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CLINICAL OBSERVATION ON CASES OF URINARY STONE AT RIMS, RANCHI

General Surgery

Dr. Sunay Damle Senior Resident, Govt. Medical College,akola,maharashtra

Dr. Aftab Ahmed* Ex. Registrar, RIMS , Ranchi.*Corresponding Author

Dr. Tarique Jamil Hasan Junior Resident,rims, Ranchi.

ABSTRACT

Urinary stone disease is the 3rd most common affliction of the urinary tract. Various etiology has been suggested like deficiency of Vit. A ,altered urinary solutes and colloid, decreased urinary citrate, renal infection, inadequate urinary drainage& urinary stasis, prolonged immobilisation, cystinurea and hyperparathyroidism. Most common types of calculi are oxalate, phosphate, uric acid, cystine etc.

MATEIAL & METHOD- Pt. With sign & symptom of urinary tract disease were selected and investigated by X RAY,USG IVU etc. to confirm urinary stone and treated accordingly by medical or surgical procedure.

OBSERVATIONS & CONCLUSION-Maximum incidence was found between 30 to 50 age group.Male to female ratio was2.5:1. Majority were from low socioeconomic group. Major presenting feature was pain followed by haematuria, uti etc. Majority were anemic and have increased BUN and creatinine.

KEYWORDS

urinary stone, staple diet, urinary citrate, haematurea, pus cell, Serum testosteron , microorganism, urinary crystals.

INTRODUCTION-Urinary stones are 3rd most common affliction of the urinary tract[1]. Urinary stones have affected mankind since time immemorial. It would be fascinating to know that the first incidence of urinary stones dates back to 4800 BC when a bladder and kidney stones was discovered in Egyptian mummy.

The prevalence of urinary stones is estimated to be 2 to 3%.Prevalence is higher in those who lives in mountain , desert and tropical areas.

The importance of nucleation of stone in the kidney was studied intensively by Randall (1937) who described the famous "Randall's plaque."

King and Prien (1971)noted the historical trend away from bladder towards upper urinary tract calculi whenever a country becomes more industrialized.

Various factor have been linked to formation of urinary stones like hereditary[2][3][4], age, peak incidence 20 to 40 yrs.[5], geographical factor[6,7,8] climate and seasonal factor[9,1956] [10,1960] [11,1973],water intake[12,1955],[13,1992],deficiency of vitamin A.

Most common types of stones of urinary stones are:-

1) OXALATE STONES-30 to 60% of all pt. with oxalate stones have increased urinary calcium excretion in the absence of raised serum calcium level [14,1939][15,1948].

2) STRUVITE STONE:-Two condition must coexist for crystallisation of stones. (a)urine pH> or= to7.2&(b)ammonia in urine.[16,Nemory & Staney(1971)].

Brown(1901) proposed that splitting of urea by bacteria results in ammoniacal urine,alkalisation & stone formation.A bacterial enzyme urease was responsible for hydrolysis of urea.

3) URIC ACID STONES:-Prncipal cause of uric acid crystallisation is the supersaturation of urine with respect to undissociated uric acid.

4) CYSTEINE STONE:-Cysteine is poorly soluble within the range of normal urinary pH. the peak of clinical presentation is in 3rd decade of life[17]

5) XANTHINE STONE:-occurs in pt.with Lesch Nyhan syndrome who was treated with large doses of allopurinol.[18]

6) DRUG INDUCED:- Triamtrene, Indinavir.

AIM & OBBJECTIVE

The aim of the present study is clinical observations on cases of urinary stone admitted at RIMS, Ranchi during period from june 1996 to October 1997

MATERIAL & METHOD

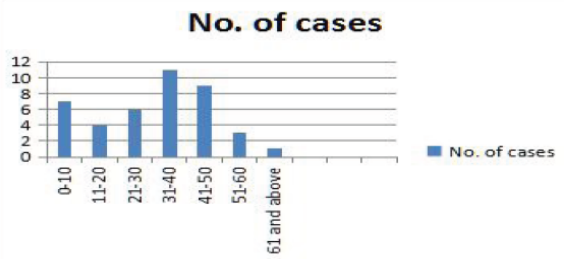
41 Pts. with symptoms & sign of urinary stone disease were selected for clinical observations on cases of urinary stone disease admitted at RIMS, Ranchi. The diagnosis was made by history, clinical examination and investigations like X ray KUB, USG, IVU etc.

OBSERVATIONS

AGE INCIDENCE OF UROLITHIASIS

TABLE 1

Age in years	No.of cases	%
0-10	7	17.07
11-20	4	9.75
21-30	6	14.6
31-40	11	26.82
41-50	9	21.95
51-60	3	7.31
61 and above	1	2.43
Total	41	100

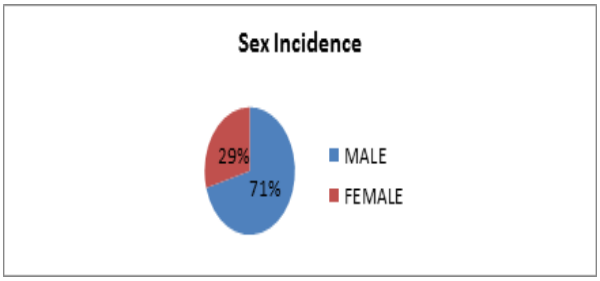


SEX INCIDENCE

TABLE – 2

SEX	NO. OF CASES	%
MALE	29	70.74

FEMALE	12	29.26
TOTAL	41	100

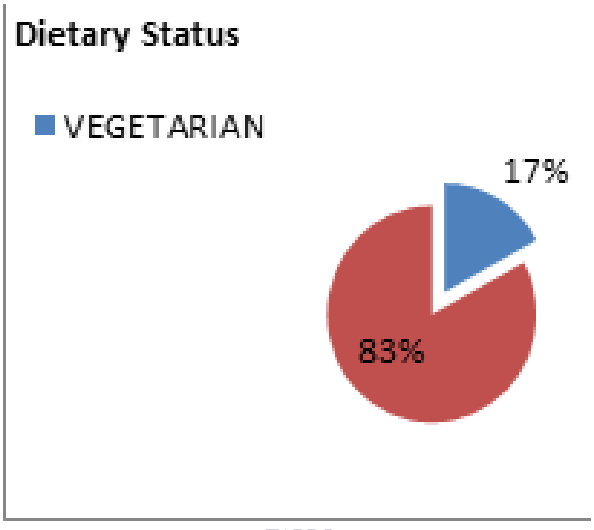


SOCIOECONOMIC STATUS
TABLE – 3

STATUS	NO. OF CASES	%
LOW	22	53.65
MIDDLE	16	39.02
HIGH	3	7.31
TOTAL	41	100

TABLE 4
DIET

DIET	NO. OF CASES	%
VEGETARIAN	7	17.07
NON-VEGETARIAN	34	82.92
TOTAL	41	100



TABL5
PRESENTING FEATURE

FEATURES	NO. OF CASES	PERCENTAGE
PAIN	41	100
HEMATURIA	16	39.02
FREQUENCY	18	43.90
DYSURIA	17	41.46
RETENTION OF URINE	4	9.75
PYURIA (FRANK)	6	14.63
GRAVEIURIA	-	-
CALCULUS ANURIA	-	-
QUISCENT STONE	-	-
METABOLIC DISEASE	-	-

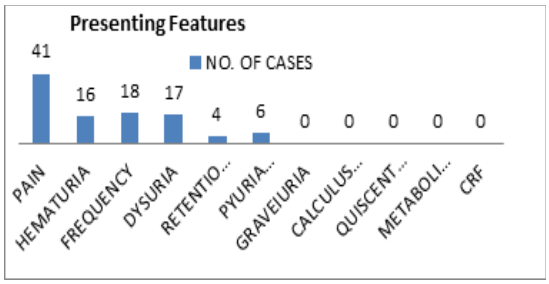


TABLE- 6
TYPES OF HEMATURIA

TYPES	NO. OF CASES	PERCENTAGE
MICROSCPIC	12	29.26
GROSS	4	09.75
TOTAL	16	39.02

TABLE- 7
24 HOUR ESTIMATION OF URINARY CRYSTALLOID (in mg)

CONSTITUENT	NORMAL RANGE	CASES EXCREATING ABOVE NORMAL RANGE	
		NUMBER	PERCENTAGE
Calcium	100-300	24	58.53
Phosphate	900-1400	6	14.63
Oxalate	15-50	7	17.07
Urate	250-800	1	02.43

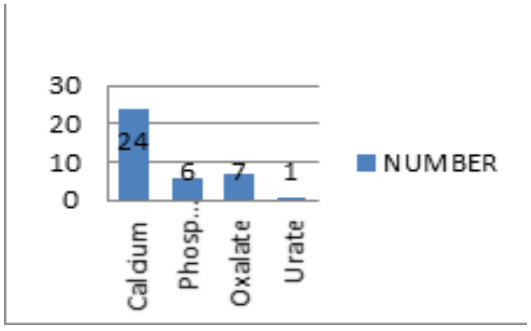


Table-8URINARY EXAMINATIONS (FINDINGS ON URINARY ANALYSIS)

FINDINDS	PRESENT CASE SEIRIES (41 CASES)	
	NUMBER	PERCENTAGE
pH Acidic Alkaline	24 17	58.53 41.46
Microscopy RBC (>4/hpf) Pus cells (>6/hpf)	12 24	29.26 58.53
Crystals Oxalate only Phosphate only Urate only Cysteine Mixed	4 6 0 0 14	09.75 14.63 0 0 34.14

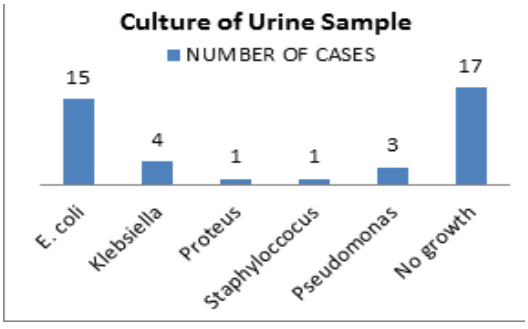
TABLE -9
BLOOD AND SERUM INVESTIGATIONS

%INVESTIGATIONS	LEVELS IN mgs	PRESENT SERIES (41 CASES)	
		NUMBERS	%
BLOOD UREA (N=15-40 MG%)	>40	4	09.75
SERUM CREATININE (N = 0.2-1.5 mg %)	>1.5	4	09.75

SERUM CALCIUM (N = 8.5-10 mg %)	>10	5	12.19
SERUM PHOSPHATE (N = 3-4 mg %)	>4	6	14.63
SERUM URIC ACID (N = 3-6 mg %)	>6	1	02.43

TABLE 10
CULTURE OF URINE SAMPLE

ORGANISMS	NUMBER OF CASES	%
E. coli	15	36.58
Klebsiella	4	09.75
Proteus	1	02.43
Staphyloccocus	1	02.43
pseudomonas	3	07.31
No growth	17	41.46
Total	41	100



Discussion

1)Age :- majority of patients with urolithiasis belonged to 31-40 & 41-50 age group[(bailey and love 24th ed); Burkland and Rosenberg (1959); Prince and Scardino (1960)]

Next peak was observed in 0-10 yr group. Lonslade (1968) found that increased no. of cases in this age group in underdeveloped countries. McGarrison (1931) observed that malnourished children frequently suffer urolithiasis. This fact fits to our population that majority are economically backward & so have poor nutrition

2) Sex :- male : female= 2.5:1

Several studies have commented on the apparently equal tendency towards urolithiasis in male & female during childhood (Prince and scardino ., 1960, Malek and Kelalis,1975). New observation coupled with reports that increased serum testosterone level resulted in increased endogenous oxalate production by liver (Liao & Richardson, 1972) led Finlayson(1974) to postulate that lower seumr testosterone levels may contribute to the protection women & children have against oxalate stones disease.

Welshman & Mc Geown (1975) demonstrated that increased urinary citrate may aid in protecting women with calcium urolithiasis.

3) Socio-economic status :- in our study majority of patients was from low socio-economic group followed by middle one.

Jolly(1929) – "urinary calculi is a poor man`s disease "
Mc Carrison (1931) , winsbury and white (1936) noticed that incidence of urinary calculi increased after war and other disaster affecting the economy resulting in poor standard of living & diet.

4) Diet :- 83% non-veg patients has urolithiasis . most of patients takes rice and wheat as staple diet .

Mc Carrison (1931) in his animal experiment using food found that whole wheat bread (atta), bajra , rice and maida have stone forming potency.

Besides rice and wheat which are lithogenic due to their low salt & appreciable amount of phosphate content, intake of milk and milk product by vegetarian and intake of meat and fish, rich source of purine phosphate by non-vegetarian might be the factor in urolithiasis.

5) Presenting feature :-All the pts. in our study had pain at the time of presentation(Parikh&Shah,1960)

a) Anemia – 61% of cases
Parikh and shah (1960) observed in 34% and Herring noted it in 17% of cases.Anemia may be due to prolonged hematuria, chronic uti as associated CRF. But in our setting, poor nutrition and parasitic infestation are major factor causing anemia.

b)hematuria- in 39% of cases of which 29% had microscopic&10% had gross hematuria.

c)UTI – 51% of patients have uti in our study.
Parikh and shah (1960) observed in 41% and Herring noted it in 29% of patients.

6) 24 hr Urinary crystalloid estimation –
58% have hypercalciuria, 17% have Hyperoxaluria, 14% have Hyperphosphaturea, 1% have Hyperuricosuric.

Parikh and Shah (1960) found hypercalciuria in 66%,Hyperoxaluria in 25%,Hyperphosphatiuria in 37%,Hyperuricosuria in 3%.

6) Urinary examination:-
I. pH –we found acidic urine in 58.8% an alkaline urine in 41.5%
Parikh and Shah (1960) found acidic urine in 62%.

II. Microscopy – RBC was found in 29% and pus cell 58.5% of cases

III. Crystals – mixed pattern of crystals were most common (34%)
Phosphate in 14%, Oxalate in 9.75% of patient.

Parikh and Shah (1960) found oxalate crystals in 9% and Phosphate in 12% and mixed in 12% of cases.

All cases of urolithiasis do not excrete crystals in urine and neither all crystalluric patient do have urinary stone.

8) BUN and Serum Creatinine – 9.75% of patients had raised BUN and creatinine Parikh and Shah (1960) noted the abnormal BUN in 9% and abnormal serum creatinine in 8% cases

9) URINE CULTURE
Different organisms were isolated in 59% of patients.

Most common pathogen E.coli (36.5%), Klebsiella (9.75%), Proteus (2.43%), Staphylococcos (2.43%) and Pseudomonas (7.3%)
Cox (1971) in his series isolated organisms in 35% of cases. E. Coli (13%), Klebsiella (1%), Staphylococcus (1%), Psudomonas (3%) Enterobacterium (2%) and Proteus (13%) and others(2%).

Treatment - Majority of patient underwent pylolithotomy 39%
Uretrolithotomy – 29%
SPC – 6 cases of bladder stone
1 case of urethral stone

CONCLUSION-

1)Age-majority of cases of urinary stone disease were between 31-50 yr.next high Incidence was found in 0-10yr.Adults were found to be harbour upper urinary calculus more commonly and children were afflicted more commonly with lower urinary tract calculus.

2) Sex-male to female ratio was found to be2.5:1.

3) SOCIOECONOMIC-Majority of cases(53.65%)belong to low socioeconomic status.
4) Diet-Nonvegetarian to vegetarian diet ratio was 5:1 but all pt. had rice and wheat as their staple diet.

5) Presenting feature-all pts. Presented with complain of pain,other features like haematuria (39.02%),frequency (43.90%), dysuria

(41.46%), retention of urine(9.75%),frank pyurea(14.63%).majority of pt. had microscopic haematurea(75%).

6) 24 hour estimation of urinary crystalloid-majority of pts.were hypercalciuric (58.53%)

7) Urinary analysis-In this study acidic urine was encountered more commonly (58.25% and among crystal mixed variety was most common.(34.14%)

8) Urine culture-showed growth of E .Coli most commonly.

9) Majority of pts.were anemic and a significant no. of cases were having evidence of UTI.

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