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A MULTIFACTORIAL APPROACH TO MANAGEMENT OF CKD DUE TO STRUVITE STONES

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ABSTRACT

Struvite stone is composed of magnesium, ammonium phosphate and calcium carbonate. These are mostly caused by bacterial infection that hydrolyze urea to ammonium raising urine pH to neutral or alkaline values. Association of phosphate calculi with infection, alkaline or ammoniacal urine form recurring hard to clear stones causing severe pain. Urea-splitting organisms are *Staphylococcus*, ***Pseudomonas, Proteus, Klebsiella*** *and Mycoplasma* .A four year analysis of 322, 448, 518 &553 between2011 & 2014 was taken to study the season wise symptoms, causes, treatment and prevention. **Case studies of 5**6 year old lady with ***Klebsiella infection& Hydronephrosis with (Kidney L/B ratio<2)***, 70 year old male suffering from ***Hematuria &*** urinary infection due to ***Pseudomonas***, 65 year old male officer with **Prostate enlargement** and post operative **Hematuria ,** 46 year old male with flank pain & **Proteus infection** and 25 year old female having Pregnancy induced excretion of **urease inhibitors** gave a clear picture of the possible causes.Correlation coefficients of seasonal occurrence of SKD in comparison with total calculi gave a Positive ' r' value of.0.9 and positive linear regression slope 1. In the year 2013, a total of 119 herbal respondents with a history of clearance of Kidney stones with Herbal treatment of Rajendra Herbal Research centre were subjected to an analysis of CKD in relation to Left/Right Kidney size and Length/Breadth ratio<2. 65 belonging to Madurai- Sivagangai Districts and 54 respondents belonging to Theni- Dindigul districts were analysed with the USG reports presented before commencement of treatment.

The results were tabulated as percentage of Single Kidney (Right/ Left) size with ratio< 2 and both the kidneys with ratio < 2 showing SKD**.** A multifactorial approach to management and successful treatment of CKD due to Struvite stones is provided. Arresting Pain with Rajendra Kidney formula (RKF), Control of Sugar (Rajendra Diabet dose), Magneto herbal treatment (Integrated Magneto formula)Treatment for Fatty liver (Rajendra Cholopack), Clearance of Struvite stone (RSF herbal treatment) and management with Immunity boosters.

KEYWORDS: Chronic Kidney Disease(CKD), Struvite Kidney Stone Disease., Hydronephrosis.

INTRODUCTION

Chronic kidney disease (CKD) needs screening for early detection, evaluation, and treatment. Urolithiasis refers to the presence of stones in the urinary bladder, the urethra or in the kidneys. While some forms of the stones can be flushed out or dissolved, others must be removed surgically. The metabolic syndrome had been evaluated as ***Diabetes mellitus*** (DM) having fasting plasma glucose >120 or PPBS>160 mg%**,** ***Hypertension*** with systolic blood pressure >140 mm Hg or diastolic blood pressure >90 mm Hg**.,** ***Proteinuria*** 1+and above, ***Hematuria,*** prolonged use of nonsteroidal anti-inflammatory analgesics,smoking and ***Obesity*** having body mass index >30Kg/m^2 with glomerular filtration rate [eGFR] < 60 mL/min/1.73 m^2 or ***urine albumin-creatinine ratio*** > 30 mg/g. The prevalence of CKD had been reported as 11.4% in Nigeria.In a systematic review of 26 studies in different populations by **Zhang *et al* in 2008**, the median prevalence of CKD was 7.2% in persons aged 30 years or older and in persons aged 64 years or older, prevalence varied from 23.4 to 35.8%. Facilities for renal replacement therapy exist, but cost and affordability are real issues. This public health problem is of serious concern To tackle the problem of limited access to renal replacement therapy, an important approach is to reduce the incidence of end-stage renal disease by preventive measures and to cut down the cost of treatment procedures. Further research will be much appreciated if cohort studies and clinical trials are taken up. Management of Diabetic Kidney Disease Clinical Challenges in Diagnosis and treatment had become a complicated process since 1950. Diabetes and hypertension had become leading causes of CKD in **(*CAO ,et al 2012*)** not only Chinese elderly patients but also in South Indians between the age group 21-70 The incidence of the disease had been on the rise **(Robert C Stanton,2013)**.

A kidney stone is a solid mass made up of tiny crystals. One or more stones can be in the kidney or ureter at the same time. Stones can form when urine contains too much of certain substances that form crystals. These crystals can develop into stones over weeks or months.Calcium can combine with other substances to form the stone**. Calcium Oxalate** the common stone found mostly in men is present in certain foods such as spinach and in vitamin C supplements. Diseases of the small intestine increase the risk of these stones. Calcium stones can also form combining with phosphate or carbonate. **Cystine** stones can form in people who have cystinuria. This disorder runs in families. It affects both men and women. **Struvite** stones are mostly found in women who have an urinary tract infection. These stones can grow very large and can block the kidney, ureter, or bladder.**Uric acid** stones are more common in men than in women. They can occur with gout or chemotherapy. Other substances such as certain medicines also can form stones.The biggest risk factor for kidney stones is not drinking enough fluids.

Kidneys filter waste from blood and conserve or excrete water depending on the body's needs. Urine is the product of this filtration and renal tubular function.Urine passes through tubes called ureters, which lead to the bladder. Bladder stores urine and exit through the urethra. Kidney infection usually begins when bacteria enter the urinary tract through the urethra or from colon and multiply. Bacteria in the urine that don't cause any signs of infection or harm exhibit a condition known as asymptomatic bacteriuria.Struvite is a material that is composed of magnesium ammonium phosphate and calcium carbonate. Normal urine is undersaturated with ammonium phosphate, and struvite stone formation occurs only when ammonia production is increased and the urine pH is elevated to decrease the solubility of phosphate. The only situation in which this occurs in humans is with an upper urinary tract infection with a urease-producing organism, such as ***Proteus or Klebsiella.***

Symptoms & causes

The main symptom is severe pain that starts suddenly and may go away suddenly. Pain may be felt in the belly area or side of the back and move to groins. Change of urine colour ,blood in Urine (Hematuria), Chills, Fever, Nausea and fever are few other symptoms. Struvite stones are mostly caused by bacterial infection that hydrolyze urea to ammonium and raising urine pH to neutral or alkaline values. *Proteus, Pseudomonas,* Mycoplasma *Klebsiella,*and *Staphylococcus are a few ura* splitting organisms. 85% of patients reported with struvite

bladder stones are females. Struvite stones, are also known as triple-phosphate, infection or infection-induced, phosphatic, and urease stones. Urea-splitting bacteria were responsible for urinary ammonia, alkalinity, and stone formation.

Struvite stones are invariably associated with urinary tract infections. Specifically, the presence of urease-producing bacteria . *Escherichia coli* cannot not produce urease and is not associated with struvite stone formation. Other common bacteria that have not been shown to produce urea include *Citrobacter, Enterococci, and streptococci.* The resulting increase in ammonium and phosphate concentrations combined with the alkaline urine (pH >7.2) is necessary for struvite and carbonate apatite crystallization. Magnesium ammonium phosphate ($MgNH_4\ PO_4 \bullet 6H_2\ O$) crystals are admixed with carbonate apatite ($Ca_{10}\ (PO_4)\ 6 \bullet CO_3$).

Struvite calculi account for up to 30% of urinary tract stones worldwide. They are found more frequently in women and in persons older than 50 years, increased risk of recurrent or persistent urinary tract infections. Accordingly, treatment of struvite stones must also address the source of these infections. Infection stones generally grow rapidly, and remaining stone material may serve as a nidus for future stone formation. Even after complete stone removal, struvite stones recur.

$H_2\ NCONH_2 + H_2\ O \rightarrow 2NH_3 + CO_2\ 2NH_3 + H_2\ O \rightarrow 2NH_4^+ + 2OH^-$ (increase pH >7.2)$CO_2 + H_2\ O \rightarrow H^+ + HCO_3 \rightarrow 2H^+ + CO_3^{2-}$

Kidney infection may cause frequent urination, painful micturition , Pus or blood in the urine (hematuria)Abdominal pain or pressure, cloudy urine with a strong odor ,urine retention, Back, side (flank) or groin pain,fever etc. Drinking plenty of fluids, especially water & berry juice may have infection-fighting properties,Shower bath principle, avoiding taking bath in standing water ponds, gentle wash avoiding too much of detergents,and avoiding skin irritants could prevent infection. Severe infection also cause extreme fatigue, nausea, vomiting, night sweats and confusion. In children loss of appetite and eneuresis might be due to infection. kidneys are intimately associated with many nearby organs. On the right side, the liver on the left side the spleen may be injured during percutaneous renal access. On both sides, the colon has retroperitoneal portions. ***Pyelonephritis*** is acute bacterial infection of the kidneys, due to the ascent of bacteria from the bladder up the ureters and kidneys. Recurrent kidney infections may result from urologic abnormalities causing infections. Although there have been significant improvements in management, the increasing numbers

of patients with SKD illustrate that current management is not wholly adequate. There are a number of challenges and controversies regarding the current management of patients. The number of patients who develop SKD and the number of patients with progressive CKD continue to increase. Study participants with **Diabetes** benefit with a low-protein diet diet (<0.6-8 g/kg/d), reduced protein supplements and weight-loss diets associated with reduced phosphate, sodium, and fat intake. All patients with CKD should cease smoking. Research during the past 20 years has led to major advances in treatment procedure and Diet .Current approaches are still not adequate.

METHODOLOGY

Five case studies of herbal respondents with struvite stones known to suffer for more than four years had been taken for case analysis and integrated herbal multifactorial study and treatment.

Case study 1.

Problem under study (*Klebsiella infection & Hydroureteronephrosis* ***Kidney L/B ratio <2)*** Preliminary history: 56 year old Chennai based lady was having complaints of **abdominal pain,loin to groin pain** for four days with vomiting , fever chills and rigors. **Burning micturition** was reported due to right renal pyelonephritis and **right renal calculi** .The patient had been **operated for renal stone 30 years back** and since then had not been reported for treatment of diabetes,hypertension, tuberculosis or bronchial asthma. Routine blood Examinations had shown Hb-13.1mg /dl, Tc- 14200,Ploatelet count 2.05,**RBS-194, FBS 160& PPbs 181**. Liver and Renal profiles were normal. Urine culture showed ***Klebsiella pneumoniae*** count of 1,00,000 cfu/ml. **Urine tests** reported negative results for sugar,albumin and ketone with positive results of **pus cells, RBCs and epithelial cells**. USG abdomen done showed ***right Hydroureteronephrosis of size 10.6 x 6.6 cm*** with peripheric fluid collection , ***Small 4mm stones*** in the proximal ureter, and ***hepatomegly*** with fatty liver . ***30mm/ hr. ESR*** had been reportd.

Patient had been discharged with an ***advice to undergo stenting***. Except *Chloride* all other parameters were at the minimum level, when **the patient opted for a cost effective herbal treatment at Rajendra Herbal research centre.**

Assessment: - CKD -Struvite stones

Diagnosis & Treatment procedure

- **Phase 1 :** Arresting Pain ,vomiting ,and **Burning micturition** (Rajendra Kidney formula RKF)
- **Phase 2** : Control of Sugar (Rajendra Diabet dose)
- **Phase 3** : Magneto herbal treatment (Integrated Magneto formula)
- **Phase 4** : Treatment for Fatty liver (Rajendra Cholopack)
- **Phase 5 :** Clearance of the agonizing hard to clear Struvite sTone (6 weeks Dietopathy RSF herbal treatment ,free normal active lifestyle without admission or rest).
- **Phase 6** : preventive reoccurrence treatment for two weeks based on complaints (RIF).

Criteria for assessment

- Burning micturition
- Loin to Groin Pain
- Fatty Liver
- Kidney size & L/B ratio <2.00 (1.61)
- Optimum chloride level , RBS-194, FBS 160& PPbs 181
- Urine culture report on the presence of ***Klebsiella pneumoniae/proteus***
- Urine test report on the presence of RBC,Pus cells &Epithelial cells.

Case Study 2: Problem under Study**(Hematuria *and*** urinary infection due to ***Pseudomonas***) 70 year old male reported for kidney stone herbal treatment after two shock wave Lithotripsy within a span of one year . With a normal Liver, gall bladder,spleen and pancreas, the lower pole of right kidney exhibited two intrarenal stones of 8mm in the middle and lower poles and the left kidney had a stone measuring 7 mm in size. The urinary bladder had a mobile struvite stone of 22 mm size and significant residual urine of 131 cc. The prostate showed enlargement with a volume of 32cc. The patient reported painful micturition in quick succession and uneasiness during sleep. He was free of cholesterol ,sugar hyper tension. Had no ascites or Sonologically detectable bowel abnormality as per reports. Had clean habits and does not smoke or drink.

- **Phase 1.** RKF The patient responded well to the treatment procedure for four weeks with diet restriction. Repeat scan showed the mobile stone of the urinary bladder in tact.

- **Phase 2. RSF -Rajendra struvite formula** Urine culture and urine analyses showed pus cells,10-12 /hpf RBC and Epithelial cells with heavy infestation of ***E-coli , Klebsiella and Pseudomonas***. On further interrogation , it was noted that he had a regular habit of taking bath in a channel in his place and eating at least 4 bananas and a cup of fresh milk without boiling.
- **Phase3**. **RIF** Immunity Booster in addition to Rajendra Kidney formula .The patient was given Immunity boosters and Anti bacterial agents in the form of Surana . The patient recorded nil bacteria in culture and pus cells RBCS and Epithelial cells were absent in the blood reports.
- **Phase 4**. The size of the calculus got reduced but Knee pain was noted. His ESR results were above normal limits > 40per hour . The patient was advised to report recurrence of the symptoms or pain.

Main Symptom. Excruciating pain in the abdomen due to **Klebsiella & Pseudomonas infection**

Cause: Habitual bath in water poolsand drinking unsterilized fresh milk.

Case study 3: Problem under study (Prostate and post operative hematuria)

65 year old Male officer who had undergone Piles surgery and Lipoma excision in the near past reported with severe left flank pain for 3 consecutive days. His USG abdomen done showed 8mm stone at Pelvic Uretero junction. Patient had been evaluated with blood,urine and had complained of colic and hematuria with 10-12/hpf. Extracorporeal Shock wave Lithotripsy had been performed. RBS had been 198mg/dl,ionized calcium was low 4.3mg/dl,Urea level was higher than normal 45 mg/dl, creatinine was 1.6mg/dl eGFR was less than 60 showing mild dysfunction. Right kidney showed L/B ratio 2.149 and Left Kidney 1.945. There was persistent urinary infection. Left PCs was dilated with a post operative calculus measuring 13mm in the PUjunction. Prostate had a volume of 116cc showing gross enlargement. PSA was high as 40mg/dl .Residual urine was 150ml.Bactriuritrie reported.

- **Phase 1.** RKF -The patient responded well to the treatment procedure and got relieved of the flank pain within ten minutes with the application of ECAM oil and magnetic treatment. After three weeks repeat scan showed a stone free kidney with no hydronephrosis.
- **Phase 2. RSF -Rajendra struvite formula**

- **Phase3** . **RIF** Immunity Booster in addition to Rajendra Kidney formula .The patient was given Immunity boosters and Anti bacterial agents in the form of Surana .

Symptom: Flank pain, Nausea, vomiting & hematuria.

Cause: Post operative calculus measuring 13mm in the PUjunction and persistent urinary infection due to stationary occupational hazard.

Case study 4. (Problem under Study (Proteus species infection)

46 year old male clinically showing no sign of Kidney stone had all symtoms of Struvite stone with severe flank pain, Abdominal discomfort, nausea, vomiting and intermittent cough and painful micturition . Haematological report s gave normal counts of RBCs WBCs and Platelets with an impression of toxic granulations. RBC was 12.4gms%, WBC /Dc Poly 71% lymph 25 % and Eosino 04%.RBS was 113mg% Blood urea 26 mg% Total bilirubin 0.7%. Chest X ray PA view showed soft tissue shadow, Bony parts Aorta and Heart within normal limits. Increased Broncho vascular markings gave an impression of Bronchitis . 15-20 pus cells and in the final urine culture and sensitivity test with an incubation period of 24 hours scanty growth of ***Proteus*** species less than 20,000 cfu/ml with high sensitivity to Amikacin, Levofloxacin and tetra cyline was reported. After recurring events of similar pain ,vomiting and severe flnk pain in2012, twice in 2013 and twice in 2014 ,the patient presented as a herbal respondent.

- **Phase 1. RBF-** Rajendra bronchial Formula cleared the basic symptoms.
- **Phase 2.** RKF -The patient responded well After three weeks USG scan showed a 4mm mobile stone in the Urinary Bladder with hydronephrosis.
- **Phase 2. RSF -**Rajendra struvite formula was administered
- **Phase3**. **RIF** Immunity Booster in addition to Rajendra Kidney formula .The patient was given Immunity boosters and Anti bacterial agents in the form of Surana .

Symptom: Flank pain, Nausea, vomiting

Cause: Growth of ***Proteus species*** in the urinary bladder.

Case study 5: PROBLEM UNDER STUDY (Pregnancy induced excretion of urease inhibitors)

25 year old female during her primipara had a severe painful urinary infection. And then on had been reporting constant urinary complaints and had been managing due to pregnancy.

In the second delivery she had severe stitching pain though a normal dlivery and then on had been under medication for pain relief.

- **Phase 1.** The young mother was counseled on her stress Skd and was advised to take RKF.
- **Phase 2. RSF** -Rajendra struvite formula was administered
- **Phase 3 . RBF**- Rajendra bronchial Formula cleared all other symptoms.
- **Phase 4.** RKF -The patient responded well and since the kidney showed hydronephrosis, the investigator is yet to give RIF as the final dose if required.

Patients should be exhibiting no symptoms, on a controlled diet., and following their usual lifestyle activities when such a study is performed for eight weeks.

Study groups

A small population of Herbal respondents in different months of the years 2011,2012,2013 &2014 were calculated and season wise calculation was made for statistical analysis of seasonal average ,Correlation co-efficient 'r' and regression line equation 'y' and one way and two way Anova T tests were applied to find out the 'F ' value towards assessing the probability and significance . The one-way analysis of variance (ANOVA)was used to determine whether there were any significant differences between the means of two or more independent (unrelated) groups .SPSS software was used for the purpose.

The quantity *r*, called the *linear correlation coefficient*, measures the strength and the direction of a linear relationship between two variables using the formula.

$$r = \frac{n\sum xy - \left(\sum x\right)\left(\sum y\right)}{\sqrt{n\left(\sum x^2\right) - \left(\sum x\right)^2}\sqrt{n\left(\sum y^2\right) - \left(\sum y\right)^2}}$$

n is the number of the pairs of data.

'r' was calculated for the number of Struvite stones and total calculi in varying seasons of the year for all the four study years . The + and – signs are used for positive linear and negative linear correlation If *x* and *y* have a strong positive linear correlation, *r* is close to +1. An *r* value of exactly +1 indicates a perfect positive fit. Positive values indicate a relationship between *x* and *y* variables,when such values for *x* increases values for *y* also increase. *Pearson product moment correlation coefficient* is negative if the 'r' value is -1.

One way and two way anova were calculated The F ratio is computed by creating a ratio of the between groups variance to the within group variance.

$$F = \frac{\text{MS (Factor)}}{\text{MS (Error)}}$$

The degrees of freedom for the numerator are $r - 1$. The degrees of freedom for the denominator are $n_T - r$. nt=total number of observations r = number of factor levels.

In the year 2013,a total of 119 herbal respondents with a history of clearance of Kidney stones with Herbal treatment of Rajendra Herbal Research centre were subjected to an analysis of CKD in relation to Left/Right Kidney size and Length/Breadth ratio . 65 belonging to Madurai- Sivagangai Districts and 54 patients belonging to Theni- Dindigul districts were analysed with the USG reports presented before commencement of treatment. The results were tabulated and the percentage with Single Kidney (Right/ Left) size with ratio< 2 and both the kidneys with ratio <2 were calculated.

RESULTS & DISCUSSION

A total of1841 patients reported recurrence of CKD in the past 14 years. Some of them had undergone repeated Lithotripsies and many were suffering from struvite stones as a chronic Kidney disease. Monthwise record of these patients clearly showed an average of 54.335 in Jan-march season and 51.013 % in July- Sept considered to be busy months with less tours and extravagance. In the April –June holiday season,entertainments,Picnics to water Games and falls area had put 67.47% of people under struvite grip.Similarly the festal season Oct-Dec had 59.256 % Struvite Kidney disease(SKD). 60.49±5.815percentage of total KSD in the year 2011, 59.913± 8.643% in the year 2012 and 59.523±8.103% in 2013 and 57.098± 1.079 in 2014 gave an alarming average of 59.256± 6.581 % (2011-2014)of struvite sufferers opting for the cost effective ,less miserable Herbal treatment.This had been in line with the govt Hospital records . Correlation coefficients of seasonal occurrence of SKD in comparison with total calculi gave a Positive ‘r’ value of.0.9 and positive linear regression slope 1.

Correlation Coefficient of struvite and total calculi occurrence in four seasons (2011)

The correlation coefficient is: r=0.974

The equation of the regression line y = 10.169+1.498.x

Correlation Coefficient of struvite and total calculi occurrence in four seasons (2012)

The correlation coefficient is: r=0.974

The equation of the regression line $y = 46.346 + 1.216 \cdot x$

Correlation Coefficient of struvite and total calculi occurrence in four seasons (2013)

The correlation coefficient is: r=0.970

The equation of the regression line $y = 68.039 + 1.106 \cdot x$

Correlation Coefficiency of struvite and total calculi occurrence in four seasons (2014)

The correlation coefficient is: r= 0.908

The equation of the regression line $y = 92.94 + 1.044 \cdot x$

Case studies of 56 year old lady with ***Klebsiella infection& Hydronephrosis with (Kidney L/B ratio<2)***,70 year old male suffering from ***Hematuria &*** urinary infection due to ***Pseudomonas***, 65 year old male officer with **Prostate enlargement** and post operative **Hematuria,** 46 year old male with flank pain & **Proteus infection** and 25 year old female having Pregnancy induced excretion of **urease inhibitors** gave a clear picture of the possible causes. In the year 2013,a total of 119 herbal respondents with a history of clearance of Kidney stones with Herbal treatment of Rajendra Herbal Research centre were subjected to an analysis of CKD in relation to Left/Right Kidney size and Length/Breadth ratio<2. 65 belonging to Madurai- Sivagangai Districts and 54 respondents belonging to Theni- Dindigul districts were analysed with the USG reports presented before commencement of treatment. The results were tabulated. The percentage of Single Kidney (Right/ Left) size with ratio< 2 and both the kidneys with ratio < 2 showed SKD**.** Right Kidney exhibited 9.2% of <2 results,Left kidney had 20% <2 value and 6.5% had both the Kidneys Expressing Hydronephrosis in the respective Kidneys.in the Theni- Dindigul group,7.40% had hydronephrosis confimed by the concept that Kidney size L/B ratio when gave <2 results had struvite stones.37% left kidneys and 12.9% right kidneys had hydronephrosis giving an idea that Theni- Dindigul Districts were more affected by SKD than patients from Madurai- Sivagangai Districts. This concept onKidney L/B ratio needs more studies on Medical Ultrasonic Image Processing.

The case studies presented highlighted the multifactorial treatment procedure.

Phase 1: (Rajendra Kidney formula RKF) Arresting Pain,vomiting and B **urning micturition.**

Phase 2 : Control of Sugar (Rajendra Diabet dose)

Phase 3 : Magneto herbal treatment (Integrated Magneto formula)

Phase 4 : Treatment for Fatty liver (Rajendra Cholopack)

Phase 5 : Clearance of Struvite stone (6 weeks Dietopathy + RSF herbal treatment ,free normal active lifestyle without admission or rest).

Phase 6 : Preventive reccurrence treatment (Rajendra Immunity Formula)

Randomised trials had been carried out in patients with hypertension,microalbumiuria and non-insulin dependent diabetes by *Mogensen et.al.,(2000).* .More studiesare needed on Role for Weight Loss in DKD .Obesity has been observed to be a clear risk factor for kidney disease and is associated with increased lipid levels, hypertension, endothelial cell dysfunction, and other metabolic abnormalities. Factors associated with obesity, such as release of inflammatory mediators from visceral fat cells and resolution of albuminuria following bariatric surgery.has been reported. *Couser et al.,* (2011) had viewed Chronic Kidney disease as a global burden of major non communicable diseases. Sardine and shell fishes, red meat and beer had caused a major problem in 41-50 age group. Lemon juice stimulated Calcium carbonate formation, thereby neutralising urease and uric acid. More intake of plain water had helped in dissolving ammonia which had caused a foul smell to urine. Solanum nigrum had been functioning as ideal antimicrobial agent(*Subramanian Ramya et al*,2012). From January 1999 to December 2009, In vitro antibacterial studies on the leaf extracts *of Solanum nigrum* were carried out on selected bacterial strains *Staphylococcus aureus, Bacillus subtilis, Salmonella typhi, Klebsiella* . Polar or the aqueous extracts may be the best solvent system in extracting drug principle from S. nigrum leaf extracts exhibiting maximum antibacterial activity against the selected microbial strains (Zubair et al .,2011) *Staphylococcus aureus, Bacillus subtilis, Salmonella typhi, Klebsiella pneumoniae*,

Table 3: KidneySize-Length/breadth ratio

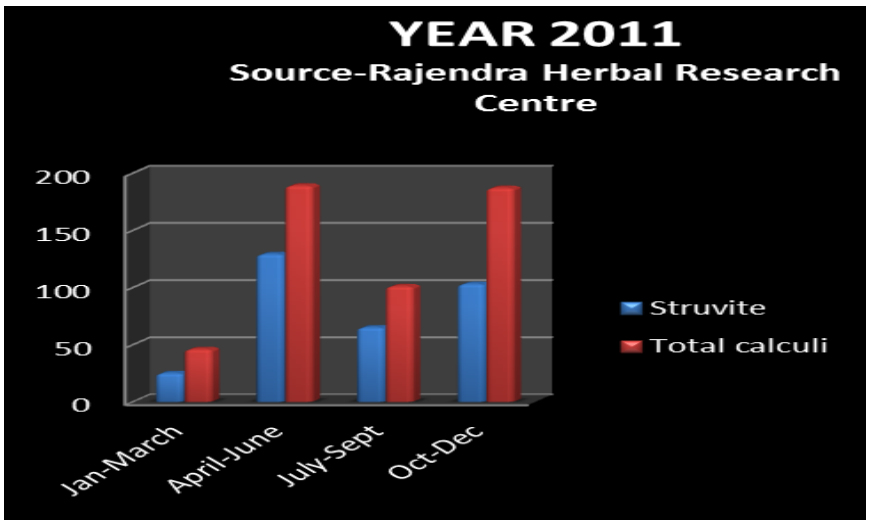
Madurai-Sivagangai (65)	number	percentage	Then-Dindugal	number	percentage
Left kidney ,<2	13	20	Left kidney ,<2	20	37
Right kidney<2	6	9.2	Right kidney<2	7	12.9
Both<2	4	6.15	Both<2	4	7.4
Ca ox stones >2	49	75.5	Ca ox stones >2	32	59.2
Struvite	16	24.5	Struvite	22	40.8

Table 4: Number of struvite stones recorded and cleared With track record of case histories

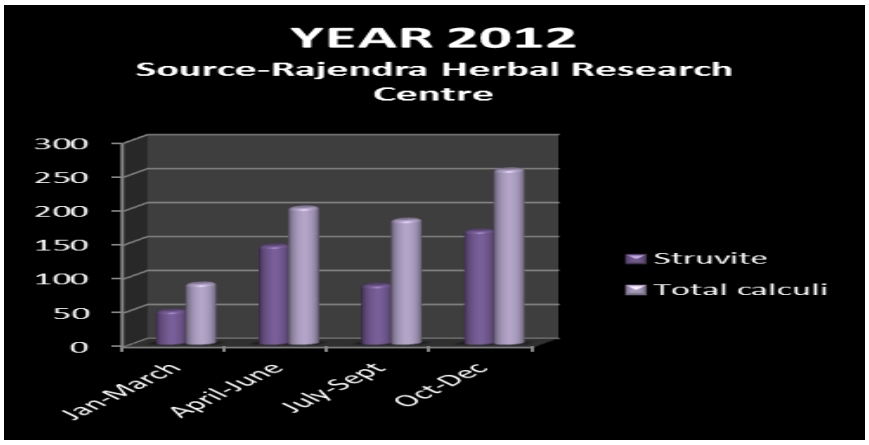
S.No.	Age range	No.presented	Remarks
1	21-30	4	3 Cleared
2	31-40	10	10 Cleared
3	41-50	7	7 Recurring
4	51-50	4	2 Other problems
5	61-70	3	2 cleared
T0tal		28	24 (86%)

Table 1 -Occurrence of Sruvite stones(2011-2014)

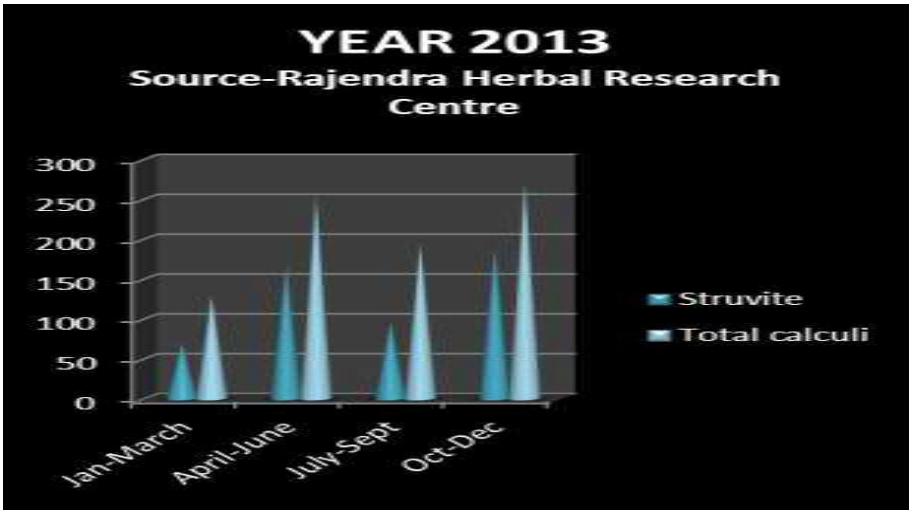
YEAR 2011			
	Struvite	**Total calculi**	**%Struvite**
Jan-March	25	46	54.34
April-June	129	189	68.25
July-Sept	65	101	64.35
Oct-Dec	103	187	55
MEAN	80.5	130.75	60.485
S.D	45.38355	69.8206	6.906029
error	13.1	20.1	
SEM	80.5±13.1	130.75±20.1	



YEAR 2012			
	Struvite	**Total calculi**	**%Struvite**
Jan-March	49	89	55
April-June	145	201	72.13
July-Sept	87	183	47.54
Oct-Dec	167	257	64.98
	112	182.5	59.9125
	53.8764	69.84507	10.83449
	15.55	20.1	
	112±15.5	182.5±20.1	



YEAR 2013			
	Struvite	**Total calculi**	**%Struvite**
Jan-March	69	128	53.9
April-June	167	253	66
July-Sept	95	194	48.94
Oct-Dec	187	270	69.25
	129.5	211.25	59.5225
	56.45942	64.34995	9.664093
	16.29	18.5	16.29
	129.5±16.29	211.25±18.5	



YEAR 2014			
	Struvite	**Total calculi**	**%Struvite**
Jan-March	79	146	54.1
April-June	174	274	63.5
July-Sept	102	236	43.22
Oct-Dec	198	293	67.57
	138.25	237.25	57.0975
	56.78248	65.28591	10.83567
	16.39	18.8	
	138.25±16.39	237.25±18.8	

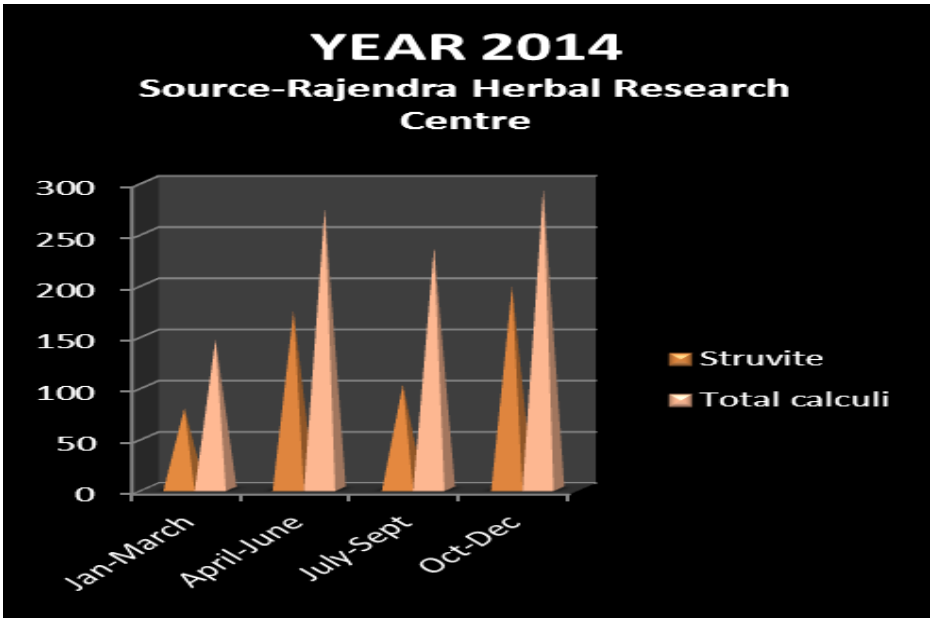
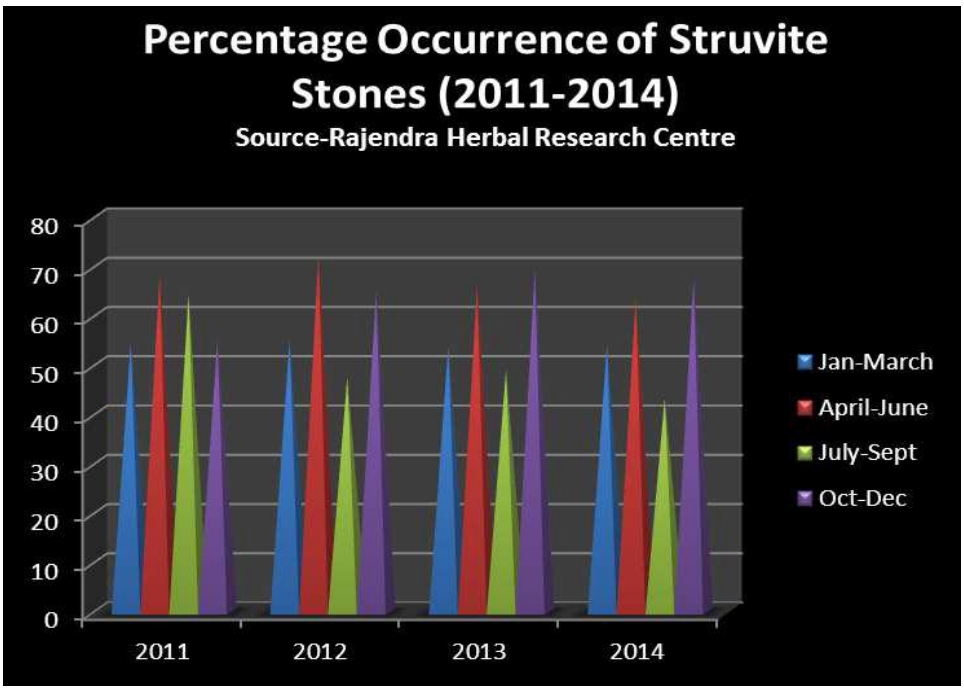


Table-2 Percentage occurrence of Struvite in different seasons.

	Percentage occurrence of Struvite Stones				
Year	**2011**	**2012**	**2013**	**2014**	
Jan-March	54.34	55	53.9	54.1	54.335
April-June	68.25	72.13	66	63.5	67.47
July-Sept	64.35	47.54	48.94	43.22	51.0125
Oct-Dec	55	64.98	69.25	67.57	64.2
MEAN	60.49	59.9125	59.5225	57.0975	59.25563
S.D	5.815	8.643	8.103	1.079	6.581



CONCLUSION

CKD in Diabetics is a major, ever increasing, worldwide public health problem. The primary goals of the health care system need to be focused on the prevention and management. The dual task of determining the best approach for both diagnosis and management (Pham *et al.*,2007) should be identified to enable this valuable Cost effective Lucid life style treatment, Herbal Health treasure available to one and all. Cohort studies and integrated programmes could go a long way in checking and arresting the hard to clear struvie disease without much ado. Public health and hygiene problems should be addressed in the right perspective. SKD needs a joint venture from Microbiologists,Technocrats,Beaurocrats, Policymakers and Herbalists.

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