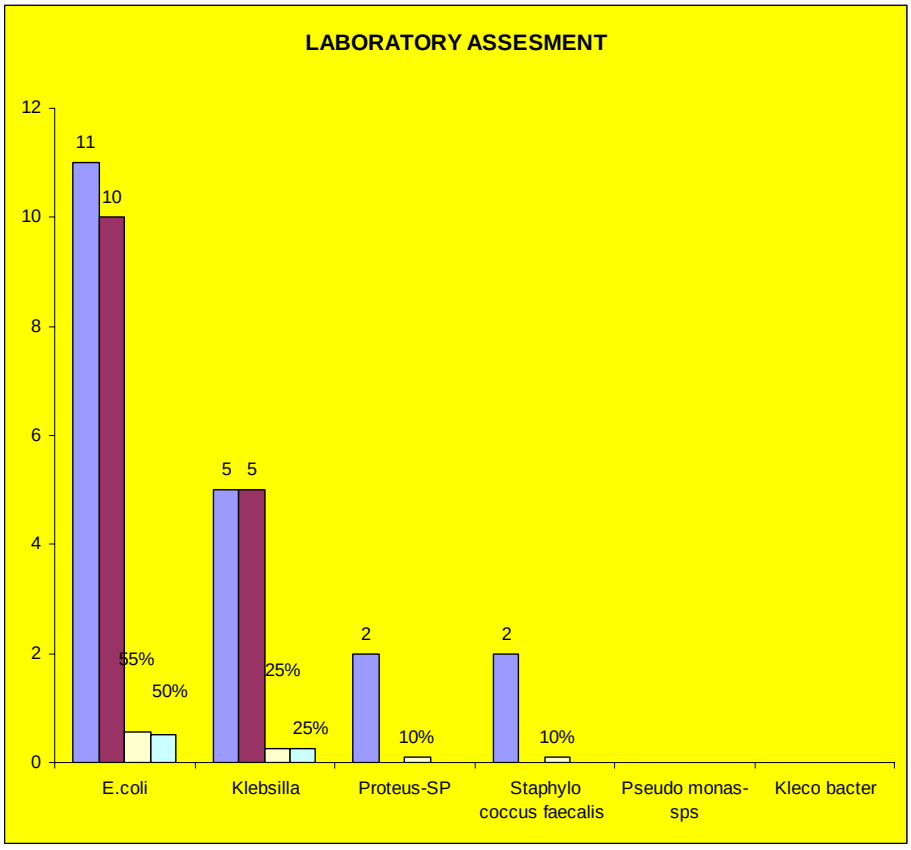
INFERENCE:

In my observation's after treatment most of the symptoms are completely relived. Only a few symptoms continued in very low percentage such as burning micturition in 15%, 25% patients had painful micturition, 20% percent of patient's urine was in yellowish colour, lower abdominal pain was present in 25% of patients, 15% patients were unpleasant odour of urine.

LABORATORY ASSESMENT

Table-18

S. NO	Urine culture name of the organism	Number of cases		Percentage (%)	
		BT +ve	AT-ve	BT +ve	AT-ve
1.	E.coli	11	10	55%	50%
2.	Klebsilla	5	5	25%	25%
3.	Proteus-SP	2	2	10%	-
4.	Staphylo coccus faecalis	2	-	10%	-
5.	Pseudo monas-sps	-	-	-	-
6.	Kleco bacter	-	-	-	-



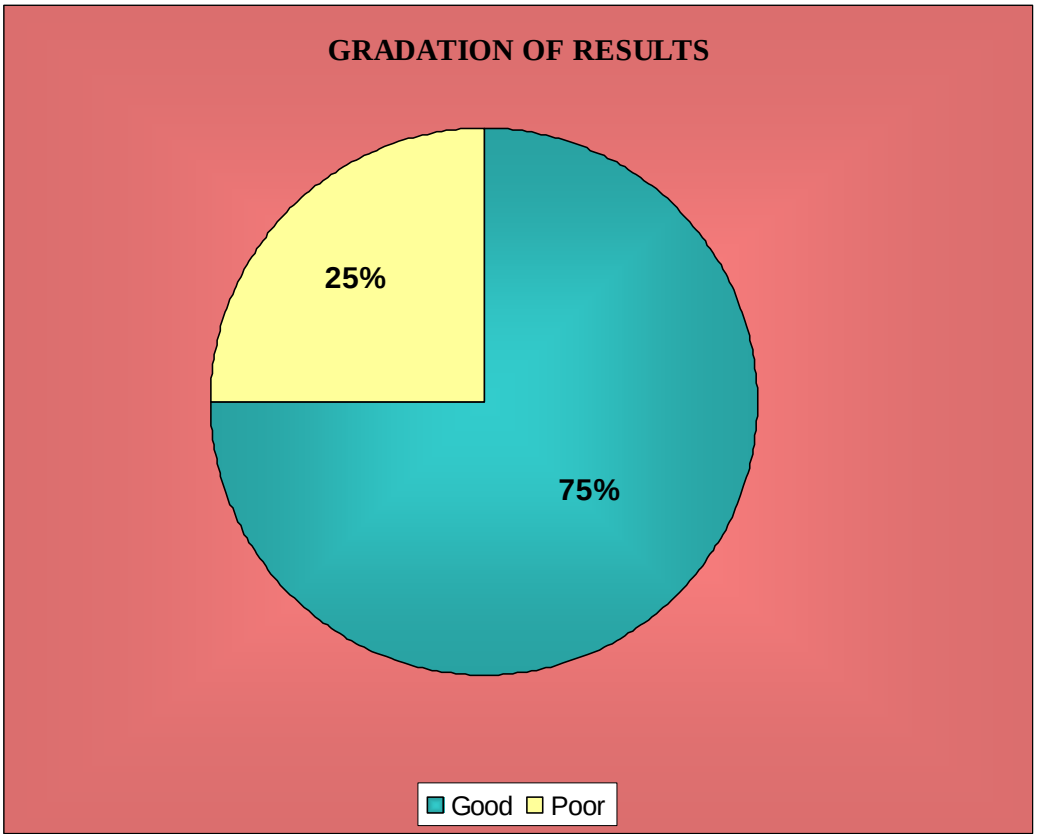
INFERENCE:

In my clinical study, 55% had e-coli growth before treatment and 50% had negative result after treatment 25% had klebsiella growth before treatment and 25% had negative result after treatment 10% had staphylo coccus growth before treatment and had no significant improvement after treatment 10% had Proteus-SP growth before treatment and had no significant improvement after treatment.

GRADATION OF RESULTS

Table-19

S. NO	Grade	Number of cases	Percentage (%)
1.	Good	15	75
2.	Poor	5	25



INFERENCE:

In my clinical trial 75% of cases showed good results 25% of cases showed poor results.

DISCUSSION

Salathamba vaatham, a clinical entity described by yugimunivar in his yugi vaidhiya chinthamani is one among the 80 types of vaatha diseases. The classical clinical features are burning michirition, painful micturition freqnent micturition, fever with rigor, vomiting, supra pubic pain and tenderness. These features can be very well compared with urinary tract infection. If neglected it produces various complications so I have chosen the disease to relieve the annoyance of salathamba vaatham symptoms troubling the patients

Relapse and recurrence of the symptoms were commonly seen in certain cases, while selecting the salathamba vaatham cases. But the miraculous cure by the trial medicines was obviously noted from the results and observations. The clinical improvement of the patients were completely discussed and brought out the efficacy of the trial medicines

20 cases of salathamba vaatham patients were admitted in the In-patient ward of aringar Anna Government hospital of Indian medicine attached to Government siddha medical college, Arumbakkam Chennai-106 during 2007-2008 period.

Another 20 cases treated in out-patient department. All necessary investigations were carried out to all patients and trial drug were given. Daily follow up were done. Total duration of treatment ranges from 20 – 48 days. All the patients were strictly advised to follow diet restriction and hygenic life style to further prevention of the diseases

1. SEX:

Among 20 inpatients 35% were males and 65% were females .

Although salathamba vaatham affecting both sexes, females were affected more than males.

Because of females anatomical contribution, they were more prone to develop urinary tract infections.

2. AGE:

Among inpatients, 15% of cases were between in the age of 20-30, 30% of cases were between in the age of 31-40, 30% of cases were between in the age off 41-50, 20% of cases were between in the age of 51-60, only 5% of cases between in the age of 61-70.

So the occurrence of the disease was found in all age groups.

3. RELIGIOUS DISTRIBUTION:

Among 20 patients 95% of patients were Hindu only 5% of patients were Muslim.

4. KAALAM:

Among 20 inpatients, 20% of cases were belonged to vaatha kaalam. 80% of case were belonged to pitha kaalam.

This is why, because of patients in pitha kaalam group has risk factors like smoking and alcholism and also it is a reproductive period.

5. OCCUPATIONAL STATUS:

In this study most of the patients were cooli because of their poverty unhigeni, poor health care. They are main reason for that occurrence.

6. DIET REFERENCE:

Most of the patient is come under mixed type of diet category. Non-veg diet causes indigestion and constipation by which it alters the vaatha.

7. SOCIO-ECONOMIC STATUS:

In my observations, 75% were belonged to lower income group.

8. SEASONAL REFERENCE:

In my observation, 35% of patients were affected in elavenil kaalam, another 35% of patients were affected in pinpani kaalam, 20% of patients were affected in munpani kaalam, 10% of patients were affected in koothir kaalam.

If salathamba vaatham is a infective disease, so it occurs in all seasons.

9. THINAI REFERENCE:

In this observation, 50% of patients come from neithal nilam (costal area) neithal nilam is more prone to vaatha diseas. 25% of patients came from kurinji nilam and marutham nilam.

PREDISPOSING FACTORS

In my observation, 65% of patients were affected due to poor sanitary, 15% of patients were affected due to PID & menopause, 5% of patients were affected due to prostatie hypertrophy.

Poor sanitation facilitated the growth of organisms. Menopause in females caused low estrogen level, hypotonia of bladder muscle and alkalinity of veginal PH.

Prostatic hypertrophy in males produced urinary obstruction and stagnation. Prolonged obstruction and stagnation leads to bacterial infection.

ONSET OF ILLNESS:

Among 20 patients, 55% of patients were acute illness, 45% of patients were chronic illness.

CLINICAL MANIFESTATION:

Regarding siddha description of salathamba vaatham, various clinical features which are mentioned resembles urinary tract infection. In my trial study, the cardinal features like burning urination (100%), painful micturition (65%), frequent micturition (70%), urgency of micturition 40%, supra pubic region pain & tenderness (75%) were noted. The associated symptoms like fever (70%), rigor (45%) chills, (45%), nausea & vomiting (40%), constipation (35%), polyuria (45%), un pleasant odour of the urine (70%), yellow discoloration of the urine (100%) were observation and taken for the assessment.

MUKKUTRAM:

In the current study, mukkutram changes were observed. In vaatham, abaanan, viyaanan were affected 100%, samanan was affected in 35%. Koorman was affected in 30% of patients.

In pitham, Anarpitham was affected in 35% Ranjaga pitham & sathga pitham was affected in 100%.

In kabham,kilethagam,tharpagam,santhigam were affected. Affected abaanan produced burning micturition, constipation. Affected viyaanan produced pain all over the supra pubic region, urethral orifice. Affected samanan produced loss of appetite and got affected as it neutralized other vayus. Affected udhanan produced nausea and vomiting. Affected koorman produced dimished vision (probably due to old age) watering of eyes and irritation of the eyes.

Pitham was deranged in some cases. Anarpitham was affected causing loss of appetite. Ranjaga pitham was affected causing increased erthrocyte sedimentation rate (ESR). Alosaga pitham was affected causing diminished vision.

Kabham was also deranged in some cases. Kilethagam was affected causing loss of appetite. Tharpagam was affected causing watering of eyes. santhigam was affected causing joint pain and back pain.

EZHU UDAL KATTUGAL:

Saaram, Senneer, Oon and Enbu were affected. Saaram was affected causing tiredness. Sennneer was affected causing increased ESR, Oon was affected causing supra pubic region tenderness, pain and back pain. Enbu was affected causing joint pain.

ENVAGAI THERVUGAL:

In envagai thervugal, naadi vaatha pitham 45%, vaatha kabham (35%), pitha vaatham 20% were noted.. Sparisam (70%), Naa (65%), Vizhi 30%, Malam 40%, Moothiram 100%, were affected. Urine was affected causing burning, painful and frequent urination. Sparisam was affected causing pain & tenderness

in the supra pubic region, lower abdomen and fever. Naa was affected causing coated tongue and paller of the tongue. Vizhi was affected causing irritation and watering of eyes, diminished vision. Malam was affected causing constipation and it is one of the most important etiological factors of the disease according to siddha.

URINE ANALYSIS

Among 20 in patients urine colour was affected in100%, specific gravity was affected in30%,70% of patients had foul smelling of urine and 100% had urinary deposits.

In salthamba vaatham the colour of the urine was yellowish discolouration, reddish yellow. Red colour was due to haematuria. Foul smell of urine was due to cystitis and urithritis.

All the patients showed varying urinary deposits as pus cells, epithelial cells, red blood cells.

NEIKURI:

Among 20 in patients 45% had vaatha neer,35% had pitha neer,20% hadkabha neer.

LABORATORY INVESTIGATION:

Routine investigations of blood urine and stools were done during the time of admistion and discharge.

Examination of urine showed 100% cases had pus cells.

In blood investigation, 100% of cases had raised ESR.

Bio-chemical analysis of blood sugar, urea, serum cholesterol, serum creationine values were found to be normal.

Most of the case showed normal stools examination results.

After treatment 100% of the patients showed no pus cells in the urine and 85% of the patients showed reduced ESR levels.

SPECIAL INVESTIGATION:

Among 20 in patients 55% had E-coli growth before treatment and 50% had negative resual after treatment. Remaining 5% of case, the colonies count was decreased than before treatment.

25% patients had klebsiella growth before treatment and 25% had negative result after treatment.

10% patients had staphylococcus growth before treatment and had no significant improvement after treatment.

10% patients had pseudomonas sps and had no significant improvement after treatment.

RADIOLOGICAL INVESTIGATION:

Ultra sonogram – abdormen and pelvis was done in all patients. Among 20 in patients 95% had normal study, 5% had prostatic hypertrophy.Salathamba vaatham occurred in normal patients and also occurred in patients with prostatomgaly.

After confirmation, the patients were given the trial medicines and other instructed to follow the diet and restrictions based on siddha classics.

The bio chemical analysis shows that “Santhanaathy Choornam” is having acid radicals such as chloride, Carbonate, phosphate. Basic radicals iron (ferrous) and phytochemicals starch, tannic acid, unsaturated componed, reducing sugar, alkaloids, Protiens, phenol and amino acids.

Bio chemical analysis of nerunchil- Kothamalli kudineer showed the presence of iron (ferrous) sulphate, chloride, alkaloids, steroids, Protein, tannins flavanoids, reducing sugar (trace) and amino acids.

The pharmacological studies show that the trial medicines of santhanaathy choornam and neerunchil- Kothamalli kudinner are having anti-inflammatory, analgesie & antipyretic activations.

The diuretic activity of nerunchil was already proved.

Both of them have the presence of tannic acid in bio-chemical analysis which protects mucous membrances of the genito urinary tract.

The microbiological study of santhanaathy choornaam and neruchil kothamallai kudineer shows that it is highly sensitive for E.coli, klebsellaz spe.and Klecobacter.

GRADUATION OF RESULTS:

Among 20 patients 15 patients got relieved completely from signs and symptoms and the post urine culturer revealed no growth

Another 5patients had no significant improvement after treatment.

Totally this is taken as the 75% good result, 20% poor.. The trial medicine is highly sensitive to gram-ve organisms.

All the patients responded nicely and not a single patient complained about any adverse or toxic affects. Medical advice was given to prevent the recurrence and to maintain their health in future.

SPECIAL ADVICE:

- Fllow good moral habits.
- Avod pre-marital and extra marital sex.
- Avoid stress, strain, fear and anxiety.
- Follow good genital hygiene.
- Follow good dietary regimen

SUMMARY

The clinical study on **"Salathamba Vaatham"** (urinary tract infection) with the administration of the trial medicines of santhanaathy choornam and nerunchil. Kothamalli kudineer were carried out in the post graduate, maruthuvam department, Govt.Siddha Medical College, Chennai-106.

In this study, 20 patients of both sexes at different age groups with classical clinical symptoms were selected as in patients and another 20 patients were taken as out patients.

Clinical and pathological assessments were carried out on the basis of both siddha and allopathy medical systems.

The results obtained from the studies are summarized here below:

- More percentage of females 65% were affected than male.
- High incidence of cases were noted in the age group ranging from 31-50 yrs and in pitha kaalam (80%).
- High incidence of cases were observed in lower income group, due to their poverty, unhigiene, poor healthcare and ignorance of treatment.
- The disease was present as both acute and chronic onset.
- Alterations in equilibrium of the three dosa has were elicited. In vaatha abaanan was affected mainly. In pitham ranjagapitham was affected more. Among seven udarkalugal, senneer, oon were affected more in majority of the cases.
- Siddha diagnosis was achieved with the help of envagai thervugal. In envagai thervugal, moothiram was affected in all of the cases,sparisam was also affected more in majority of the cases.
- Naadi showed vatha pitham, vaatha kabham and pitha vaatham.

- In neerkuri showed that all the patients had urinary deposits and colour of the urin was yellow, yellowish red in majority of cases. Foul smelling of uine was present in majority of the cases. Urine analysis showed all the cases had presence of pus cells.
- In neikuri, vaath neer55%, pitha neer25%,kabha neer20%.

Urine calture studies showed that the urinary tract infection is due to E-coli mainly and secondarily due to other organisms such as klebsielle proteus sps, staphylococcus sps and pseudomonoe, blood investigations showed raised ESR in all the patients.

40 cases were given the trial medicines. The response were assessed daily for the in patients and weekly once for the out patients and recorded in the proforma.

The patients responded to the medicines showing gradual decrease in signs and symptoms.

After treatment, the urine culture studies 75% of cases showed no growth.

The above mentioned results of the studies have given credence to the fact that the trial medicines act effectively in “Salathamba Vaatham”.

CONCLUSION

"Salathamha vaatham" is primarily due to the derangement of vaatham.Due to the variation in the intrinsic and extrinsic factors, the mukutram get deranged.

Since I observed that acute and chronic illeness. The trial medicine of santha naathy choornam which predominates with inppu suvai (man+neer) and comes under the inippu pirivu. Inippu pirivu balance the affected vaatham(vin+vali) when given internally acting as the principle of ethirurai.

In this, research, clinical results found to be satisfactory in 75% of cases.

- Clinically, the trial medicines were very effective to the suffering patients and relieved completely from the symptoms.
- Further follow up of all these patients showed efficacy of medicines in recurrent urinary tract infections also.
- Clinical study showed no adverse effects of trial medicines during the study period.
- So it is concluded that salathamba vaatham is well controllable by santhanaathy choornam along with neruchil –kotha malli kudineer.

LABORATORY INVESTIGATION REPORT-IP PATIENTS

Sl. No.	I.P. No.	Name	Age / Sex	Occupation	Date of Admission	Date of Discharge	TC Cells/cumm		DC						E S R (mm) /1hr		HB gm	
									BT			AT						
							BT	AT	P%	L%	E%	P%	L%	E%	BT	AT	BT	AT
1.	1815/8417	Munusamy	42/M	Coolie	19-11-07	10-12-07	9,700	9,800	60	34	6	62	31	3	20	5	11	11.5
2.	1844/9263	Mayavathy	50/F	Coolie	21-11-07	20-12-07	10,000	10,400	57	30	13	60	35	5	25	7	10	10.5
3.	2017/8635	Amsha	45/F	Coolie	17-12-07	03-01-08	9,700	10,800	52	42	6	64	33	3	25	5	10	10.5
4.	2072/1495	Santhamoorthy	54/M	Coolie	26-12-07	13-01-08	9,700	10,200	60	34	6	62	35	3	7	7	10.5	12.9
5.	2122/4116	Saravanan	26/M	Driver	03-01-08	25-03-08	9,400	9,800	59	35	6	60	36	4	25	20	11	11
6.	2340/5778	Pitchai	40/M	Coolie	07-02-08	01-03-08	9,800	9,900	60	34	6	62	35	3	18	9	11	11
7.	2365/7308	Chinnappa	52/M	Coolie	11-02-08	03-03-08	8,800	9,200	61	32	7	63	34	3	20	7	11.5	12
8.	2374/7757	Saraswathi	40/F	Cook	12-02-08	26-03-08	9,000	9,600	59	35	6	61	35	4	82	20	10	10.5
9.	2407/8910	Ramani	34/F	Coolie	15-02-08	03-03-08	10,000	10,200	62	33	5	62	34	4	160	40	10	10
10.	2417/9788	Chandra	50/F	Coolie	18-02-08	16-03-08	9,400	9,600	57	38	5	60	35	5	20	7	9.5	10
11.	2423/9955	Janaki Raman	51/M	Coolie	18-02-08	08-03-08	10,000	10,200	58	28	14	62	35	3	47	7	11	11
12	2474/1991	Sagunthala	65/F	Coolie	23-02-08	17-03-08	10,200	10,200	60	34	6	62	34	4	20	11	10	10.5
13.	2480/2759	Rajakumari	30/F	House Wife	25-02-08	07-03-08	9,800	10,000	60	34	6	62	35	3	52	9	10.5	11
14.	9437/1932	Kasthuri	43/F	House Wife	03-04-08	29-04-08	10,200	10,400	64	31	5	65	32	3	120	36	9.5	10
15.	2746/7789	Gowri	38/F	House Wife	04-04-08	02-05-08	9,000	9,600	59	35	6	62	36	3	60	11	9.5	10
16.	7774/9449	Sundramoorthy	52/M	Coolie	09-04-08	31-04-08	10,300	10,300	63	31	6	65	32	3	98	20	11	11.5
17.	7794/86	Shakila	37/F	House Wife	11-04-08	05-05-08	9,000	9,600	53	41	6	55	42	3	60	13	9	10
18.	2838/1845	Tamil Selvi	47/F	Cook	14-04-08	07-05-08	9,700	9,700	59	35	6	55	39	6	20	7	10.5	10.5
19.	2886/3435	Kavitha	30/F	House Wife	21-04-08	15-05-08	9,800	10,000	59	34	5	61	36	4	44	20	10.5	10.5
20.	2925/5070	Nirmala	33/F	House Wife	25-04-08	16-05-08	9,400	9,600	58	36	6	60	37	3	20	7	10	10.5

LABORATORY INVESTIGATION REPORT-OP PATIENTS

Sl. No.	O.P. No.	Name	Age / Sex	Occupation	Date of first visit	Date of last visit	TC Cells/cumm		DC						E S R (mm) /1hr		HB gm	
									BT			AT						
							BT	AT	P%	L%	E%	P%	L%	E%	BT	AT	BT	AT
1.	3262	Rajeswari	30/F	House Wife	3.2.07	6.3.07	10,800	10,800	60	34	6	62	35	3	44	7	11	12
2.	9010	Rafeek	25/M	Working	12.3.07	24.4.07	9,500	9,200	58	36	6	54	41	5	6	5	12	12
3.	5421	Indira	43/F	House Wife	28.3.07	3.5.07	9,200	9,600	58	36	6	60	36	4	20	7	9.5	10.8
4.	7596	Santha	52/F	House Wife	24.4.07	22.5.07	10,200	9,600	64	31	9	54	41	5	40	3	11	10.6
5.	5155	Kalavathi	29/F	Working	22.5.07	22.6.07	9,600	10,000	59	36	5	60	37	3	25	7	10.5	11
6.	3487	Savithri	46/F	House Wife	16.7.07		10,600	10,800	63	31	6	65	32	3	80	20	10.5	11
7.	519	GopalaKrishnan	25/M	Working	22.10.07	5.12.07	9,400	9,700	57	38	5	54	40	6	34	3	9.5	11
8.	2937	Shanmugathai	33/F	Working	31.10.07	5.12.07	9,000	9,700	55	41	4	55	47	4	46	20	10	9.5
9.	9250	Geetha	27/F	House Wife	21.10.07	20.12.07	9,600	9,500	57	38	5	58	32	5	38	15	10.5	10.5
10.	9295	Mohana	41/F	House Wife	21.11.07	8.1.08	9,400	9,100	55	36	9	58	36	6	25	30	10.5	10
11.	2336	Jeyanthi	34/F	Coolie	29.11.07	2.1.08	10,400	10,600	60	34	6	63	35	4	20	7	10.5	10.8
12	4951	Chandra	55/F	Coolie	6.12.07	3.1.08	10,200	9,600	62	33	5	60	35	5	20	7	10.5	10
13.	6521	Devaki	50/F	House Wife	11.12.07	8.2.08	9,700	8,700	55	41	6	54	41	5	60	44	10	9
14.	7885	Latha	51/F	House Wife	14.12.07	21.1.08	9,800	10,200	60	34	6	62	35	3	20	7	10.5	11
15.	8658	Gowri	45/F	Coolie	17.12.07	1.2.08	8,200	9,200	54	42	4	58	35	7	25	3	9	9
16.	9359	Kannan	58/M	Watchman	19.12.07	30.1.08	9,400	9,200	58	34	8	58	36	4	25	7	11	10
17.	4513	Pounammal	55/F	Coolie	4.1.08	30.1.08	8,700	9,200	58	35	7	60	37	3	86	48	9	11.8
18.	6766	Usha	28/F	Working	10.1.08	1.2.08	9,400	10,000	57	36	7	60	37	3	24	7	10	11.8
19.	8256	Nagaraj	42/M	Driver	13.2.08	11.3.08	8,800	9,200	58	36	6	60	37	3	15	7	10.5	11.6
20.	8943	Geetha vijayan	40/F	House Wife	12.3.08	20.3.08	8,400	9,600	59	35	6	61	36	3	46	7	10.5	11

LABORATORY INVESTIGATION REPORT – IP PATIENTS

Sl. No	I.P. No.	Bio Chemical Analysis (gm/dl)						Creatinine	Usg abd & Pelvis	Stool Examination				Urine Analysis							
		BT			AT					BT		AT		BT				AT			
		Sug	Urea	Cho	Sug	Urea	Cho			Ova	Cyst	Ova	Cyst	Alb	Sug	Dep	Culture	Alb	Sug	Dep	Culture
1.	1815/8417	71	25	186	80	19	179	0.8	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-6 Pu C	E-Coli	Nil	Nil	1-2 Pu C	No Growth
2.	1844/9263	88	21	165	90	20	165	0.6	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	1-2 Pu C	No Growth
3.	2017/8635	38	25	159	98	28	172	0.7	Lt R Cys	Nil	Nil	Nil	Nil	Nil	Nil	FEC	Klebsella	Nil	Nil	FEC	No Growth
4.	2072/1495	89	19	162	98	23	153	0.8	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-4 Pu C	E-Coli	Nil	Nil	2-4 Pu C	No Growth
5.	2122/4116	89	19	179	94	18	168	0.5	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-3 Pu C	E-Coli	Nil	Nil	2-3 Pu C	No Growth
6.	2340/5778	98	27	206	99	23	200	0.6	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-6 Pu C	Klebsella	Nil	Nil	1-2 Pu C	No Growth
7.	2365/7308	98	26	215	102	19	193	0.8	Prost	Nil	Nil	Nil	Nil	Nil	Nil	O-Pu C	Proteus	Nil	Nil	FEC	Pro Growth
8.	2374/7757	138	23	200	125	21	179	0.7	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-8 Pu C	E-Coli	Nil	Nil	No Pus	E-Coli Gro
9.	2407/8910	133	22	170	140	23	173	0.6	Pid	E-h	Nil	Nil	Nil	Nil	Nil	2-6 Pu C	Klebsella	Nil	Nil	No Ec	No Growth
10.	2417/9788	105	25	163	102	23	160	0.7	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-8 Pu C	E-Coli	Nil	Nil	2-3 FEC	No Growth
11.	2423/9955	110	23	172	123	18	169	0.8	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-6 Pu C	Staphylo	Nil	Nil	FEC	Staphy Gro
12.	2474/1991	85	26	193	85	23	190	0.6	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	O-Ec	No Growth
13.	2480/2759	108	19	173	98	20	165	0.8	Pid	Nil	Nil	Nil	Nil	Nil	Nil	O-Pu C	Proteus	Nil	Nil	O-Ec	Pro Growth
14.	9437/1932	98	21	180	85	19	176	0.8	Cyst	Nil	Nil	Nil	Nil	Nil	Nil	2-2 Pu C	E-Coli	Nil	Nil	O-Ec	No Growth
15.	2746/7789	84	18	179	93	19	165	0.8	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-2 Pu C	E-Coli	Nil	Nil	2-3 Pu C	No Growth
16.	7774/9449	105	29	218	98	23	193	0.7	N-S	E-h	Nil	Nil	Nil	Nil	Nil	2-8 Pu C	E-Coli	Nil	Nil	2-3 Pu C	No Growth
17.	7794/86	92	21	170	87	18	165	0.6	Pid	Asc	Nil	Nil	Nil	Nil	Nil	2-8 Pu C	E-Coli	Nil	Nil	2-3 Pu C	No Growth
18.	2838/1845	85	22	178	143	24	195	0.7	Pid	E-h	Nil	Nil	Nil	Nil	Nil	O-Pu C	Klebsella	Nil	Nil	2-3 Pu C	No Growth
19.	2886/3435	86	19	162	93	18	163	0.8	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-8 Pu C	Staphylo	Nil	Nil	2-3 Pu C	Staphy Gro
20.	2925/5070	88	24	187	91	19	160	0.6	N-S	Nil	Nil	Nil	Nil	Nil	Nil	2-8 Pu C	Klebsella	Nil	Nil	2-3 Pu C	No Growth

Sug – Sugar: Cho – Cholesterol: Crea – Creatinine: Alb – Albumin: Dep- Deposits: Occ – Occasionally Epithelial Cells: Occpc – Occasionally Pus Cells: Few Pu – Few Pus Cells: Few Ec- Few Epitheline Cells: Usg – Ultrasonogram: Cul – Culture: BT - Before Treatment: AT – After Treatment

LABORATORY INVESTIGATION REPORT – OP PATIENTS

Sl. No	O.P. No.	Bio Chemical Analysis (gm/dl)						Creatinine	Usg abd & Pelvis	Stool Examination				Urine Analysis							
		BT			AT					BT		AT		BT				AT			
		Sug	Urea	Cho	Sug	Urea	Cho			Ova	Cyst	Ova	Cyst	Alb	Sug	Dep	Culture	Alb	Sug	Dep	Culture
1.	3262	95	18	169	103	19	172	0.6	Cystitis	Nil	Nil	Nil	Nil	Nil	Nil	F-Pc	E-Coli	Nil	Nil	2-3 Pu C	No Growth
2.	9010	75	19	160	96	26	189	0.7	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	FEC	No Growth
3.	5421	85	19	180	90	23	169	0.6	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	FPC	Strepto Gro
4.	7596	96	26	196	128	19	200	0.7	+Rus-Ur	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	FEC	No Growth
5.	5155	93	27	179	105	23	189	0.8	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	No Pus	No Growth
6.	3487	96	23	178	103	23	169	0.7	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	FEC	No Growth
7.	519	90	16	185	99	23	149	0.8	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	FPC	No Growth
8.	2937	105	26	186	94	21	176	0.5	N-S	Nil	Nil	Nil	Nil	Nil	Nil	O-Pu C	E-Coli	Nil	Nil	FEC	No Growth
9.	9250	98	20	182	95	20	182	0.5	Cystitis	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	FEC	No Growth
10.	9295	82	23	179	162	28	196	0.5	N-S	Nil	Nil	Nil	Nil	Nil	Nil	O-Pu C	E-Coli	Nil	Nil	O-Ec	No Growth
11.	2336	85	21	170	83	19	165	0.7	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	FEC	No Growth
12.	4951	86	29	205	102	23	160	0.8	N-S	E-h	Nil	Nil	Nil	Nil	Nil	FEC	E-Coli	Nil	Nil	2-3 Pu C	No Growth
13.	6521	95	25	194	117	24	183	0.7	N-S	Nil	Nil	Nil	Nil	Nil	Nil	FEC	Klebsella	Nil	Nil	2-3 Pu C	No Growth
14.	7885	110	23	168	105	19	163	0.8	Hepto	Nil	Nil	Nil	Nil	Nil	Nil	8-10 Pu	E-Coli	Nil	Nil	FEC	No Growth
15.	8658	105	26	158	95	27	192	0.6	Min-Fl+	Asc	Nil	Nil	Nil	Nil	Nil	O-Pu C	E-Coli	Nil	Nil	2-3 Pu C	E-Coli Gro
16.	9359	126	23	182	108	27	182	0.7	N-S	Nil	Nil	Nil	Nil	Nil	Nil	O-Pu C	Klebsella	Nil	Nil	2-3 Pu C	No Growth
17.	4513	121	25	185	121	25	185	0.8	Cystitis	Asc	Nil	Nil	Nil	Nil	Nil	O-Pu C	Klebsella	Nil	Nil	2-3 Pu C	Klebsella
18.	6766	85	18	169	93	16	170	0.7	N-S	E-h	Nil	Nil	Nil	Nil	Nil	O-Ec	Klebsella	Nil	Nil	O-Ec	No Growth
19.	8256	81	28	192	90	26	176	0.8	N-S	Asc	Nil	Nil	Nil	Nil	Nil	O-Pu C	E-Coli	Nil	Nil	O-Ec	No Growth
20.	8943	93	17	173	95	16	185	0.5	N-S	E-h	Nil	Nil	Nil	Nil	Nil	O-Pu C	E-Coli	Nil	Nil	FEC	No Growth

Sug – Sugar: Cho – Cholesterol: Crea – Creatinine: Alb – Albumin: Dep- Deposits: Occ – Occasionally Epithelial Cells: Occpc – Occasionally Pus Cells: Few Pu – Few Pus Cells: Few Ec- Few Epitheline Cells: Usg – Ultrasonogram: Cul – Culture: BT - Before Treatment: AT – After Treatment