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Research Paper

Radioimaging in Retroperitoneal Masses.

Medical Science

KEYWORDS : Retroperitoneal Mass, Interventional radiology.

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ABSTRACT

Background-Retroperitoneal neoplasm, a part of abdominal cavity, is diverse group of benign and malignant neoplasm. Diagnosis of this tumour is often challenging for radiologists and consists of various steps like determining tumour location and recognising specific features of specific tumours.Radiological evaluation thus play a critical role in diagnosis of retroperitoneal mass.

Objectives-.To evaluates the role of radiology in investigation and diagnosis of retroperitoneal masses. To analyse the advantage and limitation of each imaging modality in the diagnosis of a retroperitoneal mass.

Material and method-It was prospective observational study conducted during period of December 2011 to February 2014 at Government Medical College, Ahmadabad.Total 50 numbers of patients based on clinical suspicion of retroperitoneal mass were included in study. After inclusion in the study all participant underwentsome form of radiological examination in radiology department.

Results-Out of 50 patients 36(72%) were males and 14(28%) were females. In our study most common patients were 0-10 years age group 15 (30%) followed by 31-40 years 8 (16). Lump in abdomen and pain in abdomen was the most frequent symptom seen in 40 (80%) followed by weight loss i.e. 11 (22%). Radiological investigations plain X-ray of abdomen and chest was carried out in all patients 50(100%).Next common investigation was USG that was carried out in 44(88%) followed by IVU in 34(68%),CT scan in 22(44%).In this study out of 50 cases 27(54%) were malignant lesions and 23(46%) were benign. Among lesions renal lesions was most common 19(38%) followed by suprarenal lesions 5(10%). In renal lesions most common lesions were Wilm's tumour (7/19) 37% followed by renal cell carcinoma (4/19)21%.

Conclusion- Interventional radiology is very useful as a diagnostic and therapeutic tool. It significantly change patient management. Practice of conservative surgery has increased and found to be curative in increasing number of patients. Integrated imaging should be practiced in the best possible manner to provide the diagnostic information in quickest, least expensive and least invasive way possible.

INTRODUCTION

Retro peritoneum is part of abdominal cavity that lies between the posterior parietal peritoneum and anterior to transverse fascia. It is divided in to 3 space by perirenal fascia and 3 spaces are (1) Anterior pararenal space (2) Perirenal space (3) Posterior pararenal space and fourth space of great vessel also defined[1][2].Retroperitoneal neoplasm is diverse group of benign and malignant neoplasm that arise within the retro peritoneum but outside the major organs. Diagnosis of this tumour is often challenging for radiologists and consists of various steps like determining tumour location and recognising specific features of specific tumours. Radiologicalevaluation thus plays a critical role in diagnosis of retroperitoneal mass. Theretro peritoneum is radio graphically blind area with assistance of cross-section imaging modalities like USG, CT and MRI the peritoneum can now be imaged and guided biopsies can be performed. The role of diagnostic imaging is to obtain the desired information with minimum number of imaging procedure. Newernon-invasive imaging modalities such as MRI and Doppler sonography although at present are used only as a backup to CT or USG are gaining fast popularity.

AIMS AND OBJECTIVES

(1)To evaluate the role of radiology in investigation and diagnosis of retroperitoneal masses.(2) To analyse the advantage and limitation of each imaging modality in the diagnosis of a retroperitoneal mass.(3)To determine the imaging procedure of choice, if any amongst the multiple imaging modalities available for evaluating the retro peritoneum.(4)To emphasize the changing role in patient management brought about by newer imaging modalities and the speciality of interventional radiology in case of a retroperitoneal mass.(5)To assess the value of correlative imaging and multimodality cost effective approach.

MATERIALS AND METHODS

It was prospective observational study conducted during period of December 2011 to February 2014 at Government Medical College, Ahmedabad. Permission from Human Research Ethics Committee was taken before the starting the study. Informed written consent was taken before the inclusion of participant into the study. Total 50 numbers of patients based on clinical suspicion of retroperitoneal mass were included in study. After inclusion in the study all participant underwentsome form of radiological examination in radiology department. Order of radiological examination was determined by patient presentation and the findings of preceding investigations.FNAC and histological investigations were also carried out in approaching the diagnosis. In all cases routine plain radiograph of abdomen AP and Lateral view and chest PA view were taken.USG also carried out in all patients. For sonography ESAOTE MY LAB 60USG Machine was used. IVP was performed using water soluble ionic contrast media sodium diatrizoate 76%.CT was performed when further evaluation was deemed necessary.MRI was also performed when CT findings were equivocal. Outcome and follow-up where available where correlated with surgical and histopathological findings whenever available.

Inclusion Criteria:All Patients with clinicalsuspicion of retroperitoneal mass.

Exclusion Criteria:Patient who refuse to give consent.

Collection of Data: Various patient data like name, age, sex were noted. Symptoms and various morphological characters of retroperitoneal lesion were studied. A clinico-radiological correlation and confirmation of Radiological diagnosis was done by biopsy whenever possible to minimize patient follow up.

RESULTS

After performing radiological investigations in 50 patients the findings were evaluated and then organized in tabular manner. Different parameters of patients like age, sex, clinical complaints, and types of radiological investigation, abnormal findings and correlation of various radiological finding with final diagnosis were tabled& evaluated.

Out of 50 patients 36(72%) were males and 14(28%) were females. In our study most common patients were 0-10 years age

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group 15 (30%) followed by 31-40 years 8 (16%).while in 41-50 years and 51-60 years 7 (14%), 21-30 years 5 (10%),11-20 years and above 60 years 4 (8%).Out of 15 patients in first decade 7 had Wilm's tumour, 4 had Teratodermoid, 2 had Neuroblastoma,1 had Hematoma,1 had Multicystic kidney and 1 had an abscess.

In our study lump in abdomen and pain in abdomen were the most frequent symptom seen in 40 (80%) followed by weight loss11 (22%). However, vomiting,fever,haematuria,burning micturition, anorexia, constipation, and ascites were other clinical symptoms.

TABLE -1: TYPES OF RADIOLOGICAL INVESTIGATIONS

Type of investigation	Number of patients	Percentages
Plain X-ray abdomen	50	100%
Plain X-ray chest	50	100%
Ultrasonography	44	88 %
IVU	34	68%
CT scan	22	44%
Barium study	7	14 %
Renogram	2	4 %
Bone survey	1	2%

In my study among radiological investigations plain X-ray of abdomen and chest was carried out in all patients 50(100%).Next common investigation was USG that was carried out in 44(88%) followed by IVU in 34(68%),CT scan in 22(44%),barium study in 7(14%) and renogram in 2(4%).

On plain X-ray of abdomen in 50 patients soft tissue opacity was most common finding seen in 32(64%) followed by displacement of bowel loops in 26(52%),obliteration of psoas shadow in 16(32%),calcification in 8(16%),calculus in 4(8%) and bony changes seen in 1(2%).

In USG Abdomen in 44 patients complex lesion were most common finding seen in 14 patients (31%) followed by hypo echoic lesion 11(24%),cystic lesion 10(23%),solid lesion 5(11%), calcification 5(11%),IVC and renal vein involvement in 5(11%) and distant metastases in 2 (4%).

In IVU done in 34 cases kidney function was present in 30(88%) while 4(12%) had absence of kidney function.12 (35%) had displaced kidney while 6(17%) had increase in kidney size.9 (19%) had ureter pathology and 3(8%) hadurinary bladder pathology.

TABLE NO 2:INCIDENCE OF RETROPERITONEAL MASS

LESION	TOTAL CASES	PERCENTAGE
Renal	19	38
Suprarenal	5	10
Pancreatic mass	4	8
Retroperitoneal teratoma	4	8
Psoas abscess	3	6
Hematoma	3	6
Abdominal aorta aneurysm	2	4
Neuroblastoma	2	4
Lymphnode mass	1	2
Retroperitoneal sarcoma	1	2
Liposarcoma	1	2
Germinoma	1	2
Schwanoma	1	2
Rhabdomyosarcoma	1	2
Paraganglioma	1	2
Retroperitoneal mass with metastasis	1	2

In this study out of 50 cases 27(54%) were malignant lesions and 23(46%) were benign. Among lesions renal lesions was most common 19(38%) followed by suprarenal lesions 5(10%). In renal lesions most common lesions were Wilm's tumor (7/19) 37% followed by renal cell carcinoma (4/19)21%, polycystic kidney 4 (21%), renal hydatid 2(10%), multicystic kidney 2(10%) and germinoma in 1 case (5%). Another lesions were pancreatic mass 4(8%), retroperitoneal teratoma 4(8%), psoas abscess 3(6%), hematoma 3(6%), abdominal aorta aneurysm 2(4%) and neuroblastoma 2(4%). Among renal lesions 10(52%) were solid lesions and 9(48%) were cystic lesions. Out of 19 lesions 11(58%) were malignant while 8(42%) were benign lesions.

TABLE 3.CORRELATION OF USG DIAGNOSIS WITH FINAL DIAGNOSIS

DIAGNOSIS	NO. OF CASES	PERCENTAGE
Correct diagnosis	41	93
Incorrect diagnosis	3	7

TABLE 4.CORRELATION OF CT DIAGNOSIS WITH FINAL DIAGNOSIS

DIAGNOSIS	NO. OF CASES	PERCENTAGE
Correct diagnosis	18	100
Incorrect diagnosis	0	0

DISCUSSION

Out of 50 patients who were evaluated in our study 36(72%) were males and 14(28%) were females. In our study most common patients were 0-10 years age group 15 (30%) followed by 31-40 years 8 (16%).This finding in coexistence with William et al study [4]. Finberg et al study [5] in which males more involved than females regarding retroperitoneal mass. In our study most common age group was 0-10 years this similar finding also seen in Roger et alstudy [6].

In our study lump in abdomen and pain in abdomen was the most frequent symptom seen in 40 (80%). Most of the patients in the study presented with multiple symptoms which is comparable to Johnson et al [7]. Non specific symptoms such as Anorexia, Weight loss, Fever etc. were found to be more commonly associated with malignancy than with benign lesion.

In this study out of 50 cases 27(54%) were malignant lesions and 23(46%) were benign. Among lesions renal lesions was most common 19(38%) followed by suprarenal lesions 5(10%). In renal lesions most common lesions were Wilm's tumor 7/19(37%) followed by renal cell carcinoma 4/19(21%), polycystic kidney 4 (21%),renal hydatid 2(10%),multicystic kidney 2(10%) and germinoma in 1 case (5%).

In our study 7 cases of wilm's tumorwere noted out of which 5 cases were age equal to or less than 2.5 years and in 2 cases presented at 10 years of age which was similar to Caffe et al [8] in which incidence of wilm's tumor occurring at mean age of 3.5 years. In our study 1 case of aniredia noted which was similar to Caffe et al[8].In our study wilm's tumor were large,spherical,solid,well circumscribed these presentation of wilm's tumor were similar to Jaffe study[9].

In our study 4/50 showed pancreatic mass which were irregular, solid, with indistinct margin with duct abnormality similar finding were reported in Joseph et al[10] and in my studyout of 4 cases 3 case were diagnosed in USG while 1 case diagnosed on CT and most common site is head of pancreas which was similar in Mark et al[11].

In our study 4/19 was adult polycystic kidney disease cases. In IVU cyst were round, radiolucent defect within the opacified renal parenchyma. Similar findings were reported in Caffe et al [8]. In our study 2/19 were multi cystic kidney disease cases. Find-

ings in USG were reniformcontour of kidney is lost, parenchyma replaced by multiple, randomly positioned cysts of various sizes similar finding were reported in Hasimotpo et al [12].

In our study 2/50 cases were neuroblastoma.Out of which 1 in adrenal gland neuroblastoma and other is retro peritoneum and peak age is 2 years. In USG neuroblastoma were heterogeneously echogenic with poor defined margins with calcification and distant metastasis. Similar finding were reported in Bent et al [13].In our study 3/50 cases were psoas abscess which on USG presented as hypo echoic psoas muscle with internal echoes which was similar in Leon et al [14].In our study 2/50 cases were of aortic aneurysm which on plain film shows soft tissue opacity with aortic wall calcification which was similar in Michal et al [15].

CONCLUSION

In this study 50 cases of retroperitoneal masses were examined by various radiological modalities based on clinical suspicion. Plain radiograph routinely done in all cases showed various abnormalities which was useful as initial diagnosis of masses when present. Contrastexamination like IVU done when indicated and remains basic diagnostic investigation in assessing a mass arising or involving the kidney. It delineates the effect of mass on renal function and to a lesser extent to its structure. However it does not differentiate between solid and cystic lesions and its role is limited in case if impaired renal function,diabetes,renal failure, multiple myeloma in whom use of contrast media is contraindicated.USG remains basic screening procedure to rule out a retroperitoneal mass.USG showing displacement of kidney,IVC and aorta, external pressure impression on bladder. It shows characteristic size, shape and extent of mass and is very useful for differentiating solid from cystic lesion. It is cheap, safe, rapid and provides multiplanar imaging and does not use ionising radiation. Guided biopsy can always be taken with the help of USG.CT Scan is more accurate and with higher specificity and sensitivity in demonstrating size, nature, extent and metastasis of the mass lesion.IV contrast study determines function status of kidney and enhancement of tumour. For staging CT is widely used. However it is expensive, selectively available and use ionising radiation and IV contrast media.

Interventional radiology is very useful as a diagnostic and therapeutic tool.USG guided fine needle aspiration of lesion reduce need of biopsy. Interventional radiology significantly change patient management, practice of conservative surgery has increased and found to be curative in increasing number of patients. Integrated imaging should be practiced in the best possible manner to provide the diagnostic information in quickest, least expensive and least invasive way possible.

REFERENCE

1.Tires T,Sandrasegaran K, Patel AA, et al. Peritoneal and retroperitoneal anatomy and its relevance for cross-sectional imaging. Radiographics 2012:32:437-51. | 2.Rajiah P,Sinha R,Cuevas C, et al.Imaging of uncommon retroperitoneal masses. | 3.Lee and sagel : Computed body tomogram with MRI correlation 3rd edition volume 2. | 4.Carbonian J Michael et al. Inflammatory aortic aneurysm radiographic imaging-Radiology 1986. | 5.Finberg HI et al. Ultrasound evaluation of non-functioning kidneys:clinical diagnostic ultrasound 2 : 105. | 6.Pariently A Roger et al. Cystic Renal Cancers :CT characteristics : Radio 1985. | 7.Johnson C Daniel et al. Renal adenocarcinoma CT staging of 100n tumours : AJR Jan 1987 | 8.Caffe Silverman : Textbook of Paediatric : x-ray diagnosis : vol-2. | 9.Jaffe HM et al. Wilm's tumour – US features –pathological coorelation and diagnostic pitfall Radior-1981. | 10.Ferucci T. Joseph. Radiology of pancreas RCNA, Dec 1976. | 11.Ormson J. Mark et al. Sonography in patients with a possible pancreatic mass seen on CT March 1987 | 12.Hashimoto E Beverly et al. Multicystic dysplastic kidney in utero : changing appereance on USG : RCNA 1986 | 13.Medson Bent et al. Radiological and clinical evaluation of 20 Neuroblastomas clinical radiology 32,1981. | 14.Lenchik Lem et al. CT of thepsoas compartment : Value in differentiating tumour,abscess and hematoma :AJR September 1983. | 15.Cullenward J Michael et al. Inflammatory Aortic Aneurysm Radiologic imaging-Radiology 1986. |