International Surgery Journal
Tandel PR. et al. Int Surg J. 2018 Oct;5(10):3246-3251
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20183854

Original Research Article

Role of CT scan in evaluation of retroperitoneal lumps

Prabhubhai R. Tandel*, Himanshu R. Patel, Kiran U. Patel

Department of General Surgery, GMERS Medical College, Valsad, Gujarat, India

Received: 18 August 2018
Accepted: 27 August 2018

***Correspondence:**
Dr. Prabhubhai R. Tandel,
E-mail: drprtandel@gmail.com

ABSTRACT

Background: With the advent and advances in the field of radiological and imaging techniques, the diagnosis of lump can be made with greater accuracy than previous years. The better diagnostic facilities like ultrasonography, computer tomographic scan and magnetic resonance imaging shows mass lesions directly in their entirety. Within two decades of CT scan there have been rapid technical advances, which has provided us with high quality images but at a substantially increased cost.
Methods: This is prospective study. It was conducted from June 2017 to July 2018 at GMERS Medical College Valsad. A Study of 25 cases was carried out, after thorough clinical examination and necessary investigations, patients were subjected to CT scan of abdomen. CT Scan was carried out for the extent of the growth, exact nature of the growth and whether growth is respectable or not.
Results: The present series of 25 cases of retroperitoneal lump the age of patient varied a lot. Maximum number of cases were seen in fourth, fifth and sixth decades. Symptoms include lump, pain in abdomen and other associated complaints.
Conclusions: Definitive diagnosis and precise detail of disease was not obtained by conventional investigations, CT scan was performed in all cases and added information was gained by the same study like inoperable growth, lymph node, metastases, vein or inferior vena cava involvement.

Keywords: CT scan, Retro peritoneal lump

INTRODUCTION

Primary retroperitoneal neoplasms are a rare but diverse group of benign and malignant tumors that arise within the retroperitoneal space but outside the major organs in this space. Although computed tomography imaging can demonstrate important characteristics of these tumor.[1]

The retroperitoneal space is the second most frequent location, followed by the lower extremities, where malignant mesenchymal tumors arise. Each year, approximately 250 to 300 new cases of retroperitoneal sarcoma are diagnosed in the United Kingdom.[2] Retroperitoneal tumours (RTs) develop insidiously and are generally seen as large masses; 50% of RT is larger than 20 cm at the time of diagnosis. RTs develop without suppressing the inner organs or causing significant lumen blockage and are frequently confused with lymphomas. Full physical examination, evaluation of all peripheral lymph nodes, and testis examination for male patients are important when approaching patients with RT. RT liposarcomas are most frequently seen between 50 and 70 years of age. With a 5-year survival rate of between 40% and 50%.[3]

The prognosis is worse than that of other soft tissue sarcomas regarding local recurrence. The goal in surgical management of RTs is to achieve the optimal negative surgical border. In the presence of a positive surgical

border, the 5-year survival rate decreases to 28%. Delayed diagnosis, high histological grade, inoperability due to invasion into vital organs, and a positive surgical border can be listed among the most significant factors affecting survival. The average life expectancy for patients with high-grade RTs is 20 months, while for low-grade RTs, it is 80 months; moreover, RTs larger than 10 cm generally had distant metastasis at the time of diagnosis.[4]

METHODS

A Study of 25 cases was carried out in the Department of Surgery in GMERS hospital and Medical College, Valsad. As a method of investigating a patient of retroperitoneal lump from June 2017 to July 2018. In present study, after thorough clinical examination and necessary investigations like hemograms, urine analysis, stool examination, blood group, serum electrolytes and blood urea, random blood sugar, liver function test with S. protein, bleeding time, clotting time, prothrombin time, Hbs Ag, serum creatinine, serum amylase.

The following diagnostic investigations were carried out as indicated, Barium studies, IVP, FNAC, Ultrasound, CAT Scan, patients were subjected to CT scan of abdomen. As we do not have the facility of CT scan in our institute, all the CT scans were done in 2 private institutes of Valsad. In all patients a detailed history and general, local examination was carried out.

Systemic examination was done to rule out any associated disorder like tuberculosis, hypertension and status of cardiovascular, respiratory and central nervous system was noted

Patients where then taken for surgery whenever necessary exploratory laparotomy operation performed and intra operative finding noted. Prophylactic oral antibiotics were given for duration of 5 to 7 days, of which parenteral antibiotics were given for at first 3 days. Patients were observed for any complications like hematoma, seroma, wound sepsis during their stay in hospital and also assessed for postoperative pain and its severity. Meticulous follow up for all patients was done at Monthly, Three Monthly and Six Monthly. Repeat CT Scan examination was done as and when indicated. In case of death of the patient, the post mortem examination was carried out and post mortem findings were correlated with CT scan findings.

RESULTS

Age and sex distribution of the cases

Age: In the present series of 25 cases of retroperitoneal lump the age of patient varied a lot. The youngest patient to present with a retroperitoneal lump was of 29 years and that of oldest was 70 years. Maximum number of cases were seen in fourth, fifth and sixth decades but it has also been seen that retroperitoneal can present at any age group even in extremes of life (Table 1).

Table 1: Age distribution of cases.

Age group	No. of patients
21-30	1
31-40	4
41-50	8
51-60	7
61- onwards	5
Total	25

Sex: in the present series of 25 cases of retroperitoneal lump 11 female patients were noted. So, female constituted nearly equal of total number of cases (Table 2).

Table 2: Sex distribution of cases.

Sex	No. of patients
Male	14
Female	11
Total	25

Clinical presentation of the patient

The study of the 25 cases of retroperitoneal lump was undertaken with following symptoms and signs in mind. Symptoms include lump, pain in abdomen and other associated complaints.

Lump

It was the most common presentation in this series. The duration of lump was varied from fifteen days to one year. Some of the patients had notice the lump by themselves. The rate of growth of the lump varied from last 1 month to 2 years.

Pain

It was the second most complaint of lump in retroperitoneum. The duration of pain varies from 5 days to 6 months.

Anorexia

In this present series 16 patients presented with complaints of anorexia. It was present from last 1 month to 1 year.

Fever

In the present series of 25 cases of retroperitoneal lumps fever was one of the associating complaints in 18 patients. It was of varying character. It ranged from low grade continuous fever to very high-grade intermittent fever associated with chills and rigors.

Jaundice

The complaint of jaundice was seen in 16 cases. In some of the cases patients themselves notice the yellow colour, whereas in other relatives informed them about the jaundice.

Loss of weight

In the present series 20 patients presented with weight loss as associated with other complaints like lump or pain in abdomen.

The weight loss was more than 10% of their weight with an average duration of 4 months.

Haematuria

In the present series 6 patients presented with haematuria as associated with other complaints. The haematuria was frank blood or just few drops with urine. Duration and frequency varied widely in each individual case.

Clay colour stool

In the present series 8 patients had complaints of passing clay coloured stools. The patients had noticed it with minor illness. Duration of this complaint is varied.

Burning micturition

In 5 patients micturation was one of the associated complaints with hematuria or fever.

Table 3: Clinical presentation of the patient.

Symptoms	No. of cases
Lump	24
Pain	22
Anorexia	16
Fever	18
Jaundice	16
Weight loss	20
Haematuria	6
Clay coloured stool	8
Burning micturation	5
Vomiting	7
Itching	8

Table 4: Provisional clinical diagnosis.

Clinical diagnosis	No. of cases
Obstructive jaundice due to periampullary carcinoma	10
Pseudo pancreatic cyst	5
Pronephros's	2
Hydronephrosis	3
Non-Hodgkin's lymphoma	1
Renal cell carcinoma	2
Retroperitoneal sarcoma	2

Table 5: Final diagnosis by CT scan.

Finding	No. of cases
Growth seen at head of pancreas with dilated CBD, extension into Porta hepatis, no portal veins involvement	8
Distended gall bladder s/o Ca head of pancreas with gall stone with ascites	2
Renal cell carcinoma with No renal vein involvement or perinephric extension	2
Renal cell carcinoma calculus in both kidney	1
Renal cell carcinoma renal vein involvement with perinephric extension	1
Large inhomogeneous mass from tail and body and tail of pancreas	1
Aortocaval, precaval, retrocaval para aortic adenopathy s/o lymphoma	3
Growth at head of pancreas metastasis in liver	2
Pseudo pancreatic cyst	2
Growth at lower end of CBD	2
Mass arising from retroperitoneum metastasis in liver, hydronephrosis with hydroureter	1
Total	25

Vomiting

7 patients had complained of vomiting, Itching: In the present series 8 patients had complaints of itching more over the lower limb than upper limb. Its severity varied from mild to severe, in which patients were not able to sleep due to itching (Table 3). Clinical diagnosis series of 25 cases of lump in retroperitoneum, after thorough history and clinical examination provisional diagnosis was reached.

The common clinical diagnosis was obstructive jaundice due to Periampullary carcinoma 10 cases, Pseudo pancreatic cyst 5 cases, Pronephros's 2 cases, Hydronephrosis 3 cases, Non-Hodgkin's lymphoma 1 cases, Renal Cell carcinoma 2 cases, Retroperitoneal sarcoma 2 cases (Table 4).

Final diagnosis by CT scan 8 cases Growth seen at head of Pancreas with dilated CBD, extension into Porta hepatis, no portal veins involvement, 2 cases of Distended gall bladder s/o Ca head of pancreas with gall stone with ascites, renal cell carcinoma seen 4 cases out of 2 cases had no renal vein involvement or perinephric extension, 1 case calculus in both kidney and 1 case Renal vein involvement with perinephric extension. 1 case suggest Large inhomogeneous mass from tail and body and tail of pancreas. 3 cases of aortocaval, precaval, retrocaval para aortic adenopathy's/o lymphoma. 2 cases growth at head of pancreas metastasis in liver. 2 cases Pseudo pancreatic cyst. 2 cases Growth at lower end of CBD. 1 case mass arising from retroperitoneum

Metastasis in liver, hydronephrosis with hydroureter (Table 5).

DISCUSSION

The present series of 25 cases of clinically retroperitoneal lump was studied and the result were studied in detail as follows:

- Age and sex distribution of cases
- Clinical presentation of the patients
- Common clinical diagnosis
- Role of CT in definitive diagnosis of lump

Age and sex distribution of cases

In the present series the cases were distributed and compared with other series. On comparison of this series it was found that in the present series, majority of the cases occurred during third decades onwards, as also in Gill's series. In a study by Braasch J. W. et al maximum incidence was in the 4th and 5th decades. The youngest patient to present in this series was 29 and oldest was 70 years. Whereas in the series presented by Gill the youngest patient was 11 years and oldest was 88 years (Table 6).[5,6]

Table 6: In present series case compare with other series.

Age group	Present series	Braasch series	Gill's series
Less than 20 year	-	6	3
21-30	2	18	20
31-40	4	16	25
41-50	8	30	30
51-60	7	25	26
More than 61 year	9	6	30
Total	25	101	134

Table 7: In present series case compare with other series.

Sex of patient	Present series	Braasch series	Gill's series
Male	14	51	84
Female	11	50	60

So, the male: Female ratio in the present series was 1.3:1 as compared to 1.5:1 and in case of Gill's series it was 1.2:1 In a study carried out by Braasch J.W., et al. there was a male: female equal ration. Thus, it was clear that male case was more in number than female. (Table 7).[5,6]Clinical Presentation of the patient: In the present series finding of a lump was the most common presentation. It was seen in 24 cases. Next frequent presentation was pain, which was seen in 22 cases. Anorexia was there in 16 cases. Jaundice was there as main symptom in 16 patients in series presented by Gill et al, the main features was Hiding of a lump. Other symptoms in order of decreasing frequencies were pain in abdomen, jaundice, weight loss.

Table 8: Compare clinical diagnosis, CT scan diagnosis and laparotomy findings.

Clinical Diagnosis	CT impression	Exploratory	No.
Pseudo pancreatic cyst obstructive jaundice	Well defined mature cyst with compression over the surrounding structure	Cyst with compression over the stomach and duodenum	3
Lymphoma retroperitoneal huge retrocaval aortocaval, tumours	Huge retrocaval aortocaval, para aortic, per aortic lymph-adenopathy		4
Hydronephrosis renal mass	Mass arising from kidney without involvement of renal vein no Gerotas fascia infiltration	Growth from the kidney no lymph mode or vein involvement	3
	With renal vein involve Gerota's fuscia infiltration		2
Obstructive jaundice	Growth respectable without infiltration of surrounding vein or lymph node	Growth arising from head of pancreas no LN enlargement	2
	Growth unresectable infiltration of lymph node and portal vein		10
Ca stomach Mesenteric Lymphoma	Mass arising from retroperitoneum metastasis in Rt lobe of liver Rt hydronephrosis in hydroureter	Sarcoma from retroperitoneum liver metastasis + adhesion + no portal vein involvement	1

In a study carried out by Braasch et al common crenellation was pain in abdomen seen in 71 % of cases. Other presentation noted by him were abdominal lump, in 53 % fever was in 40.8% of cases, weight loss in 54%, nausea, vomiting in 31 %, In the present series other symptom were hematuria, weight loss, fever, vomiting and itching.[6] In a study by Stephen's et al CT scan was performed in 19 patients of retroperitoneal tumour.

They found that CT provided accurate correlation between CT finding and operative and gross pathological findings in 14 patients. In 18 of the 19 cases. the retroperitoneal tumour was obvious in the CT scan. The location of all tumours was accurately displayed. CT provided intonation concealing the effect of tumour on adjacent anatomical structures. In addition to demonstrating direct extension and metastasis within the retroperitoneal space, CT revealed unsuspected metastatic lesions within the liver.[7]

Masselot et al studied 54 patients of abdominal mass using the CAT scan. Renal tumour, neuroblastoma, hepatic tumours, rhabdomyosarcoma and several miscellaneous tumours were described.

The nephroblastoma was lateralized turnouts that was quite voluminous. CT is considered to be useful for Mis tumours when the diagnosis is doubtful. The neuroblastoma was more medial than the nephroblastoma and usually contained calcification.

CT seems particularly useful for following progress of a patient Immediately before surgery and for estimating the radiotherapy target volume.[8]

In a study by Probst P et al 40 patients with pathologically proven renal malignancies were staged by angiography and CT. CT is more acurate than angiography for detection of both perirenal and pararenal extension of the primary tumours in 25 patients. The diagnostic Proliance of CT is clearly superior to angiography in lymphatic spreads in 10 patients, and distant intestates in 5 patients. CT is therefore, becoming the primary diagnostic approach for the staging of renal malignant tumours.[9]

In a study by Jusechke W et al CT scan was prefund in 125 patients of renal tumour for pretreatment staging. Perineal extension was contently predicted in 79% of au the patients, lymph node involvement in 87 main renal vein involvement in 91, infiltration of the inferior Nena cava in 97 and invasion of neighboring organs in 96%. They concluded that CT should be the baseline for assessment of the extent of the spread of tumour.

In a study by Rossi P et al. 33 patients suspected of having a functioning tumours of the pancreas were studied with CT scan. CT was positive in 71 % of the cases and negative in 29%. There were no false positive.[10]

In a study done by Hussein S et al on 43 patients of adrenal mass to see which features correlated most significantly with malignancy. He found that in 30 patients the size contract enhancement and irregular consistency were found to be discrimination malignant from benign adrenal mass.[11]

Naik WG et al studied 33 patients of testicular malignancy with bulky lymph node metastases for regular follow up with CT scan, before, during and after chemotherapy. They suggest that CT has an important role in the management of patient with advance testicular malignancy, because CT provides useful information regarding expected regression rate on successful treatment and follow up.[12]

Brooks RH et al have done CT scan in 15 patients with biopsy proven retroperitoneal fibrosis. With follow up in all patient's mass is decreased in size, which will give idea about the response of the therapy.[13]

Muranka T studied 78 patients with a pancreatic head mass. The CT findings of an enlarged pancreatic body is important due to the presence of a small carcinoma in the head of pancreas. The pancreatic body width in focal inflammatory masses, was large compared to that in carcinoma of comparable size. Non-uniform pancreatic body with discontinuous duct was most commonly associated with pseudocyst. Characterization of the CT appearance of secondary changes in the pancreatic body may help to improve the diagnosis of pancreatic head mass.[14]

In a study of George et al 145 patients were subjected to determine the contrast enhanced CT to predict the resectability of malignant neoplasm of the pancreatic head. 42 were considered to have resectable tumour and underwent pancreaticdueodenectomy.[15]

Final diagnosis with CT Scan

Final diagnosis was confirmed by CT scan and exploratory laprotomy was done, if needed. (Table 8) showing CT scan diagnosis and laprotomy findings.

CONCLUSION

The results of the study lead to the following conclusion:

By clinical features and ancillary investigations, it is not possible to know the exact nature of the growth, its effect over the surrounding structures and metastases. CT scan plays an important role in localizing the exact anatomic site of retroperitoneal lump in all cases

In pancreatic pathology, CT scan gives the idea about, its effect on the surrounding structure, whether mass is operable or not, present or absent, lymph node metastases and porta hepatic involvement

In renal pathology, CT gives the idea about whether the mass is cystic or solid, perirenal and pararenal extension of the growth, renal vein involvement, inferior vena cava extension, metastases in the liver and in the lymph nodes and is useful in follow up of patients.

In lymphoma CT is of great value in detecting all the abdominal lymph nodes. It permits detection of additional enlarged lymph nodes within the lymphographic field together with further enlarged nodes in the area, not covered by the examination.

CT is helpful in detecting the tumor arising from retroperitoneum, in which other investigations do not give the exact nature and extent of the growth.

CT scan is also helpful in avoiding unnecessary abdominal explorations. Follow up of CT scan also gives us an idea about the response of the retroperitoneal tumour to chemotherapy and/or radiotherapy

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Nishino M, Hayakawa K, Minami M, Yamamoto A, Ueda H, Takasu K. Primary retroperitoneal neoplasms: CT and MR imaging findings with anatomic and pathologic diagnostic clues. 2003.
2. Weiss SW, Goldblum JR. Enzinger, Weiss's. Soft tissue tumors. 4th ed. St Louis: Mosby; 2001.
3. Singer S, Antonescu CR, Riedel E, Brennan MF. Histologic subtype and margin of resection predict pattern of recurrence and survival for retroperitoneal liposarcoma. Ann Surg. 2003;238:358-71.
4. Jagues DP, Coit DG, Hajdu SI, Brennan MF. Management of primary and recurrent soft-tissue sarcoma of the retroperitoneum. Ann Surg. 1990;212:51-9.
5. Braasch JW, Mon AB. Primary retroperitoneal tumours. Surg Clin North Am. 1967;47:663-78.
6. Gill W, Carter DC, Durie B. Retroperitoneal tumours: a review of 134 cases. J Royal Coll Surg Edinburg. 1970;15:213-21.
7. Stephens DH, Sheedy PF, Hattery RR, Williamson B. Diagnosis and evaluation of retroperitoneal tumour by computed tomography. Am J Radiol. 1977;129:395-402.
8. Masselot J, Cournet D, Fekate NC, Passil G, Venal D. Computed tomography in the study of abdominal mass. Int Congress Surg. 1979;463:348-7.
9. Probst P, Hoogewoud HM, Haertel M, Zingg E, Fuchs WA. Computerised tomography versus angiography in the staging of malignant renal neoplasm. Br J Radiol. 1981;54;744-53.
10. Jaschke W, Van G, Kaicki, Peter S, Palmtag H. Accuracy of tomography in staging of kidney tumours. Acta Radiologica. 1982;23:593-8.
11. Husain S, Belldegrun A, Seltzer SE, Richie JP, Gittes RF, Abrams HL. Differentiation of malignant from benign adrenal masses: Predictive Indices on Computed Tomography: Am J Radiol. 1985;144:61.
12. Naik WJ, Heron CW, Husband JE. Computed tomography of the abdomen in advanced seminoma response to treatment. Clin Radiol. 1987;38:629-33
13. Brooks R, Reznek RH, Judith A, Webb W, Baker LRI. Computed tomography in the follow-up of reuoperitoneal fibrosis. Clinical Radiol. 1987;38:597-601.
14. Muranka T. Morphologic changes in the body of the pancreas secondary to a mass in the pancreatic head; analysis by CT. Acta Radiologica. 1990;31:483-8.
15. George M, Fubraman, Martin RG, Femoqlio OJ. Contrast enhanced CT to predict the respectability of malignant neoplasm of the pancreatic head. Am J Surg. 1994;167:104-13.

Cite this article as: Tandel PR, Patel HR, Patel KU. Role of CT scan in evaluation of retroperitoneal lumps. Int Surg J 2018;5:3246-51.