Imaging in the detection of an intercostal nerve schwannoma

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Case Type: Clinical Cases
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Patient: 48 years, male

Clinical History:

A 48-year-old male presented with pain in the thoraco-lumbar spine, which had irradiated to the 8th left intercostal space. He did not report the occurrence of any trauma. The chest X-ray and the specific study of the ribs, showed a round and regularly-shaped mass of about 1.5 cm in size, projecting into the 8th intercostal space. Ultrasonography and gadolinium-enhanced magnetic resonance imaging (MRI) confirmed the presence of such a mass. The patient underwent a percutaneous excision under an ultrasound guide. A microscopic examination revealed a typical Schwannoma featuring cystic areas and with the predominant occurrence of Antoni B areas.

Discussion:

A schwannoma, also known as neuroma or neurilemmoma, is a benign tumour that arises form nerve sheath cells (Schwann cells). The occurrence of a schwannoma is relatively common at all ages (with a greater incidence between the ages of 20 and 50 years), and it accounts for around 5% of all benign neoplasms of soft tissues. In most cases, it presents as an encapsulated, solitary and slow-growing mass. In rare cases, it can be found associated with Von Recklinghausen’s neurofibromatosis (NF-1). Microscopically, schwannoma may present areas comprising of compact fascicles of spindle cells (Antoni A) or loosely textured (Antoni B) zones. The most common sites of occurrence are the head, neck, flexor areas of the upper and lower extremities, the posterior mediastinum and peritoneal areas. In about 8.5% of cases it is localized to the trunk. The presentation is often as an asymptomatic localized mass. In the case we presented, the main symptom was pain, localized to the thoraco-lumbar spine, irradiating to the 8th left intercostal space, which had worsened during the last year. Pain was found to increase with movements of the trunk and of the upper left arm, and it worsened with pressure of the chest. The chest X-ray, projectively on the 8th intercostal space, showed the presence of a round and regularly-shaped mass with fluid content. Ultrasonography showed the presence of a hypo-echoic mass measuring 2 cm round in shape, with no sign of vascularization localized along the nerve. It also showed that this mass was clearly separated from the parietal pleura. The need for a differential diagnosis between a cyst and a neoplasm originating from nerve
roots, justified the decision to perform an MRI study. The study was done on a 1.5 T MR scanner, with T1, T2, fat-suppressed T2-weighted sequences (STIR), and post-gadolinium T1-weighted sequences, on the coronal and axial planes. It showed a mass with a low signal on T1-sequences and a high signal on T2- and STIR sequences. The mass showed no enhancement in the central area and a peripheral rim of enhancement on T1-weighted images post-gadolinium. Both at CT and at MRI, schwannomas show an intense and early vascularization (typical of Antoni A areas). The detection of a capsule on the MRI, visualized as a low intensity rim, can be detected in 70% of the schwannomas. Schwannoma featuring cystic areas and with predominantly Antoni B areas may have different vascularization patterns: enhancement may be delayed, with only peripheral rim enhancement or no enhancement of necrotic areas. Differential diagnosis has to be made with (a) neurofibromas, which are usually located centrally in the nerve and rarely present with cystic or necrotic areas; (b) ancient schwannomas which are bigger in size and present calcifications and areas of hyalinization; (c) malignant schwannomas, which are rapidly growing mass (>5 cm), irregularly shaped and presenting with oedema and central necrotic areas; (d) synovial sarcomas; (e) granulomas and (f) haemangioperictomas.

**Differential Diagnosis List:** Ordinary Schwannoma of the intercostal nerve.

**Final Diagnosis:** Ordinary Schwannoma of the intercostal nerve.
Description: A chest X-ray showing the round and regularly-shaped mass of about 1.5 cm in size, projectively on the 8th intercostal space. Origin:
**Figure 2**

**Description:** An ultrasonograph showing the round, hypo-echoic mass. **Origin:**
Description: An MR image showing a low signal on a T1-weighted sequence on the axial plane.
Origin:
Description: An MR image, coronal plane, showing a high signal on the T2-weighted sequence. Origin:
Figure 5

Description: An MR image, T1-weighted sequence, acquired in the arterial phase. Origin:
Description: An MR image, post IV contrast administration, showing the peripheral rim of enhancement on the T1-weighted sequence during the late phase. Origin: