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GIANT RETROPERITONEAL LIPOSARCOMAS: DIAGNOSTIC APPROACH WITH MULTIDETECTOR COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING

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Liposarcomas are the most common mesenchymal tumors of the retroperitoneal space. Retroperitoneal liposarcomas are usually grown slowly and frequently reach a very large size before clinical recognition. Precise diagnosis and distinct multiplanar evaluation is essential for complete resection of these tumors. Here in we reported two cases with giant retroperitoneal liposarcomas which were evaluated multiplanary with multidetector computed tomography and magnetic resonance imaging.

Key-word: Liposarcoma.

Soft-tissue sarcomas are rare tumors and represent less than 1% of all malignancies. Of all soft tissue sarcomas 10% to 15% are located in the retroperitoneum. Liposarcomas are the most common soft tissue sarcomas in adults and the second most frequent retroperitoneal tumours (1). They are most commonly located in the soft tissues of the extremities, but other sides such as retroperitoneum can be involved (2). Retroperitoneal liposarcomas (RLs) grow slowly in the very expandable retroperitoneal space in the deeply hidden and clinically silent retroperitoneum. Total resection of the tumour is the aim, including adjacent organs if necessary. But, its prognosis is poor due to tumor relapse and only complete surgical removal produces a "cure" (3).

Multidetector computed tomography (MDCT) and magnetic resonance imaging (MRI) are very important for diagnosis of RLs with fast multiplanar imaging techniques especially for huge ones. Hereby we demonstrated the facility of multiplanar evaluating of giant RLs with MDCT and MRI on two of our patients.

Case reports

Case 1

A 52-year-old woman admitted to our hospital with a one year history of abdominal pain, distension, dyspepsia, and alteration of intestinal habits. She did not have any loss in weight, on the contrary she put on weight. On physical examination, her abdomen had a marked distension and a palpable huge mass was filling the whole of her abdomen. Laboratory findings were considered as normal, also tumor markers (Carcino embryonic antigen and CA19-9) were within the normal limits. Abdominal ultrasound revealed a huge retroperitoneal solid mass which was filling all abdominal cavity. MDCT scan had been obtained using 16-section multidetector row CT (Sensation 16, Siemens Medical Solutions, Erlangen, Germany). Intravenous contrast-media had been administred and 60 sec delayed portal phase had been performed on CT scan. After MDCT scan, MRI was performed with a 1.5 T scanner (Intera-Best, Philips Medical Systems, Netherland, 2000). Scanning orientations were transvers and coronal balanced FFE Turbo spin-echo (TSE) T1 weighted images (TR/TE : 500 ms/15 ms, flip angle 80°) and TSE T2 weighted images (TR/TE: 1600/70 ms). T2 images were on coronal plane with spectral presaturation with inversion recovery (SPIR) sequence for fat-suppressed imaging. Contrast-enhanced T1 weighted MR images also obtanied with intravenous injection of gadopentantate dimeglumine (Magnevist, Schering, Germany) (0.1 mmol/kg of body weight).

On overall evaluation of tumor with MDCT and MRI the lesion had thickened, irregular septas and minor nodulary components. On contrast-enhanced images, sclerosing components of the mass were enhanced homogeneously on MDCT and MRI. These were the sclerosing components of the well differentiated liposarcoma, showed CT attenuation and MR signal intensity that approximated the characteristics of muscle (Fig. 1). The tumor did not involve the major vascular structures, and the organs. The lesion was hypointense relative to muscle on T1 and T2 weighted TSE images, and showed slightly enhancement (Fig. 2). MDCT attenuation and MRI signal intensity of the lesion was equal to fat tissue and with drop-out on fat-suppressed STIR images (Fig. 3). The T1 weighted criteria for well-differentiated liposarcoma were thick septation and nodularities with non-fatty signal intensity within tumors as this case. Thus, imaging on fat-suppressed STIR images, lesion was considered well-differentiated liposarcoma also when linear or nodular well-defined hyperintens septas were detected inside suppressed fatty lesion. No distant metastasis was detected. Histological examination revealed a well-differentiated liposarcoma.

Case 2

A 70-year-old woman was admitted to emergency department of our hospital with severe abdominal pain, distension, nausea, dyspepsia, anorexia, and abdominal tenderness. She had almost one-year of abdominal pain, and her complaints had significantly increased in the past two months. The abdomen was enlarged and a very large soft mass was palpable throughout the abdomen. Laboratory findings showed no significant changes. Abdominal ultrasound revealed a hypoechoic huge mass in retroperitoneal region that was displacing the right colon, and right kidney anteriorly and medially. MDCT imaging demonstrated a very large retroperitoneal mass of fat density that was filling right abdomen-pelvic cavity totally and left abdomen cavity partially. The lesion was com-

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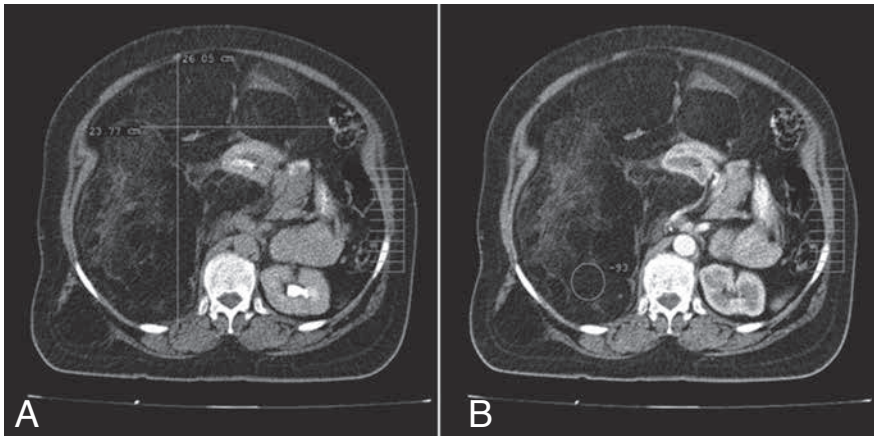

Fig. 1. – Noncontrast (A) and contrast-enhanced (B) CT images show a large fatty mass which is filling a very big portion of the abdominal cavity and displacing right kidney to medially and ventrally.

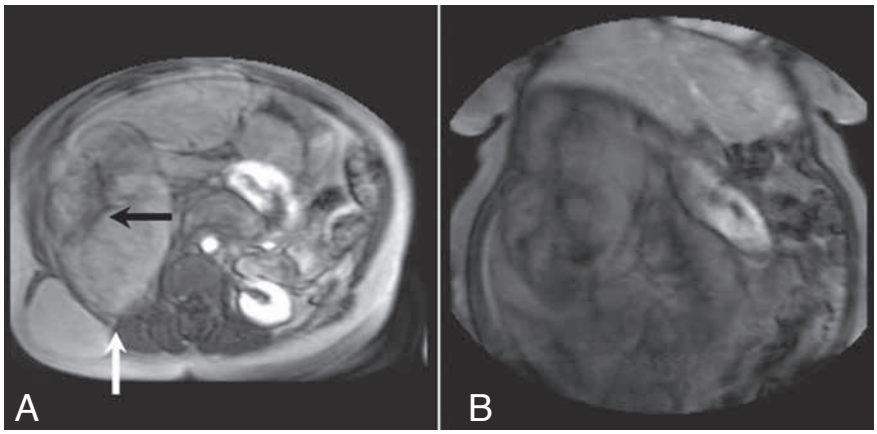

Fig. 2. – Contrast-enhanced axial (A) and coronal (B) T1 weighted TSE images show heterogeneously enhancing hyperintense lesion (white arrow) appears isointense in relation to subcutaneous fat and linear sclerosing components of the lesion (black arrow).

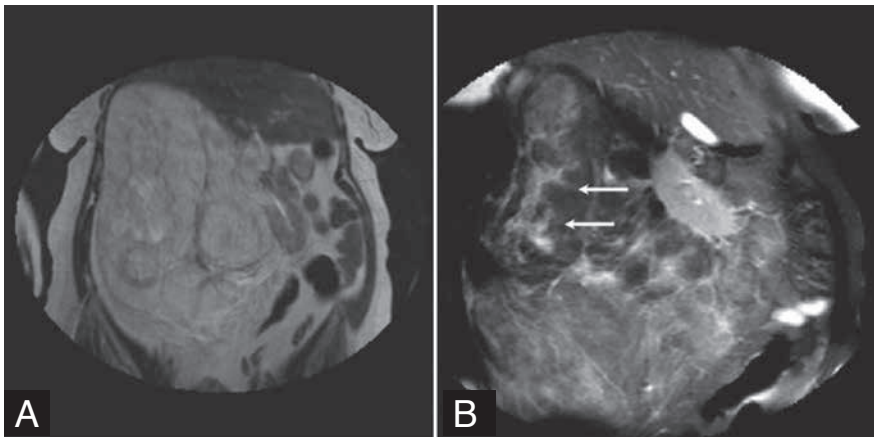

Fig. 3. – Coronal T2 weighted TSE (A) image shows giant abdominal fatty mass with homogeneously hyperintense in relation to subcutaneous fat. At the same location with T2 TSE SPIR sequence (B) image shows fat suppression of the lesion and hyperintense sclerosing septas (arrows).

pressing the liver superiorly. Right colon and sigmoid colon were seriously compressed by the mass anteriorly and the other colon segments was dilated due to obstruction of passage. Right kidney displaced superomedially also (Fig. 4). General condition of patient was bad and after MDCT scan, patient was sent to intensive-care unit. In this case, MRI could not be done due to bad condition of the patient. On histopathological examination, mature large-sized multivacuolated atypic fat cells demonstrated. This phenomenon was diagnosed as a well-diffentiated liposarcoma. As soon as later, patient was died in intensive-care unit due to cardio-pulmonary arrest.

Discussion

Liposarcoma is a malignancy of adipose tissue mostly found in the soft tissue of limbs, retroperitoneum, trunk, and mediastinum. Although slight male predominance can be seen in patients (4). However, the patients that we studied were women. Liposarcoma and leiomyosarcoma are the most frequent diagnosed sarcomas in the retroperitoneal space. Thus, 25-35 % liposarcomas consist of soft tissue sarcomas located in the retroperitoneal region (5). Liposarcomas usually grow slowly and frequently reach a very large size before recognised clinically and they generally present with symptoms of discomfort or palpable mass and causes disturbances in adjecent structures.

On pathology, recognition of lipoblasts is the key finding in histological diagnosis of liposarcoma. Liposarcomas is currently classified into five groups: well-differentiated (or atypical lipoma), pleomorphic, myxoid, round-cell and dedifferentiated liposarcoma subtypes. Prognosis of liposarcomas varies on the basis of the subtypes. Well-differentiated liposarcoma is considered a low-grade malignancy and myxoid liposarcoma is considered an intermediate-grade malignancy tumors. Pleomorphic and round-cell liposarcomas are considered high-grade malignancies with high rates of local recurrence and metastases (6). Like our cases, well-differentiated liposarcomas show a predominant presence of mature fat cells, and the amount of widely diffused lipoblasts is relatively low .

US imaging is very restricted valuable for detection in liposarcomas. They show hyperechoic or mixt echo texture on US imaging. But, with this modality detection of borders of

Fig. 4. – Coronal MDCT image shows giant retroperitoneal fatty tumor with septa which is filling all of right abdominal and pelvic cavity (arrow). Displacement to left of the retroperitoneal and intraperitoneal organs also seen.

huge lesions generally unsufficient such as giant RLs.

However, combined evaluation with computed tomography (CT) and MRI are the most effective radiological procedures determining the extend and invasions of RLs. These modalities are also valuable in the follow-up and are useful in detecting recurrence early. In last years, MDCT has become a useful modality for exact diagnosis and multiplanar evaluation of huge abdominal masses. Today, determining the distinct borders, extent of the lesions, and invasions can be easily made by MDCT. All of them reveal fat-tissue density and intensity values. After detecting the lipoid masses with MDCT, MRI is very helpful for distinguishing lipoma from liposarcoma with fat-suppressed T2 images or short tau inversion recovery (STIR) imaging (7).

In characterization of liposarcomas, CT imaging of a lipomatous mass is very likely to be a liposarcoma if it contains streaky densities or solid areas of soft-tissue density in addition to areas of pure fat density. Well-differentiated liposarcomas can have thickened, irregular septa and nodular components with attenuation on MDCT scans approximating that of muscle. In both of our cases were well-differentiated subtype, and they showed these typical patterns on MDCT and MRI.

For the evaluation of MRI, fat accounting for 75% of the entire tumor, will be hyperintense on T1-weighted images, intermediate-intense signal on T2-weighted images and drop-out on MRI fat –suppresed sequences images. The fat-suppression techniques (short tau inversion recovery-STIR) are sensitive enough in the diagnosis of liposarcomas (4). Focal areas of well-differentiated liposarcomas on T2-weighted images may have hyperintense signal relative to that of fat. Fat within the tumor may lead to diagnosis of liposarcoma, although abdominal tumors with fat are not always liposarcomas. Thin septal structure (sclerosing component) which also is one of the well-differentiated subtypes, showed similar signal intensity that approximated the characteristics of muscle. Less fatty liposarcomas composed of myxoid, pleomorphic, or round-cell subtypes have been reported (8).

In conclusion, RLs generally had large sizes because of their silent characteristics. At the time of diagnosis, the huge sizes of lesions should be evaluated carefully. On comparing the pathology, different subtypes of RLs exhibit varying MRI features, depending on tumor histological components. So, we emphasize that multiplanar imaging and evaluating of giant RLs with MDCT and MRI may be helpful for exact diagnosis and for predicting the prognosis.

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