CT findings of a retroperitoneal schwannoma

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Area of Interest: Abdomen Pelvis
Technique: CT
Case Type: Clinical Cases
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Patient: 56 years, female

Clinical History:

Right upper quadrant abdominal pain.

Imaging Findings:

A 56-year-old patient was admitted to the emergency department of our hospital for right upper quadrant abdominal pain. The patient underwent a CT examination, which showed an over-distended gallbladder with thickened wall, pericholecystic fluid and intraluminal stones. The findings were characteristic for acute calculus cholecystitis. (Fig. 1) CT scan also showed a large hypodense retro-peritoneal pelvic mass, 10x 9 cm in size, with few hypodense areas within. (Fig. 2) The well-defined mass with regular contours laterally displaced the sigmoid colon and compressed the bladder; however, fat planes of the surrounding pelvic organs and muscles were well preserved. The lesion was in close relationship to the sacrum and the fat planes appeared not preserved. After contrast medium administration the mass showed a poorly and inhomogeneous contrast enhancement. (Fig.3) The patient underwent cholecystectomy and a radical excision of the pelvic mass at the same time. Histological result of the resection specimen was a schwannoma.

Discussion:

Schwannomas (neurilemmomas) are benign soft tissue neurogenic tumours that arise from Schwann cells of peripheral nerve sheaths. They usually arise from sensory nerves; however, motor nerve origin is also reported. They most commonly manifest in the head and neck region and in the extremities. Retro-peritoneal schwannomas are rare and account for 0.7% to 2.7% of these tumours [1]. In the retro-peritoneal position, they occur most commonly between 40 and 60 years of age. They are usually solid, slow-growing well capsulated masses with a smooth surface, originating from a paravertebral area. As the retro-peritoneum is a flexible, non-restrictive space, schwannomas grow to a large size before discovery and may show cystic degeneration, hyalinisation and haemorrhage [2]. Diagnosis in the retro-peritoneal position is difficult, and a large and deeply situated tumour is usually present before patients have any symptoms. Intra-abdominal schwannomas can often be discovered incidentally by CT scans. Although target and fascicular signs are characteristic radiological features of schwannoma, these are not frequently seen in retro-peritoneal schwannomas [4]. Computed tomography scans show well-defined low or mixed attenuation with cystic necrotic central areas. Cystic
changes occur more commonly in retro-peritoneal schwannomas (up to 66%). Other degenerative changes, such as calcification, haemorrhage, and hyalinisation, can also be present.

A typical CT appearance of schwannoma after contrast medium administration is a heterogeneous contrast enhancement [1].

MRI findings of schwannomas have been reported as masses of low signal intensity on T1-weighted images and high signal intensity on T2-weighted images. These findings are characteristic but not specific of schwannomas [4]. CT-guided core biopsy and fine needle aspiration have been founded to be unreliable for the diagnosis of retroperitoneal schwannoma [3].

The differential diagnosis for retroperitoneal schwannomas includes other neurogenic tumors such as paraganglioma and pheochromocytoma as well as, liposarcoma and malignant fibrous histiocytoma. In addition to those, if the retroperitoneal schwannoma contains considerable amount of cystic degeneration, retroperitoneal cystic masses such as hematoma and lymphangioma should also be included in the diagnostic checklist.

Histologically schwannomas consist of compact cellular lesions (Antoni type A tissue) and loose hypocellular myxoid lesions with microcystic spaces (Antoni type B tissue).

Wide surgical resection is recommended in cases of suspected retro-peritoneal schwannoma [4]. Although the prognosis is extremely good, malignant transformations have been reported, therefore it is suggested that careful monitoring is necessary after removal of benign retro-peritoneal schwannomas [3].

**Differential Diagnosis List:** Retro-peritoneal schwannoma, Lymphadenopathy, Intra-peritoneal neoplasm

**Final Diagnosis:** Retro-peritoneal schwannoma

**References:**


Figure 1

Description: Enhanced CT image shows overdistended gallbladder with mural thickening, pericholecystic fluid, and intraluminal stones; the largest stones impact in the infundibulum. Origin:
**Figure 2**

Description: Large well-defined hypodense retroperitoneal pelvic mass, with hypodense areas within, on unenhanced axial CT scan image. Origin:
Figure 3

Description: The lesion shows an inhomogeneous contrast enhancement with few necrotic areas within. (a) Origin:

Description: On axial CT images the mass is adherent to the sacrum (b) and displaces laterally the sigmoid colon (c), without evidence of infiltration of the surrounding pelvic organs and muscles. Origin:
**Description:** On axial CT images the mass is adherent to the sacrum (b) and displaces laterally the sigmoid colon (c), without evidence of infiltration of the surrounding pelvic organs and muscles. **Origin:**

**Description:** MPR on sagittal plane (d) clearly shows the compression of the bladder and the close relationship between the mass and the sacrum. **Origin:**