Original Research Article

A study of X-ray KUB in evaluation of renal colic at tertiary health care centre

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Abstract

Background: Renal colic is pain associated with obstructed stone in renal system. Calculi are formed when the urine is supersaturated with salt and minerals such as calcium oxalate, uric acid and cystine. **Aim and objective:** To assess the role of X-Ray KUB in evaluation of renal colic patients in a tertiary care centre **Methodology:** 80 patients presenting with renal colic to emergency department were studied. Sociodemographic data, detailed history was recorded with questionnaire. Diagnosis was done with X-ray KUB. Data was analysed with appropriate statistical tests. **Results:** Renal stones were common in age group of 31-50 years. Male to female ratio was 2.3:1. X-ray KUB has sensitivity of 90%.
Key Word: X-ray KUB.

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INTRODUCTION

Acute abdomen due to renal colic is most common presentation in emergency department. Urolithiasis is most common cause of renal colic. Urolithiasis is estimated to have a lifetime incidence of 12%.[1] Stone formation can be quite complex and differ between various stone compositions.[2] Stones are largely asymptomatic when they are growing in the renal calyces. Passage into the ureter obstructs the flow of urine, leading to upstream dilatation of the ureter and renal pelvis. This obstruction generally results in colic-type pain as ureteral peristalsis increases.[3] Nausea and vomiting are often associated with these severe bouts of pain. There are some places where stone gets obliterated due to narrow passage such as proximally near the ureteropelvic junction where the renal pelvis narrows to the calibre of the ureter, point where the ureter crosses the iliac vessels, and the ureterovesical junction. Obstruction of the iliac vessels causes pain radiating down into the groin or lower abdomen. Stones lodged at the ureterovesical junction tend to cause pain that radiates into the scrotum or labia, inner thigh, or urethra and often create urinary frequency, urgency, and dysuria, as the stone irritates the bladder. Kidney, ureter, bladder (KUB) plain film radiography is most helpful in evaluating for interval stone growth in patients with known stone disease, and is less useful in the setting of acute stones. Advantages of KUB radiography include relatively low ionizing radiation exposure compared with CT (0.15mSv) and low cost (~10% of ultrasonography).[4] The main purpose of evaluation in patients with renal colic is to confirm the diagnosis, to find out the cause, and to assess the level and degree of obstruction. This study was conducted to assess the role of X-Ray KUB in evaluation of renal colic patients in a tertiary care centre.

MATERIAL AND METHODS

Present study was conducted in 80 patients of renal colic attending emergency department in a tertiary care center. Study was approved by ethical committee of institute. A written valid consent was taken from patients after explaining them the study. Data collection was done by a pre tested questionnaire. It includes sociodemographic data, detailed history and clinical examination. All these

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patients were presented in emergency department and then followed up in urology department. After complete history and clinical examination, they were investigated with x-ray KUB. X-Ray KUB was obtained with conventional film or as digital images. A single anteroposterior view of the whole urinary tract was obtained with the patient in supine position. In x-ray KUB radio-opaque shadows in the renal area and in the line of ureter were noted. Data was analysed with appropriate statistical tests.

RESULTS

Table 1

Sr no	variables	no of patients (80)	percentage
1	Age (years)		
2	15-30	11	13.75%
3	31-45	28	35%
4	46-60	22	27.5%
5	61-75	13	16.25%
6	76-90	6	7.5%
7	Sex		
8	Male	56	70%
9	Female	24	30%
10	Side involved		
11	Right	36	45%
12	Left	44	55%

Age of patients ranged from 15-89 years. Majority of the patients were in age group of 31-45 years (35%) followed by 46-60 years (27.5%). Patients above 75 years contribute 7.5%. Out of 80 patients 56 were males and 24 were females. Male to female ratio was 2.33:1. Left side was more involved (55%) than the right side (45%). On x-ray KUB in 34 out of 80 patients (42.5%) stone was visible as radio-opaque shadow. Out of these 34 positive KUB, stones were in the ureter in 22 patients while in 12 patients' stones were in the kidney. In ureter 9 stones were in upper ureter, 3 were in middle part of ureter and 10 were in lower part of ureter.

DISCUSSION

Majority of the patients were in age group of 31-45 years (35%) followed by 46-60 years (27.5%). Similar findings were observed in Abhay Kasliwal *et al*[5] where they found maximum patients in age group of 20-40 years. Another study by Mumtaz Ahmad *et al*[6] found that Sixty-three patients out of 76 (83%) presented in between 3rd to 5th decade of life. Out of 80 patients 56 were males and 24 were females. Male to female ratio was 2.33:1. Similar findings were seen in Mumtaz Ahmad *et al*[6] where male to female ratio was 3:1. Abhay Kasliwal *et al*[5] observed male to female ratio of 2.7:1. Left side was more involved (55%) than the right side (45%). Similar observations were noted in previous studies[5,6] where left side renal colic was more common. On x-ray KUB in 34 out of 80 patients (42.5%) stone was visible as radio-opaque shadow. Similar findings were seen in Mumtaz Ahmad *et al*[6] where (40%) stone was visible as radio-opaque shadow. Out of these 34 positive KUB, stones were in the ureter in 22 patients while in 12 patients' stones were in the kidney. In ureter 9 stones were in upper ureter, 3 were in middle part of ureter and 10 were in lower part of ureter. Similar findings were observed in previous studies.[5] In this study 4 stones which were not demonstrated by KUB were detected when KUB was combined with ultra sound. X-ray KUB detects 89.47% stones (sensitivity 90%) They were missed on KUB because of low calcium content of stone. Radiolucent stones are not visible on x-ray. Overlying bowel gas and osseous structures such as transverse processes or the sacrum can hide small calculi so detection may be low. Similar findings were observed in previous studies.[7]

CONCLUSION

renal colic was more commonly seen in third to fifth decade of life with male predominance. X-ray KUB has 90% sensitivity in detection of renal stones.

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