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RESEARCH ARTICLE

CORRELATION AND COMPUTED TOMOGRAPHY FINDINGS IN PATIENTS WITH ATYPICAL CLINICAL PRESENTATION AND URINARY SYSTEM DISEASES.

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ABSTRACT:

Background : Renal angle pain or back pain referred to corresponding flank is the major world wide cause of pain secondary to the causes of urinary system like calculus disease , space occupying lesions or infections . Other causes includes muscle or rib pain , neuropathic pain or radiculopathy , pleural origin pain etc . Methods : Off all the patients having generalized fever , back pain , referred pain , hematuria , burning micturation or other non specific back pain from medicine , surgery , urology out and in patient department to radiology department for radiography , USG and finally confirmed by computed tomography were considered for this study. Results : The result showed good correlation of the non specific symptoms with their cause being to urinary system diseases . Common symptoms as fever , nausea , vomiting abdominal pain showed significant incidence of urinary system causes as nephrolithiasis or urolithiasis , urinary tract infections , acute or chronic infective, pylo or pyonephritis , glomerulo nephritis , polycystic kidneys, renal mass , previous operative cases and other adjacent pathology involving urinary system. Conclusions : In our study of 100 patient having non specific complains, incidence of urinary system disease is prime . commonest cause found seem to be a calculus disease , followed by infections , cystic renal diseases , renal mass , renal abscess , renal , uretric or urinary bladder mass lesions or secondary involvement of the urinary system like direct spread from cervix , adrenals or metastatic & secondary involvement of the urinary system . Between 1 % and 15 % of people globally are affected by kidney stones at some point in their life . Generally more men are affected than women .

Keywords : Urinary system , Urolithiasis , Emphysematous , Angiomyolipoma

INTRODUCTION

Our aim of doing this study of around 100 cases of such pain and the common incidence of the urinary system causes. Many patients came with the non specific symptoms as generalized fever , bodyache , backpain , malaise and subsequently get diagnosed as renal infective or urinary system cause for their all symptoms.

Between 1 % and 15 % of people globally are affected by kidney stones at some point in their life . Generally more men are affected than women . Almost all diagnosis were achieved on radiography , USG and plain computed tomography. Very few patients

needed intravenous contrast study for final diagnosis . Very few patients need histo pathological correlation to complete the diagnosis except in cases of renal mass . The evaluation of urinary system cause is very much important in any case of abdominal pain & other generalized symptoms . All age group are equally affected and may have any of the above listed symptoms & corresponding urinary system disease . In children & pregnant woman USG is the modality of choice over radiography & computed tomography to avoid exposure to non ionizing radiation.

The approach to this study was based on the imaging findings using radiographs , USG & computed tomography instead of a pathologic correlation . (8) .

MATERIALS & METHODS :

Of all the patients investigated during the period of June 2016 to December 2016 have all the above listed or some of the above listed symptoms . Investigations are mainly done using USG machine , X – RAY machine & Siemens CT - scan machine . After final reporting and clinical correlation all cases were segregated into different group of findings as shown in table - 1 . Few of them show multiple findings overlapping each other but pre dominant once were considered as main finding to quantify for that sub group .

Table 1 : Sub Groups according to different findings

Normal	**Abnormal**						
	Nephrolithiasis	Acute Infection	Chronic Infection	Benign Mass	Malignancy	Post Treatment	Others
10	32	12	15	10	7	10	4

RESULTS

Out of 100 patients having symptoms , 10 show near normal investigations for urinary system & most likely diagnosed as other causes for pain

Out of the remaining patients urolithiasis & related surgical interventions has top in the position than infective or mass lesions

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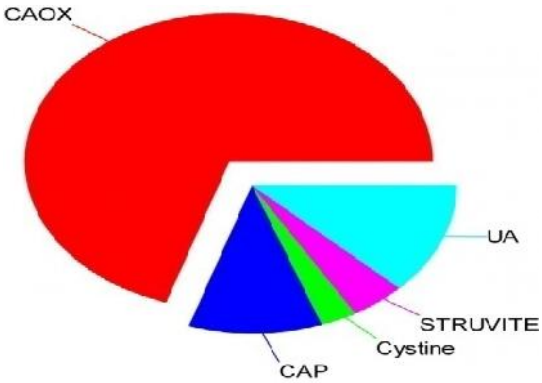
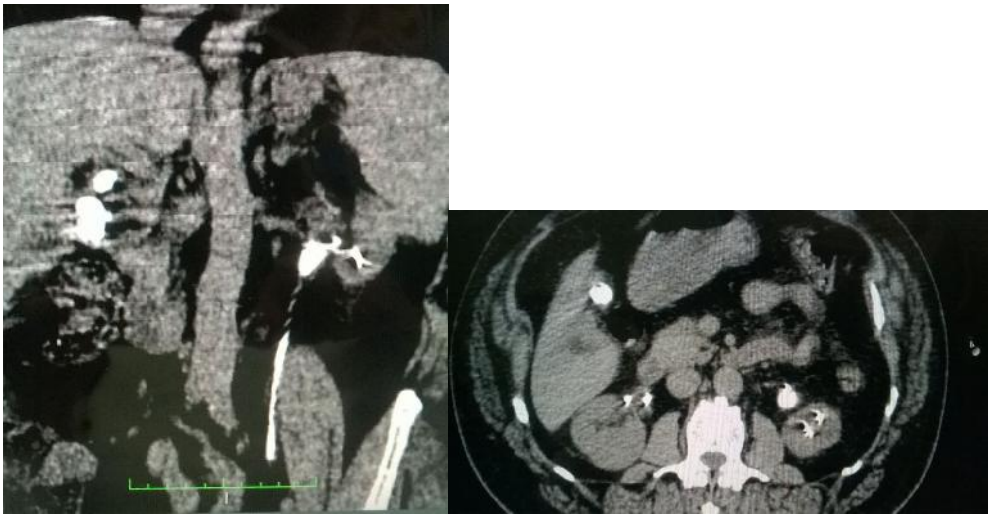
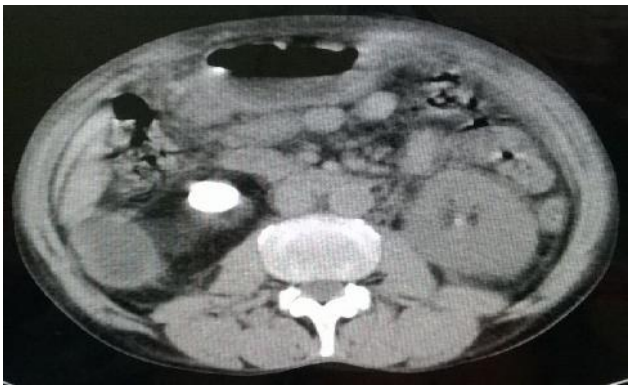


Pie diagram showing types of urolithiasis (Fig .1)

NECT showing right middle pole renal calculus (Fig. 2a)

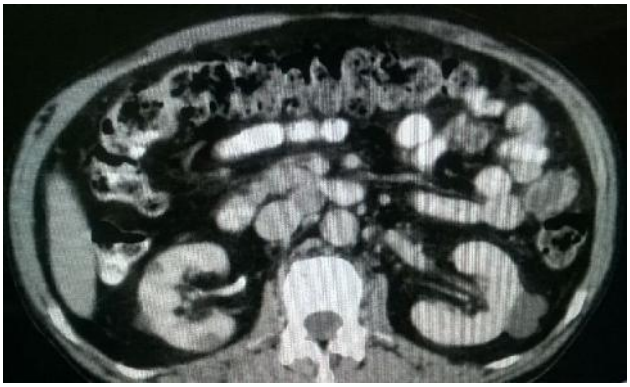


Bilateral renal stent with left uretric calculus . Cholilithiasis is present (Fig. 2b)



Right upper ureter calculus (Fig. 2c)

Few cases show well defined cortical cysts , with thin wall and less than one third of wall calcification . No obvious intra cystic septa or enhancing areas noted . No significant post contrast enhancement is noticed in the cyst wall . (Bosniak Type 2) (9)



Bilateral simple renal cortical cysts (Bosniak Type 2) Axial CE CT image (Fig. 3a)

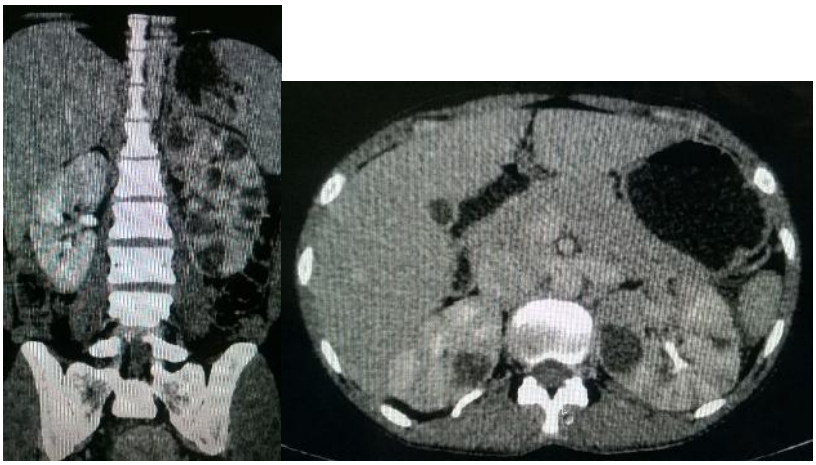
Cortical cyst with rim calcification in left kidney (Fig. 3b)

Thick walled cyst left kidney with enhancement (Fig. 3c) (Bosniak type 3)

A serious ascending bacterial urinary tract infection of the kidneys is termed as pyelonephritis. Escherichia coli is the most common causative agent of this infection .

Acute pyelonephritis is the sudden occurrence of pelvis and renal parenchymal inflammation that is characterized by small abscesses at the cortex that is due to the buildup of pus in the interstitial tissue and collecting tubules. (Fig. 4a and 4b) (Fig. 4c and 4d)

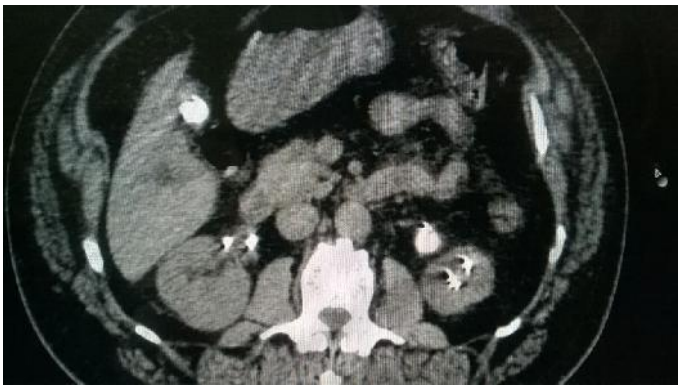
Chronic pyelonephritis is brought about by recurring renal infection. This condition occurs practically in patients with anatomic anomalies as well as with calculi, urinary tract obstruction, vesicouretricl reflux (most common) or renal dysplasia. This is linked to scarring of the renal tissues and would eventually progress to end-stage renal disease. (Fig. 5a)



CE CT Acute pyelonephritis left kidney (Fig. 4a and 4b)

NECT acute emphysematous pyelonephritis left kidney (Fig. 4c and 4d)

NECT acute emphysematous pyelonephritis left kidney (Fig. 4e and 4f)



Chronic pyelonephritis left kidney secondary to calculus disease. Bilateral renal stent , left uretric calculus and cholilithiasis also noticed . (Fig. 5a)

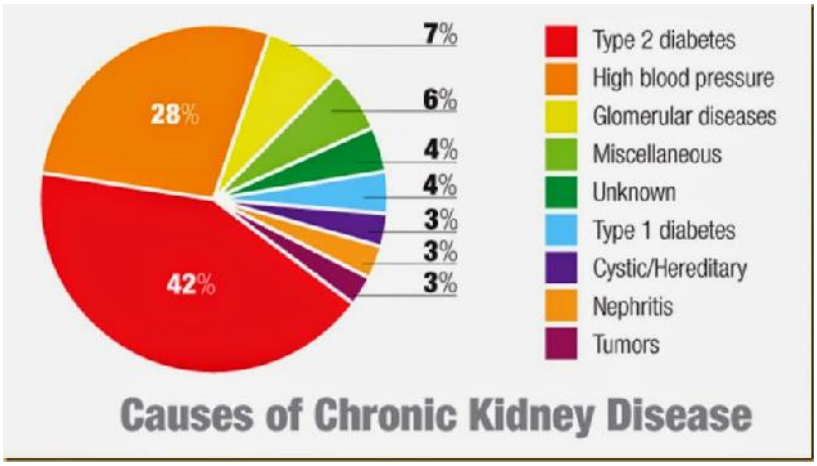


Fig. 5b

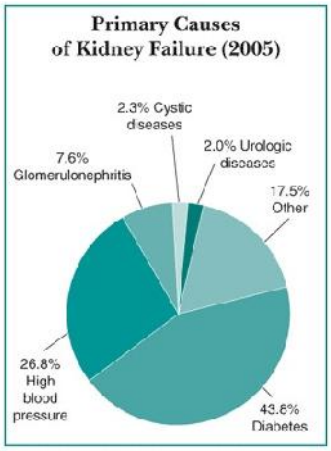


Fig.5c

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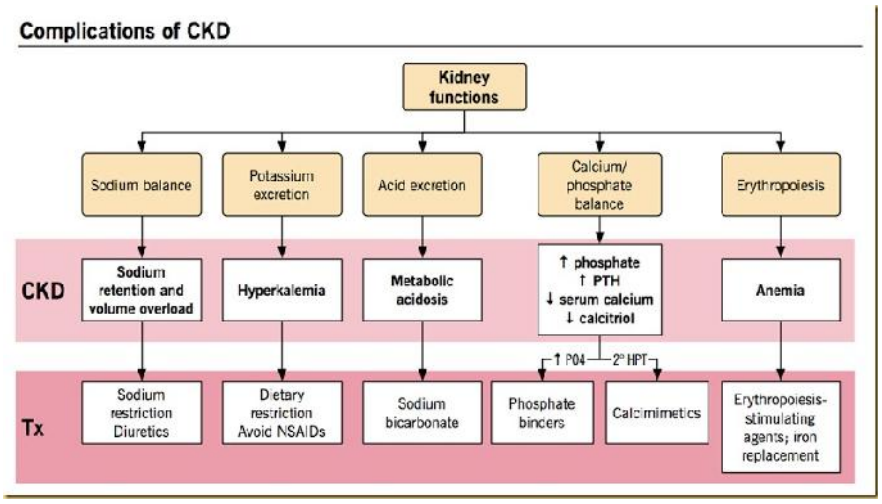

Fig. 5d

Angiomyolipoma is the most common benign renal mesenchymal neoplasm arising from the perivascular epitheloid cells and contain a variable proportion of blood vessels , smooth muscle and adipose tissue , but it can degenerate into a malignant form known as epitheloid angiomyolipoma , which radiologically resembles RCC. (15)

The fat content of the lesions is better identified on 2-5mm section‘s than 10 mm sections . The use of 2-5mm and thin non enhanced section’s increases spatial and density resolution and decreases suspectibility to partial volume effects . (14)

Right renal mass with fat content and smooth indentation on enhanced infundibulum (Fig. 6a and 6b)

Renal cell carcinoma is the most common adult renal epithelial cancer , accounting for more than 90 % of all renal malignancies (12) . The 5 year cancer – specific survivals of patients with PT4 RCC and lymph node metastases are 20 % and 5 to 30 % respectively (12)

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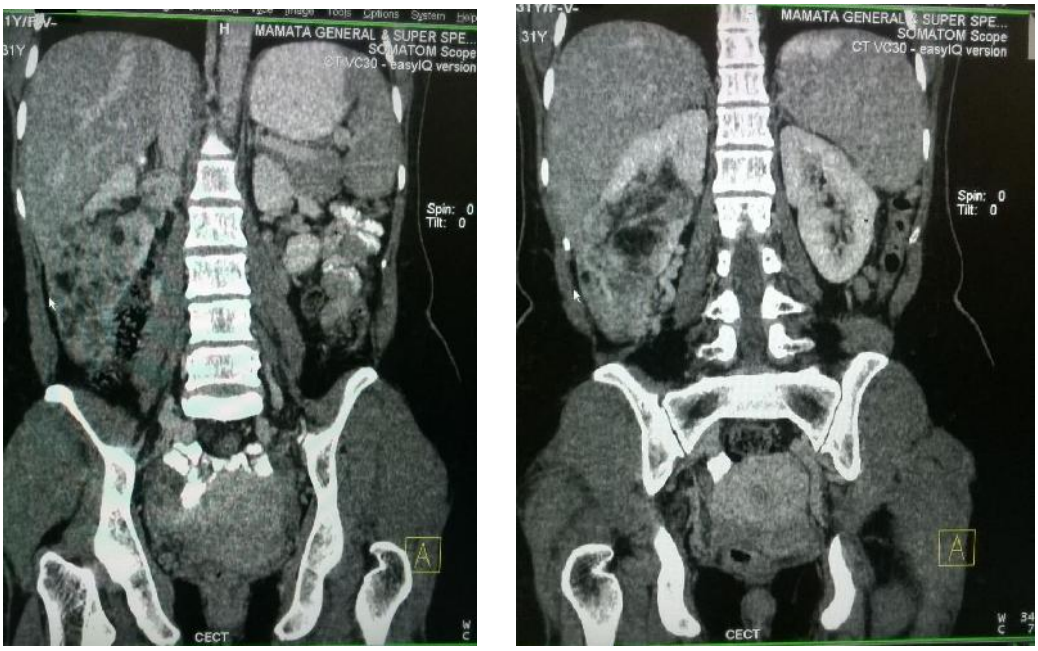
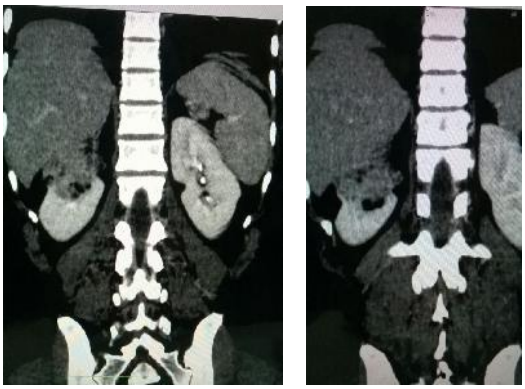
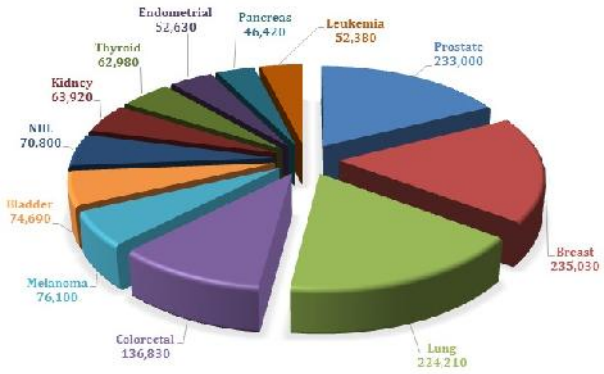
We represent the renal cell carcinoma as space occupying lesion in right kidney lower pole. It is exophytic in nature with few areas of fat content and early washout in post contrast study. Other example reveals dominant features of angiomyolipoma and histologically proved as renal cell carcinoma (Malignant transformation of pre existing agiomyolipoma).

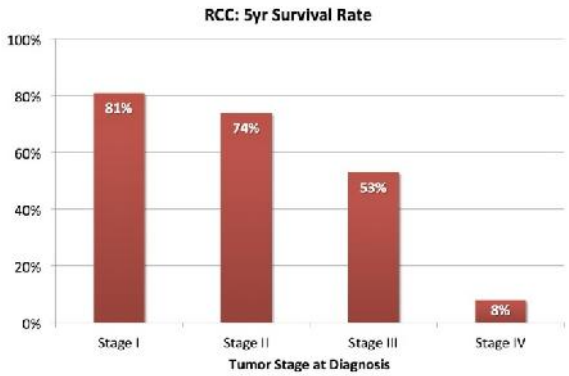


CECT right kidney malignancy with early washout of contrast with perirenal fat stranding (Fig 7a and 7b) .



Right renal upper pole malignancy with perinephric extension (Fig 7d and 7e)





Distribution of neoplasm in human body (Fig 8a) Survival rate in renal carcinoma (Fig 8b)

Other examples coming from miscellaneous group , an middle aged female with past history of malignancy of cervix , post chemotherapy and radiotherapy. Mild changes of bilateral obstructive uropathy involving almost entire length of the ureter without significant intraluminal obstruction due to calculus or tumor extention.

Post radiation fibrosis with obstructive uropathy in a patient of treated case of carcinoma cervix

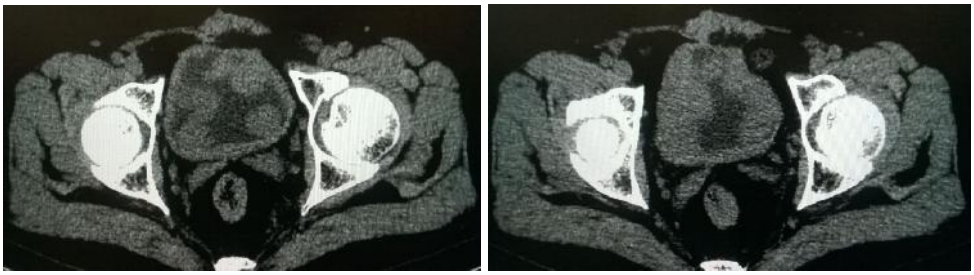
(Fig 9a and 9b)

Other example belong from elderly age group having clinical symptoms resembling benign enlargement of prostate. Investigation show enhancing lesion arising from prostate with direct invasion of bladder base extending to urinary bladder lumen . Urinary bladder

capacity was significantly reduced . There is invasion of vesico – uretric junctions , obstructive uropathy on either side and compromised left renal function. Periprostatic and perivesicle fat planes are involved.

Malignancy of prostate with bladder base and vesico ureteric junction involvement. (Fig 10a and 10b)

Another case is presented with dysuria , acute renal failure and occasional microscopic hematuria. Plain computed tomography study reveal multi focal , diffuse wall thickening of urinary bladder along posterior lateral walls on either side. Perivesical fat planes are maintained .



Diffuse urinary bladder wall thickening. Biopsy reveal changes of dysplasia. (Fig 11a and 11b)

DISCUSSION

This study included 100 patients having common and non specific symptoms as abdominal pain fever , nausea , vomiting , malaise which do reveal significant association

with the urinary system diseases like urolithiasis , urinary tract infections , post operative cases , post radio therapy patients , acute and chronic pyelonephritis , benign and neo plastic lesions involving urinary system. Some patients also show secondary involvement of the urinary system by direct spread .

The first majority group belongs to have urolithiasis as commonest cause of abdominal pain may or may not be associated with other symptoms or hematuria depending on the type of the calculus that particular patient is suffering from. All age group of the patients are seen to be involved in this group with adult preponderance than children .

Other causes include acute and chronic pyelonephritis , commonly seen in adult patients with almost all patients showing association of maturity onset diabetes. Many of patients of this group show association with hypertension. Few of the patients show changes of various degree of emphysematous pyelonephritis with slight male dominance.

Another group presented benign and malignant renal mass lesions with various degrees of severity and staging particularly in neoplastic lesions. The approach to this study was mainly based on the imaging findings using radiographs , USG and computed tomography with support of other investigations like hemogram , urine cytology and histopathology.

Miscellaneous group presents patients showing secondary involvement of urinary system to post radiation fibrosis or necrosis and direct spread of adjacent malignancy.

CONCLUSION

This study reveals importance of radiological investigations like radiographs , USG and computed tomography. CT played an important role in the diagnosis of all the urinary system abnormilities and proved to be a milestone investigation for urinary system. Many conditions can be diagnosed completely without contrast enhanced scans in patients with impaired renal function. It is also helpful in staging of the neoplastic lesions , its direct , lymphatic and hematogenous spread. All these investigations proved to be a useful tool in the follow-ups of the patients underwent treatment , receiving chemo or radiotherapy. It helps the clinicians by properly diagnosing the abnormality even if the symptoms of the patient are non specific or generalized .

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