



ROLE OF MULTI DETECTOR COMPUTED TOMOGRAPHY IN EVALUATION OF RENAL MASSES

Radio-Diagnosis

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ABSTRACT

Detection of renal masses and their differentiation from their benign counterparts is extremely important, especially when these masses are small. CT is the most sensitive imaging modality for detecting and characterizing renal masses as solid lesions, simple cysts or complex cysts. MDCT with its speed, easy availability and multiplanar reformatting capabilities has emerged as the single most useful tool for characterization of renal masses. In this review, we showcase the imaging findings of cystic as well as solid renal masses using MDCT.

KEYWORDS

AIM:

Characterization of renal masses using MDCT.

MATERIALS & METHODS:

This was a cross sectional observational study conducted from July 2022 to December 2022. Scans were performed on the 128 slice MDCT scanner (Somatom Definition Flash, Siemens Healthineers AG, Erlangen, Germany) in the Department of Radiodiagnosis.

Patients who were demonstrated to have a renal lesions on ultrasonography were included in this study.

Non contrast scanning was followed by post contrast imaging, done using intravenous Iomeprol (400 mgI/ml) at 3–5 ml/s. Phases used were corticomedullary, nephrographic and excretory phases at approximately 60, 100 and 180 seconds respectively, after injection of contrast agent.

RESULTS:

A total of 55 patients were included in the study, out of which- 25 patients (45%) were of benign group which included Renal cysts (20%), Renal abscess (8%), Renal hydatid (4%), Polycystic kidney diseases (16%), Reninoma (4%), Oncocytoma (16%) and Angiomyolipoma (32%).

30 patients (55%) were of malignant group which included Renal cell carcinoma (40%), Transitional cell carcinoma (16.6%), Wilms tumour (13.3%), Renal lymphoma (10%), Metastasis (6.6%), Renal sarcoma (3.3%), Multilocular cystic nephroma (3.3%), PNET (3.3%), Rhabdomyosarcoma (3.3%).

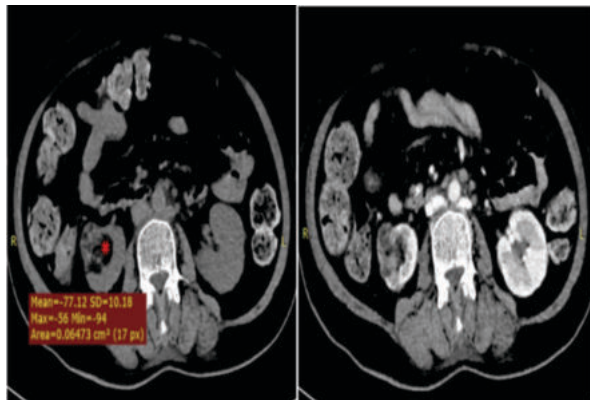


Figure 1,2 : Angiomyolipoma-

A well defined lobulated solid mass lesion with predominant fat attenuation is noted in lateral aspect of lower pole of right kidney. The solid component shows post contrast enhancement.

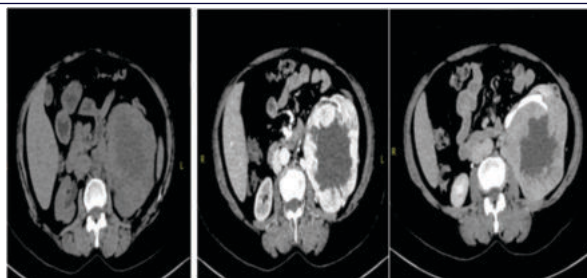


Figure 3,4,5: Renal Oncocytoma-

A large heterogeneously enhancing mass lesion with central non enhancing scar is seen arising from interpolar region of left kidney. Lesion is causing medial displacement of upper ureter, splaying of hilar vessels and pelvicalyceal system.

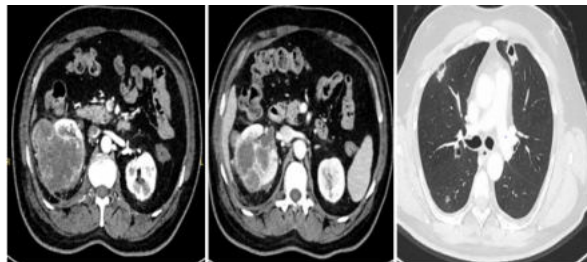


Figure 6,7,8 : Renal Cell Carcinoma-

A well defined heterogeneously enhancing mass lesion seen arising from right kidney with internal cystic areas. Multiple cavitary lesions are seen in bilateral lung fields with invasion of left inferior pulmonary vein s/o metastases-T4N1M1

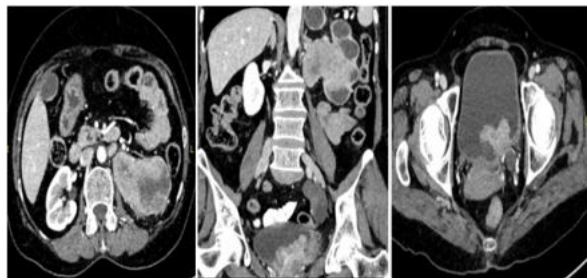


Figure 9,10,11: Transitional Cell Carcinoma-

Heterogeneously enhancing soft tissue mass lesion seen involving left renal pelvis and extending into left proximal ureter causing HDUN. Heterogeneously enhancing soft tissue mass lesion also seen involving posterior and left lateral wall of urinary bladder with involvement of left VUJ with upstream dilatation of ureter

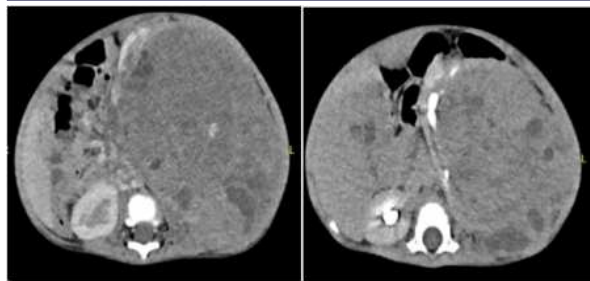


Figure 12,13: Wilms Tumour-

A large well circumscribed heterogeneously enhancing mass lesion is seen replacing left kidney with multiple non enhancing areas, few calcific foci and fat density. The lesion has splayed and displaced renal pelvicalyceal system anteromedially. The lesion is causing displacement of adjacent organs.

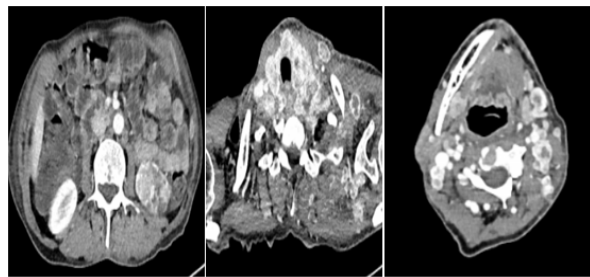


Figure 14,15,16: Metastasis-

Heterogeneously enhancing exophytic mass lesion seen in left kidney.

In a cervical lymph node biopsy proven case of metastatic neuroendocrine tumour, multiple heterogeneously enhancing nodules seen in thyroid gland along with bilateral cervical, axillary and mediastinal lymphadenopathy, Well defined lytic lesion with sclerotic margins seen in C5 vertebral body-Possibility of medullary carcinoma thyroid with metastasis to Lymph nodes, kidney and bones

The study was carried out in ABVIMS & DR RML hospital, New Delhi over a period of 1 year (July 2022-Dec 2022) on 55 patients. Calcification was seen in 35% cases of RCC. Malignant renal masses showed more amount of necrosis compared to benign masses (60% in RCC and 100% in wilms tumour). Renal vein invasion was seen in 33% cases of RCC while none of benign lesions showed invasion. Renal TCC were associated with HDN in 50% cases. The most common site of Metastasis from RCC was to lymph node (40%), lungs (18%).

CONCLUSION

MDCT plays a central role in the differential diagnosis of renal masses. MDCT can be used as a single most powerful tool in the preoperative diagnosis and staging of renal masses.

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