

A Short-Term Prospective Study of Retroperitoneal Tumours in a Tertiary Hospital in Eastern India

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ABSTRACT

BACKGROUND

Retroperitoneal tumours are rare but diverse group of neoplasms that arise from the retroperitoneum, and account for 10% of all soft tissue tumours. Managing retroperitoneal tumours is challenging because they typically present at a relatively late stage, and are anatomically proximate to major vessels and vital organs. This study was carried out to find out different clinicopathological profiles of patients who presented with retroperitoneal tumours in our hospital during the tenure of this study.

METHODS

This is an observational study. 25 patients with retroperitoneal tumours were studied. For statistical analysis, data was entered into a Microsoft Excel spreadsheet and then analysed with SPSS Version 25.0.

RESULTS

In our study, we studied 25 patients with retroperitoneal tumours. Most of the patients were in the age group of 40-60 years (48.00%) with a mean age of 42 years and standard deviation of 15.0416. The most common presenting complaint (s) in the patient population attending our institution was abdominal lump and pain (40.00%) followed by pain (32%). Amongst the signs, 96% of the patients had an abdominal lump and 92% had tenderness. Transabdominal ultrasonography revealed 16 homogeneous and 9 heterogeneous masses for which computed tomography (CT Scan W/A) was done for all 25 patients studied which depicted 19 homogeneous (solid or cystic) and 6 mixed primary retroperitoneal tumours. All patients underwent open surgery at our institute, but complete resection was possible in only 18 (72.00%) patients whereas 4 (16.00%) underwent a partial resection and 3 patients were inoperable. 17 cases are reported to be malignant (68.00%) with complete curative resection with margins free of tumour in 52.94% of them and 8 cases were benign (32.00%) and all of them were found to have clear margins. Among the malignant tumours, liposarcomas were the most common while neural tissue tumours were the most common benign type.

CONCLUSIONS

The incidence of retroperitoneal tumours is maximum in the 5th decade of life, though it can occur in any age group. Symptoms of pain abdomen, abdominal lump should be properly evaluated to diagnose retroperitoneal tumours.

KEY WORDS

Primary Retroperitoneal Tumour, Clinicopathological Profile

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BACKGROUND

Retroperitoneal tumour are rare but diverse group of neoplasms that arise from the retroperitoneum, comprising about 10% of all soft tissue tumours.¹ Retroperitoneal tumours (RTs) commonly present with abdominal distension and palpable mass. In many cases, they are detected as a result of imaging techniques performed to investigate unrelated issues. Although Retroperitoneal tumours can be located in the gastrointestinal and urinary tracts, patients rarely present with symptoms in these systems.^{2,3} The retroperitoneal space is the second most frequent location, followed by the lower extremities, where malignant mesenchymal tumours arise. Each year, approximately 250 to 300 new cases of retroperitoneal sarcoma are diagnosed in the United Kingdom.⁴ Despite the rare nature of RTs, two thirds of these diagnoses represent malignant tumours. Managing retroperitoneal tumours is challenging because they typically present at a relatively late stage, and are anatomically proximate to major vessels and vital organs. Masses encountered in the retroperitoneum may be benign, primary malignant, or metastatic.

Primary retroperitoneal tumours presents an uncommon group of neoplasms that account for 0.01% to 0.3% of all tumours.⁵⁻⁸ They derive from tissues contained in the retroperitoneal space (adipose, muscular, vessel and nerve tissue), from embryonic remnants or heterotopies coming from one or more embryonic layers (ectoderm, mesoderm and endoderm) or from totipotent embryonic germ cells. They do not include any growing lesions belonging to the retroperitoneal organs (kidneys, adrenal glands, excretory tract, pancreas and colon) or secondary invasive organs such as systemic masses (lymphomas) and metastases.^{9,10} The tumours are mostly malignant in both adults and infants (62%–86%).^{11,10,12-15}

This short-term study was carried out to find out different clinicopathological profile of patients who presented with retroperitoneal tumours and this study was an effort to focus about characteristics of retroperitoneal tumours in our locality in eastern India.

METHODS

After taking approval from the institutional ethics committee, the study was carried out in the Department of General Surgery, SSKM Hospital, Kolkata. All cases with uncomplicated retroperitoneal tumours attending the study area within the mentioned time were included. Paediatric patients, unwilling patients and patients with tumours arising from the kidney and pancreas were excluded. A total of 25 patients was considered. (SINCE these are rare tumours, only patients meeting the inclusion and exclusion criteria within the study time were considered) Patients meeting the inclusion and exclusion criteria were subjected to a detailed history and clinical examination, investigations (including ultrasonography, contrast enhanced CT-Scan of the abdomen, routine blood tests) and prepared for surgery. Preoperatively, the resectability was assessed. If resectable, the mass was resected. If complete resection was not feasible, a debulking partial resection was carried out. If unresectable,

some tissue was taken for histopathological examination. The preoperative radiological findings were tallied with the preoperative findings. Postoperatively, the histopathological characteristics were studied.

Statistical Analysis

For statistical analysis data were entered into a Microsoft excel spreadsheet and then analyzed by SPSS (version 25.0; SPSS Inc., Chicago, IL, USA). Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. A chi-squared test (χ^2 test) was any statistical hypothesis test wherein the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Without other qualification, 'chi-squared test' often is used as short for Pearson's chi-squared test. Unpaired proportions were compared by Chi-square test or Fischer's exact test, as appropriate. p-value ≤ 0.05 was considered for statistically significant.

RESULTS

		Frequency	Percent	Z-value	p-value
Age in years	12-20	4	16.0%	0.6623	.50926
	21-30	2	8.0%		
	31-40	4	16.0%		
	41-50	7	28.0%		
	51-60	5	20.0%		
	61-70	3	12.0%		
	Total	25	100.0%		
Sex	Female	13	52.0%	0.2828	.77948
	Male	12	48.0%		
	Total	25	100.0%		

Table 1 Age and Sex Distribution

		Frequency	%	Z-value	p
Chief complaints	Abdominal lump	7	28.0%	0.5893	.5552
	Abdominal lump + pain	10	40.0%		
	Pain	8	32.0%		
	Total	25	100.0%		
Lump	No	1	4.0%	6.5054	<.00001
	Yes	24	96.0%		
	Total	25	100.0%		
Tenderness	No	2	8.0%	5.9397	<.00001
	Yes	23	92.0%		
	Total	25	100.0%		

Table 2. Distribution of Chief Complaints, Lump and Tenderness

		Frequency	%	Z-value	p
Ascites-USG	No	19	76.0%	3.677	.00024
	Yes	6	24.0%		
Displacing bowel loops-USG	No	5	20.0%	4.2426	<.00001
	Yes	20	80.0%		
Composition USG	Heterogeneous	9	36.0%	1.9799	.0477
	Homogeneous	16	64.0%		
USG Boundary	Ill Defined	14	56.0%	0.8485	.39532
	Well Defined	11	44.0%		
Invading adjacent structures-CT scan	No	15	60.0%	1.4142	.15854
	Yes	10	40.0%		
Fat planes-CT scan	Lost	15	60.0%	1.4142	.15854
	Preserved	10	40.0%		
Composition CT scan	Heterogeneous	6	24.0%	3.677	.00024
	Homogeneous	19	76.0%		
CT Scan Boundary	Ill Defined	14	56.0%	0.8485	.39532
	Well Defined	11	44.0%		
Type of resection	Complete resection	18	72.0%	3.9886	.00006
	Partial	4	16.0%		
	Unresectable	3	12.0%		
Histopathology	Cystic inflammatory mass	1	4.0%	1.9868	.0466
	Ganglioneuroma	1	4.0%		
	Leiomyosarcoma	1	4.0%		
	Lipoma	1	4.0%		
	Liposarcoma	9	36.0%		

	Lymphangioma	1	4.0%		
	Lymphoma	3	12.0%		
	Malignant fibrous histiocytoma	1	4.0%		
	Malignant schwannoma	1	4.0%		
	Mature cystic teratoma	2	8.0%		
	Neurofibroma	1	4.0%		
	Rhabdomyosarcoma	2	8.0%		
	Schwannoma	1	4.0%		
HPE	Benign	8	32.0%	2,5456	.01078
	Malignant	17	68.0%		

Table 3. Distribution of USG features- Ascites, Displacement of Bowel Loops, Composition, Boundary, CT-Scan Features: Invading Adjacent Structures, Fat Planes, Composition, Type of Resection, Histopathology and HPE

HPE			
Histopathology	Benign	Malignant	Total
Cystic inflammatory mass	1	0	1
Row %	100.0	0.0	100.0
Col %	12.5	0.0	4.0
Ganglioneuroma	1	0	1
Row %	100.0	0.0	100.0
Col %	12.5	0.0	4.0
Leiomyosarcoma	0	1	1
Row %	0.0	100.0	100.0
Col %	0.0	5.9	4.0
Lipoma	1	0	1
Row %	100.0	0.0	100.0
Col %	12.5	0.0	4.0
Liposarcoma	0	9	9
Row %	0.0	100.0	100.0
Col %	0.0	52.9	36.0
Lymphangioma	1	0	1
Row %	100.0	0.0	100.0
Col %	12.5	0.0	4.0
Lymphoma	0	3	3
Row %	0.0	100.0	100.0
Col %	0.0	17.6	12.0
Malignant fibrous histiocytoma	0	1	1
Row %	0.0	100.0	100.0
Col %	0.0	5.9	4.0
Malignant schwannoma	0	1	1
Row %	0.0	100.0	100.0
Col %	0.0	5.9	4.0
Mature cystic teratoma	2	0	2
Row %	100.0	0.0	100.0
Col %	25.0	0.0	8.0
Neurofibroma	1	0	1
Row %	100.0	0.0	100.0
Col %	12.5	0.0	4.0
Rhabdomyosarcoma	0	2	2
Row %	0.0	100.0	100.0
Col %	0.0	11.8	8.0
Schwannoma	1	0	1
Row %	100.0	0.0	100.0
Col %	12.5	0.0	4.0
TOTAL	8	17	25
Row %	32.0	68.0	100.0
Col %	100.0	100.0	100.0

Table 4. Histopathology: HPE

DISCUSSION

The current study was an endeavour to assess the clinicopathological characteristics of primary retroperitoneal tumours in adult population at a Tertiary Referral Hospital in Eastern India. As they are rare tumours, our study comprised of 25 patients assessed over a period of January 2016-September 2017. Most of the patients were in the age group of 40-60 years (48.00%) with a mean age of 42 years and standard deviation of 15.0416. This corroborates with the study of CE Gratita et al¹⁶ who also found that the incidence of these tumours is maximum in the fifth decade of life. 4 (16.0%) patients had 12-20 years of age, 2 (8.0%) patients had 21-30 years of age, 4 (16.0%) patients had 31-40 years of age, 7 (28.0%) patients had 41-50 years of age, 5 (20.0%) patients had 51-60 years of age and 3 (12.0%) patients had 61-70 years of age. Distribution of age in years was not

statistically significant (p=.50926). 13 (52.0%) patients had female and 12 (48.0%) patients had male. Distribution of sex was not statistically significant (p=.77948).

Most patients who have a retroperitoneal tumour present with abdominal swelling/increase in girth, early satiety and abdominal discomfort, and most patients have a palpable mass.³ Many benign lesions are discovered as an incidental finding during imaging for unrelated symptoms.² Location of retroperitoneal mass will directly impact how the patient clinically presents. For example, retroperitoneal masses located near the kidney and ureters can cause a patient to present with decreased urinary output, flank pain, and renal failure. A retroperitoneal mass near the duodenum can manifest with gastric outlet obstruction leading to nausea, vomiting, and early satiety in patients. Occasionally, patients also experience nonspecific symptoms including vague abdominal pain, weight loss, general malaise, and nausea. Although the gastrointestinal and urinary tracts are often displaced, they are rarely invaded and gastrointestinal or urinary symptoms are unusual¹⁷, a high index of suspicion is needed in order to include retroperitoneal masses as a part of the differential diagnoses of common complaints such as nausea and abdominal pain.

Clinical symptoms are (in decreasing order of occurrence)¹⁸ are abdominal/flank mass, pain, anaemia, upper urinary track obstructive symptoms, weight loss/anorexia, fever, intestinal obstructive symptoms, pedal oedema and haematuria. The most common presenting complaint (s) in the patient population attending our institution was abdominal lump and pain (40.00%) followed by pain (32%), abdominal lump (32%). Amongst the signs, 96% of the patients had an abdominal lump and 92% had tenderness. Apart from these, majority of our patients complained of weight loss and/or anorexia. Ultrasonography is a good modality to differentiate solid from cystic mass. It can comment about the location. The investigation of choice is cross sectional imaging. Cross-sectional imaging has revolutionised the investigation of patients with retroperitoneal neoplasms. Both CT and MRI play an integral role in the characterisation of these masses and in evaluation of their extent and involvement of adjacent structures, and therefore in treatment planning. In order to define a primary retroperitoneal tumour as such, it is absolutely necessary to exclude its origin from retroperitoneal organs.¹⁹

Patients included in our study underwent transabdominal ultrasonography to reveal 16 homogenous and 9 heterogenous masses; which computed tomography (CT SCAN W/A) was done for all 25 patients studied which depicted 19 homogeneous (SOLID or cystic), 6 mixed primary retroperitoneal tumours; with invasion of adjacent structures by 10 (40.00%), loss of fat planes in 15 cases (60.00%) and encasement of vital vascular structures by 4 of them. Surgical exploration was carried out in all patients. Laparotomy was done in all of these. Prior to operative intervention, 4 patients underwent blood transfusion to correct their severe anaemia (14.28%) which matches with S. Aliyu et al⁵ who also gave blood transfusion to 21 of their 130 patients (16.15%) for the same preoperative complication of severe anaemia. Complete surgical resection is the only potential curative treatment modality for both benign and malignant retroperitoneal tumours, but, local recurrence in case of malignant tumours occurs in a large proportion of patients and is responsible for

as many as 75% of tumour-related deaths. The prognostic factors that are known to govern local recurrence and overall survival in retroperitoneal tumours are complete macroscopic excision, tumour grade, multifocality and histological subtype.^{20,17} Within the framework of a study evaluating 500 patients with retroperitoneal sarcoma, who were treated at Memorial Sloan-Kettering Cancer Center, it was found that the average life expectancy for patients who had complete resection was 103 months, this decreased to 18 months for patients who had incomplete resection or whose tumours were inoperable.²¹

With the aim of curative resection and wide margins of excision in mind, the 22 patients underwent open surgery at our institute, but this was possible in only 18 (72.00%) patients whereas 4 (16.00%) underwent a partial resection and 3 were unresectable; which is in contrast to S. Aliyu et al¹⁸ wherein complete tumour resection was achieved in 51.54% patients (67/130) while 63 of the 130 patients (48.46%) had either debulking or biopsy due to advanced disease. As per literature, during surgery for retroperitoneal sarcomas, resection of adjacent involved organs is frequently required and rates of resection of adjacent viscera are reported in large series from 34% to 93% while macroscopic clearance was obtained in 55–93%.^{22,23,24} The most common organs requiring resection are the colon, kidney, pancreas and spleen. However, in our study, 1 patient required a right hemicolectomy followed by ileo-transverse anastomosis, 1 required a distal pancreatectomy and splenectomy, 1 required only splenectomy and 1 a nephrectomy. Thus, of the 18 cases undergoing complete resection, 4 required resection of adjacent organs (i.e. 22.22%). The size of the tumours that were resected ranged from 10-45 cm in greatest dimensions, which is in sharp contrast to that of Jiang YY et al¹¹ who reported a size variation of 3 to 34 cm. This is significantly lower than our finding and the possible explanation for this is that in the Indian scenario patients present late, due to ignorance, neglect of personal health and lack of adequate health care facilities throughout the country, apart from other social factors. The total of 25 patients were then monitored post operatively and among them, 2 expired soon after the operation while 5 developed significant post-operative complications/morbidity.

The histopathological report was available for all our patients, and the broad categorization into benign and malignant was made, apart from the exact diagnosis. 17 cases are reported to be malignant (68.00%) with complete curative resection and margins free of tumour in 52.94% of them. Similarly, 8 cases were benign (32.00%) and all of them were found to have clear margins; these are unlike the findings of Li S²⁵ who, in his study of 201 patients found 113 to be malignant (56%) and complete resection of 51% of these; whereas 88 (44%) tumours were benign with again a significant 81% of these undergoing complete curative resection. Among the malignant tumours, liposarcomas were the most common while neural tissue tumours were the most common in the benign group.

CONCLUSIONS

Although the incidence of retroperitoneal tumours is maximum in the 5th decade of life, they can occur in any age

group. Symptoms of pain abdomen, abdominal lump should be properly evaluated. It is recommended that retroperitoneal tumours be treated by an experienced team of surgeons, employing a multidisciplinary approach. Since these are rare conditions, more studies are needed for improving the outcome.

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