

A CASE STUDY ON RETROPERITONEAL MASSES

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ABSTRACT

Background

Retroperitoneal masses are a large group of uncommon tumours which originate in the retroperitoneal space in the abdomen. Their diverse presentations and locations make them difficult to diagnose by surgeons and need precise radiological diagnosis. Most of the diagnosed tumours are in advanced size and stage and are malignant in nature. Some of them are radio/chemotherapy sensitive but the definite management should be by complete resections of the tumours.

Objectives

The primary aim of our study is to identify patients diagnosed with retroperitoneal masses among elective cases in two surgical hospitals in Sulaimani Governorate/ Iraq over four years. All underwent combined surgical management with chemo/radiotherapy and followed up.

Materials and Methods

Seven patients with retroperitoneal masses are reported in this paper, five of whom are male and two females. Their ages range from 3 to 72 years, and the mean age is 40.4. In addition, other surgeons who practiced in different specialties brought some of the cases to us. Over four years, they were hospitalized and treated at Sulaimani Teaching Hospital and Soma Private Hospital. The patients underwent surgery following a thorough history, physical examination, and imaging, and the histological findings determined the definitive diagnosis. In addition to direct questioning the patients and patients' parents (as one case was a child) to obtain their consent, information was gathered from the medical records of both hospitals.

Results

Complete resection of retroperitoneal tumours by surgical approach was reported in five patients included in the study, and residual tumours were reported in two. An uneventful post-operative period in all of them, and recurrence was recorded in the follow-up period in three of them. Histopathological findings were: two well-differentiated liposarcomas, one dedifferentiated liposarcoma, one Ewing sarcoma, one rhabdomyosarcoma, one ganglioneuroma, and one lipoma. Mortality was reported in three of the patients.

Conclusion

Retroperitoneal tumours are rare and require precise diagnosis by physical examination and imaging modalities. The primary management method in our study was surgical resection combined with neoadjuvant chemo/radiotherapy and regular follow-up.

Keywords: *Retroperitoneal masses, Tumours, Laparotomy, Neoadjuvant, Liposarcoma.*

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INTRODUCTION

Retroperitoneal tumours account for diverse lesions originating in the retroperitoneal space and are considered a diagnostic challenge for surgeons and radiologists ⁽¹⁾. The precise prevalence is difficult to demonstrate, but the incidence rate is roughly calculated at 0.31 per 100,000 people per year. Approximately 53–56% of the patients are female, and the average age at diagnosis is 59–61 ⁽²⁾.

Nearly 70–80% of primary retroperitoneal soft tissue tumours are malignant; however, these only constitute about 0.1–0.2% of all malignancies ⁽³⁾. They are derived from tissues within the retroperitoneal space (adipose, muscular, vessel, and nerve tissue), embryonic remnants, or heterotopies which come from one or more embryonic layers (ectoderm, mesoderm, and endoderm), or totipotent embryonic germ cells⁽⁴⁾.

Retroperitoneal tumours are uncommon, yet two-thirds have a malignant tumour diagnosis. Around one-third of retroperitoneal tumour patients are sarcomas. The most prevalent sarcomas are liposarcoma, malignant fibrous histiocytoma, and leiomyosarcoma. Lymphoma, epithelial tumours, malignant paraganglioma (which is characterized as benign when no metastasis occurs), and metastatic tumours are other forms of malignant retroperitoneal tumours. Among the benign tumours, fibromatosis, renal angiomyolipoma, benign paraganglioma, neurofibroma, lipoma, angiofibroma, and schwannoma can be found ⁽⁵⁾.

The retroperitoneum in the abdomen is bounded by the posterior parietal peritoneum anteriorly and the transversal fascia posteriorly. They extend from the diaphragm superiorly and continue into the extraperitoneal space in the pelvis inferiorly. The retroperitoneum is roughly divided into the anterior and posterior pararenal, perirenal, and great vessel spaces⁽⁶⁾.

Most patients with retroperitoneal tumours present with complaints of abdominal distension/increase in circumference, early satiety, and abdominal distress, and most of the patients have a palpable mass on examination ⁽⁷⁾.

Thorough physical examination, assessment of all peripheral lymph nodes, and testicular examination for male patients are crucial when approaching patients with retroperitoneal tumours⁽⁵⁾.

Numerous diagnostic methods can be utilized for the assessment of retroperitoneal tumours, including standard methods (plain radiography, intravenous urography, retroperitoneal lymphography, and angiography), Ultrasonography (USG), computed tomography (CT), and Magnetic Resonance Imaging (MRI) ⁽⁸⁾.

With the emergence of ultrasonography, some hope was brought out for retroperitoneal evaluation, yet, the air is one of the enemies of ultrasound. In some cases, ultrasound was unsuccessful in assessing the retroperitoneum satisfactorily⁽⁹⁾.

In addition to helping describe tumours in the retroperitoneal area, CT scans and MRIs are also helpful in determining the severity of the disease. While MRI has a greater soft-tissue contrast and aids staging, CT is a fantastic tool for evaluating calcification. A further benefit of MRI is that it may be used to detect any potential vascular invasion ⁽¹⁰⁾. Surgery persists as the primary conceivable treatment, which proposes a chance of radicalization and treatment of this disease. The accurate surgery involves en-bloc resectioning the tumour by removing all the involved structures. Extended surgery with a free tumour margin proposes the most remarkable results in terms of local recurrence rates when it is compared with simple excisions. The best chance for a curative resection is at the primary presentation of the retroperitoneal tumours ⁽²⁾.

In addition to surgical procedures for retroperitoneal sarcomas, the efficacy of perioperative radiation therapy has become motivating ⁽³⁾.

Neoadjuvant/adjuvant chemotherapy for common histological subtypes has not revealed dependable signs of a disease-free survival benefit, although there may be some conditions where it is valuable. For subtypes such as the Ewing family of tumours, chemotherapy is a vital part of the primary management and has undoubtedly enhanced survival ⁽⁷⁾.

Doxorubicin has been an effective drug in the systematic treatment of retroperitoneal sarcomas for around 30 years. Ifosfamide and other drugs have also been used in combination with doxorubicin ⁽³⁾.

Managing retroperitoneal tumours is challenging because they characteristically present at a relatively late stage and are structurally adjacent to major vessels and vital organs. Consequently, local recurrence after

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surgical resection is not infrequent and significantly affects the survival of patients with retroperitoneal tumours ⁽¹¹⁾.

The main aim of this study is to identify patients diagnosed with retroperitoneal masses among elective cases in two surgical hospitals in Sulaimani governorate/ Iraq over four years. All underwent combined surgical management in the form of laparotomy with chemo/ radiotherapy and followed up.

METHODS

Registration and ethics: According to the Helsinki Declaration, "Every research project involving human beings must be registered in a publicly available database before recruiting the first subject," the registry number for this study has been set aside. The Kurdistan Board of Medical Specialties' Scientific and Ethical Committee approved this study's execution.

Study design

This study is a collective case study.

Setting

The locations where the cases were managed were academic, community, and private practice hospitals in Sulaimani Governorate/ Iraq. The patients were seen and treated between July 2018 and February 2022, and their data was gathered during this time. Information was gathered through patient records, patients, and the responsible surgeons.

Participants

All patients diagnosed with retroperitoneal masses admitted to Sulaimani Teaching Hospital and Soma Private Hospital met the inclusion criteria. A medical history, physical examination, abdominal/pelvic ultrasound, CT scan, and MRI were used to diagnose them. In addition, patients' medical records, healthcare professionals, and the patients themselves were used to gather sociodemographic and clinical information.

Pre-operative evaluation

Every patient was prepared for general anaesthesia and received the appropriate pre-operative checks from the anaesthetist regarding vital signs, blood tests, and imaging. A cardiologist also examined one patient with an ischemic heart disease (IHD) history. In addition, they all had mechanical and chemical bowel preparation in the form of oral laxatives and antibiotics

the day before surgery.

Type of operation

Under general anaesthesia (GA), in the supine position, all patients underwent laparotomies, during which the abdomen was explored, and masses were excised. They received intravenous hydration and antibiotics for an eight-hour pre-operative fasting period.

Perioperative considerations

The patients had continuous electrocardiography (ECG) monitoring throughout the procedure. Intravenous fluids in the form of crystalloids were infused according to vital signs and the duration of the surgery. Tube drains were left inside each patient's abdomen, and incisions were sutured in layers.

Surgical team

Consisted of a consultant general surgeon, senior house officers (board students), and scrub nurses.

Post-operative considerations

Patients were admitted to the ward or high dependency unit (HDU) with daily abdominal wound dressings, regular recording of vital signs, urine output, and drain output. The diagnosis of each case was proved by the histopathological examination (HPE) results of the excised specimen, which were performed on all resected tissues.

RESULTS

Participants

Ages ranged from three to seventy-two years old for the seven patients in this study, five of whom were men and two of whom were women. Some of the cases were referred by other surgeons after being identified as having retroperitoneal masses. A laparotomy and tumour resection were conducted for each of them during surgery. Unfortunately, three patients experienced recurrence, and three passed away during the follow-up period. After radiographic examinations of the abdomen and pelvis, the diagnosis was suspected; it was later confirmed after receiving the definitive histopathological report.

Patient 1: A 3 -year- old male patient with no past medical or surgical history; presented in March 2018

with asymmetry in the size of his right and left buttocks of many weeks' duration noticed by his parents. They also noticed that he had night sweats and decreased appetite.

A pelvic MRI with contrast was performed, showing (Large mass lesion on the right side of deep pelvic soft tissue with extension across the obturator foramen and into the gluteal region (9x6cm). It has a large component in the right-side perineal region, showing a low signal on T1, a high signal on T2 and STIR, high on diffusion and ADC with intense enhancement. Local bones are remodelled with no erosion. Picture most likely of large pelvic soft tissue malignant mass lesion possible Rhabdomyosarcoma). (Figure 1 A, B) A US-guided percutaneous true-cut biopsy was obtained from the mass and sent for HPE. The result showed (Morphological features of embryonal rhabdomyosarcoma) and was confirmed by immunohistochemistry.

The patient received five sessions of chemotherapy and then prepared for the operation.

The operation was performed in July 2018. In the supine position, under GA, the abdomen opened through a transverse lower abdominal incision, and a mass was identified lying deep in the pelvis at the right buttock. The mass was resected with preservation of the iliac vessels and right ureter. The resected tissues were sent for HPE.

HPE result was (Embryonal rhabdomyosarcoma with focal anaplasia. Surgical resection margin is involved in more than one point).

Follow-up imaging showed local recurrence with multiple hepatic and pulmonary metastases.

He received multiple adjuvant chemo/radiotherapy sessions and passed away in late 2019.

Patient 2: A 28 -year- old male patient with no past medical or surgical history; presented in September 2018 with chronic constipation of many months' duration. He was diagnosed with a large left-sided retroperitoneal mass (lipoma?) by imaging, and an operation was decided for him.

The patient was prepared for an operation in October 2018. In the supine position, under GA, through midline laparotomy incision, excision of a large left-sided retroperitoneal mass was done with preservation of adjacent structures. The

resected tissues were sent for HPE. (Figure 2) Follow-up imaging in 2021 showed a recurrence of the mass.

An abdominal CT scan with contrast was performed, showing (Evidence of a large (9x6.5x5cm) solid mass lesion with heterogeneous enhancement occupying the left hypochondrium and loin region anterior to the left kidney and inferior to the spleen, which is partially in contact. While not arising from them, it displaces bowel loops anteromedially and has no relation with the pancreas. The above overall picture is going with a retroperitoneal mass lesion. Although the patient has a history of operation for lipoma in the same region, the above picture is more going with retroperitoneal sarcoma).

The patient was prepared for an operation in December 2021. In the supine position, under GA, through midline laparotomy incision, excision of a large left-sided retroperitoneal mass was done with preservation of adjacent structures. The resected tissues were sent for HPE.

HPE result was (Dedifferentiated liposarcoma. Surgical resection margin of 1mm).

Follow-up imaging in 2022 showed a recurrence of the mass again, and he was scheduled for adjuvant chemo/radiotherapy.

Patient 3: A 72 -year- old male patient with a history of HT and IHD; presented in March 2019 with abdominal pain, distention, and constipation of many years' duration.

An abdominal CT scan with contrast was performed, showing (Evidence of a huge right side well capsulated rounded non-calcified, non-enhancing retroperitoneal heterogenous fat density component mass lesion measuring (30x20x17cm) in size, exhibiting multiple inner septations, lobulation and few peripheral locations causing great left side contra-lateral displacement of the bowel loops and posterior renal displacement signifies: right side huge retroperitoneal lipoma, however; underlying early sarcomata's changes are possible).

The operation was decided for him but postponed because of his cardiac condition. CABG and mitral valve replacement surgery (sternotomy) were done for him in March 2019.

The patient was prepared for an operation in April 2019. In supine position under GA, through

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midline laparotomy incision. A huge right-sided retroperitoneal mass was found and excised with the preservation of adjacent structures. The resected tissues were sent for HPE. (Figure 3) HPE result was (Well-differentiated liposarcoma with multiple differentiated foci. Negative resection margins.). He received adjuvant chemo/radiotherapy, and follow-up imaging showed no recurrence of the mass.

Patient 4: A 52 -year- old male patient with no past medical or surgical history; presented in April 2019 and was referred by a urologist with a complaint of back pain and progressive swelling of his right lower limb of many weeks' duration.

An abdominal CT scan with contrast was performed, showing (A large fat-containing, septate retroperitoneal lesion, measuring (37x21x18cm), compressing the liver and right kidney, invading segment VI liver and right psoas muscle and associated with mild right side pleural effusion, retroperitoneal liposarcoma?).

The patient received multiple neoadjuvant chemo/radiotherapy sessions and was prepared for the operation.

The operation was performed in April 2019. In the supine position, under GA, through midline laparotomy incision, an excision of a huge retroperitoneal mass en-bloc with a small liver segment was performed. The resected tissues were sent for HPE. (Figure 4) HPE result was (Giant ganglioneuroma. a Huge, completely inoculated mass touching one margin).

Follow-up imaging showed a recurrence of the mass twice in 2020, and 2021 with HPE showed the same diagnosis. He was operated upon twice with adjuvant chemo/radiotherapy and passed away in May 2022 with complications of lung metastasis.

Patient 5: A 44 -year- old male patient with a surgical history of appendectomy and no medical history; presented in February 2020 with a complaint of left-side abdominal pain of many months' duration.

An abdominal CT scan with contrast was performed, showing (Left iliac fossa enhancing mass of about (115x75mm) seen anteromedial to the left psoas muscle and causing complete encasement of left iliac vessels and distal left ureter, resulting in mild PCS and ureteric dilatation. Are possibilities matted LNs of lymphoma? Alternatively, it could be a desmoid tumour?)

The patient received multiple neoadjuvant chemo/radiotherapy sessions and was prepared for the operation.

The operation was performed in March 2020. Under GA, in the supine position, through midline laparotomy incision. A large retroperitoneal mass was found, invading the left ureter and kidney, fixed to the vertebral column at S2,3,4 and sacrum, with the invasion of the posterior wall of the urinary bladder. About 75% of the mass was excised, with the separation of left iliac vessels and left nephrectomy. The resected tissues were sent for HPE. (Figure 5) HPE result was (Retroperitoneal liposarcoma. Well-differentiated. Sclerosing sub-type. No involvement of left renal parenchyma by the tumour).

The patient passed away at home a few weeks postoperatively due to severe dehydration and renal failure, as he refused further treatment.

Patient 6: A 27 -year- old female patient with no past medical or surgical history; presented in November 2020 and was referred by an orthopedician with a complaint of right leg pain of many weeks' duration.

An MRI of the pelvis with contrast was performed, showing (Evidence of a large right para-vertebral heterogeneous soft tissue mass lesion is seen of about (72x103x86mm) in its maximum APxTRxCC dimensions, respectively. It elicits heterogeneous intermediate T1 and T2 signals with heterogeneous post-contrast enhancement. It is markedly displacing and stretching the right psoas muscle anterolaterally to the right side and right common iliac vessels medially, which are seen passing anteriorly over the mass lesion with venous collapsing and arterial half encasing. The mass lesion is characteristically growing into and widening the neural foramen of the right L5-S1 lateral foramen, likely involving the right S1 nerve root. The picture is highly suggestive of plexiform neurofibroma). (Figure 6 A, B).

The patient was prepared for an operation in January 2021 with the neurosurgery team. In the supine position, under GA, through midline laparotomy incision, a large paravertebral/ pelvic mass with the invasion of adjacent iliac vessels was found, dissection was done, and mass resected with preservation of the iliac vessels. The right S1 root was exposed and iatrogenically injured; decompression of the extra-foraminal root was done. The resected tissues were sent for HPE.

HPE result was (Extra-skeletal Ewing Sarcoma. State of resection margins cannot be assessed because of the nature of the specimens, which are multiple fragments.).

Follow-up imaging (PET/CT) showed a residual tumour (Figure 7), for which she received multiple sessions of chemo/radiotherapy, the last one in June 2022.

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HPE result was (Extra-skeletal Ewing Sarcoma. State of resection margins cannot be assessed because of the nature of the specimens, which are multiple fragments.).

Follow-up imaging (PET/CT) showed a residual tumour (Figure 7), for which she received multiple sessions of chemo/radiotherapy, the last one in June 2022.

Patient 7: A 57 -year- old female patient with a history of HT and DM; presented in November 2021 with lower abdominal pain of a few weeks' duration. There was an incidental finding of two retroperitoneal masses with a left ovarian tumour.

An MRI of the abdomen and pelvis with contrast was performed, showing (Evidence of a large complex heterogeneous enhancing mass in the pelvis with restricted diffusion areas and cystic component within, measuring (15x12cm), no clear origin, it is in contact with the uterine fundus and both ovaries, mainly left side and vascular supply has seen from the uterus as

a vascular pedicle, picture suggestive of malignant tumour? Possibly from the uterus or left ovary. Evidence of a well-defines complex cyst-like retroperitoneal lesion of (72x45mm) behind 3rd part of the duodenum, anterolateral to the aorta and IVC and infero-medial to the lower pole of the right kidney, showing minimal enhancing component without restricted diffusion foci within, and multiple foci of loss of signal (calcifications) are seen within, suspicious for retroperitoneal tumour?! Or metastasis? Mild pelvic free fluid is seen). (Figure 8 A, B)

The patient was prepared for an operation done in February 2022. Under GA, supine position, through a midline incision. Peritoneal free fluid was aspirated for cytology. A huge left ovarian mass was found with an appendix attached, total abdominal hysterectomy and bilateral salpingo-oophorectomy were done. Omental thickening was found, and an omentectomy was done. Two right-side retroperitoneal masses were found and excised. Small bowel and cecal nodules were found and excised. Pelvic (iliac and obturator) lymphadenectomy was done. All resected tissues were sent for HPE. HPE result was (Left ovarian tumour: granulosa cell tumour, adult type. Retroperitoneal masses: lipoma and necrotic fat with pseudocyst formation).

Follow-up imaging was all normal and showed no recurrence.

Outcome and follow-up: During the follow-up period of all the patients, two had a residual tumour, three had a recurrence of the retroperitoneal mass (two had recurrence twice), and one had a malignant transformation of a previously benign mass. Mortality was reported in three of the patients.

Complications and adverse or unanticipated events: No serious complications could be identified.

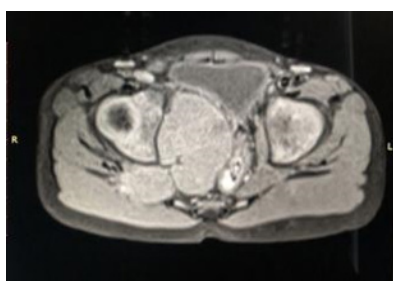


Figure 1. Contrast-enhanced pelvic MRI (A) axial section, (B) coronal section.

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Figure 2. Gross of the mass with cut sections.
HPE result was (Lipoma with focal fat necrosis).

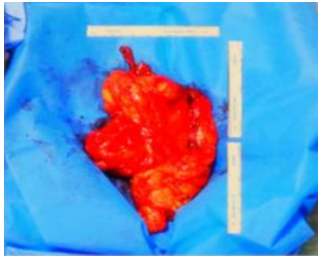


Figure 3. Resected mass.

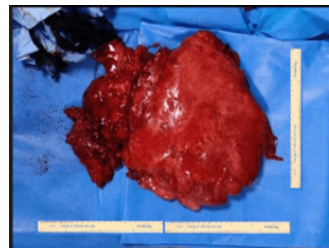


Figure 4. Resected mass with a liver segment.



Figure 5. Resected mass.

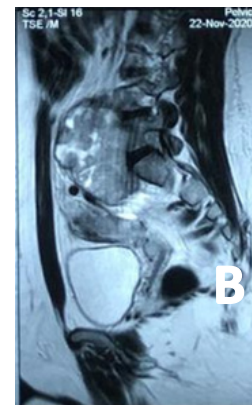
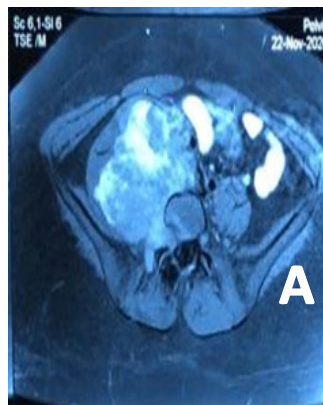


Figure 6. Contrast-enhanced pelvic MRI (A) axial section, (B) sagittal section.

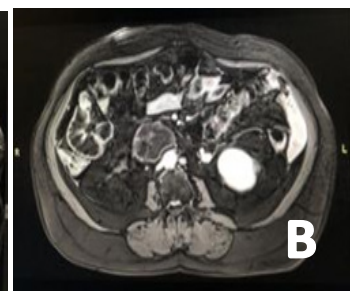
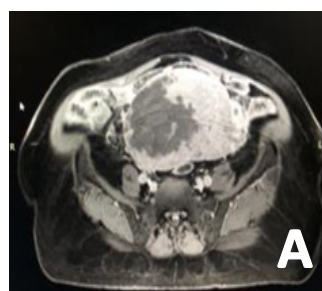
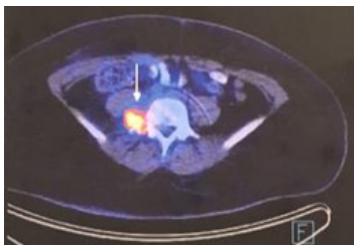


Figure 7. Hypermetabolic soft tissue mass in Figure 8. Contrast-enhanced abdominal/ pelvic MRI (A) the right distal paravertebral region and psoas axial section showing huge left ovarian tumour, (B) muscle with minimal extension into the right axial section showing a multi-foci retroperitoneal mass. L5-S1 intervertebral space without local bony destruction.

Table 1. Histopathological examination results.

Patient	Gender	Age (Year)	Result
1	Male	3	Embryonal Rhabdomyosarcoma
2	Male	28	1. Lipoma 2. Dedifferentiated Liposarcoma
3	Male	72	Well Differentiated Liposarcoma
4	Male	52	Giant Ganglioneuroma
5	Male	44	Well Differentiated Liposarcoma, Sclerosing Subtype
6	Female	27	Extra-skeletal Ewing Sarcoma
7	Female	57	Lipoma

DISCUSSION

Primary retroperitoneal tumours that originate in the retroperitoneum but outside the main retroperitoneal organs are rare and can be divided mainly into solid and cystic masses, and each of them can be additionally subdivided into malignant and benign masses ⁽¹²⁾.

Among the primary retroperitoneal tumours, 70-80% are malignant, constituting 0.1- 0.2% of all malignant tumours in the human body ⁽⁸⁾.

Presenting complaints are typically vague and depend on the affected anatomical region. Retroperitoneal sarcomas typically develop as a tumour that compresses nearby organs and causes abdominal discomfort, especially when it grows significantly. The most typical symptoms include back pain, intestinal obstruction, urinary and gynaecological symptoms, abdominal pain, and discomfort. It becomes superficially palpable as the bulk increases in size ⁽²⁾.

Computed tomography (CT) and magnetic resonance imaging (MRI) is the chief imaging modalities for assessing these lesions. Imaging characteristics ease the differential diagnosis, the tumour staging, and the surgical planning, as well as biopsy guidance ⁽¹⁾.

Retroperitoneal masses typically appear to develop gradually; 50% of retroperitoneal tumours are larger than 20cm when diagnosed. Even for the most qualified surgeons, they can be quite difficult to manage because they are relatively uncommon. Most retroperitoneal masses are malignant, and the prognosis for these cases is determined by the tumour grade and histologic subtype, the extent of the surgical resection, and the

presence of distant metastases ^(5,13).

After initial resection, local recurrence of retroperitoneal sarcomas is common and is commonly associated with a worse prognosis than primary retroperitoneal sarcomas ⁽²⁾.

In a study by Skapek et al. at the University of Texas Southwestern Medical Center, Dallas, TX, USA, they claimed that ionizing radiation and surgical resection are both necessary for the local management of retroperitoneal sarcomas. Radiation and cytotoxic chemotherapy are initially effective treatments for retroperitoneal sarcomas. There is currently no established standard of care for treating recurrent rhabdomyosarcoma, which has an extremely dismal prognosis. The overall prognosis of a rhabdomyosarcoma recurrence relies on various variables, including the tumour's histology, the disease stage at first diagnosis, and the site of the relapse ⁽¹⁴⁾.

In our study, one of our patients had a recurrence of rhabdomyosarcoma with hepatic and pulmonary metastases. Unfortunately, he passed away one year after the initial diagnosis, despite combining surgical resection with neoadjuvant chemo/radiotherapy.

Jyoti Tapadi and Anand Shrikant Gajakos at Ashwini Rural Medical College, Hospital and Research Centre, Kumbhari, India, did a study. They concluded male dominance. Males (28, i.e., 56%) were affected compared to females (22, i.e., 44%). Most of the patients were in the age group of 41- 60 (22, i.e., 44%) ⁽⁹⁾.

In our study, there was also male dominance (5:2), and the mean age of the patients was (40.4 years).

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In another study by Fabio Carbone et al. in the Department of Advanced Biomedical Sciences, Università Degli Studi di Napoli "Federico II", 80131 Naples, Italy. They stated that among retroperitoneal sarcomas, the most common histologic types are liposarcoma (about 56.8%), leiomyosarcoma (LMS, 24.7%), and undifferentiated sarcoma (8.6%). Liposarcomas are further subdivided into well-differentiated, dedifferentiated (DDLs), myxoid (ML), pleomorphic, mixed, and not otherwise specified⁽²⁾.

In our study, we had two cases of well-differentiated liposarcoma, one case of dedifferentiated liposarcoma, one case of rhabdomyosarcoma, and one case of Ewing sarcoma with two benign subtypes; ganglioneuroma and lipoma one case each.

In a case report on retroperitoneal ganglioneuroma as a cause of chronic lower back and leg pain in an 80-year-old man by G.S. Papaetis et al. done in Paphos, Cyprus. Retroperitoneal ganglioneuromas producing lower back and leg discomfort in this age group, according to them, are extremely rare. Unfortunately, in the middle-aged or senior population, the possibility of a retroperitoneal tumour being the source of these symptoms is rarely considered⁽¹⁵⁾.

Our study had a similar middle-aged male patient diagnosed with a giant retroperitoneal ganglioneuroma after consulting many physicians of different specialities.

In conclusion, since retroperitoneal tumours are uncommon, diagnosing them requires a high level of expertise, a careful physical examination, and precise imaging techniques. Retroperitoneal tumours require surgery in the form of a laparotomy for complete removal, which carries a high risk of patient morbidity due to the likelihood of nearby vessels or organ injury. Surgery is sometimes paired with neoadjuvant chemotherapy and radiation therapy to minimize tumour size and eliminate metastatic foci. Because of their aggressive activity, sarcoma subtypes have high rates of recurrence and mortality. Three of our patients had recurrent masses throughout the follow-up period of our study, and three of the patients passed away.

Recommendations

In patients of any age group presenting with abdominal pain/ fullness with back or leg pain, suspicion of retroperitoneal tumours should be made.

Contrast-enhanced abdominal/ pelvic CT scans and MRI are the best methods for diagnosing retroperitoneal tumours and identifying local invasion or distant metastasis.

Retroperitoneal tumour management best combines surgical resection with neoadjuvant chemo/ radiotherapy.

As the tumours may invade the adjacent bowel, mechanical and chemical bowel preparations are necessary prior to any surgical intervention.

Regular follow-up of the patients by the operating surgeons, oncologists, and radiologists is crucial for diagnosis and early management of any remanent or recurrent masses.

Conflicts of interest

No conflicts of interest could be reported.

Funding

There is no identifiable source of funding.

Ethical approval

The Kurdistan Board of Medical Specialties' Scientific and Ethical Committee approved their ethics.

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