

Case report

Benign solitary fibrous tumour of the pre-sacral space: MRI findings

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Abstract. Benign solitary fibrous tumour, a rare mesenchymal tumour of adults, usually arises from the pleura. Only a few cases have been reported in the retroperitoneum and, to our knowledge, there has been no report of its imaging features. We describe the MRI features of benign solitary fibrous tumour arising from the pre-sacral space.

Benign solitary fibrous tumour is a rare tumour of mesenchymal origin in adults. This tumour has many synonyms, including localized benign mesothelioma, submesothelioma, localized fibrous tumour, fibroma and fibromyxoma. This confusion has mainly stemmed from uncertainty regarding histogenesis of the tumour. There has been some contention as to whether this tumour arises from mesothelial or mesenchymal cells, the latter now being preferred [1].

Although most of these tumours were reported in the pleura, an extrapleural origin has occasionally been reported [2]. To our knowledge, imaging features of this tumour in the retroperitoneum have not been reported previously. We report the MRI and pathological findings, in a solitary fibrous tumour arising from the pre-sacral space.

Case report

A 58-year-old man presented with right-sided abdominal pain. He had no abnormality on physical examination or routine laboratory studies.

A plain radiograph of the pelvis showed a large, ovoid, soft tissue mass lesion, 6 cm in diameter, containing calcification and situated in the left side of the pelvic cavity (Figure 1). Barium enema confirmed that the mass was located in the left side of the pre-sacral space and displacing the rectum to the right. MRI was performed on a 1.5 T superconducting unit (Signa Advantage, GE Medical Systems, Milwaukee, WI, USA). The mass lesion was well circumscribed and slightly lobulated on axial T_1 weighted images. The signal intensity was mostly isointense relative to adjacent

muscle, with a low signal intensity area in the posterior part (Figure 2a). The mass was inhomogeneously hypointense on T_2 weighted images; the dark signal area on T_1 weighting remained hypointense and represented calcification (Figure 2b). Following intravenous injection of 20 ml of dimeglumine gadopentetate (Magnevist®, Schering AG, Germany), the mass became well enhanced except for the area of calcification (Figure 2c).

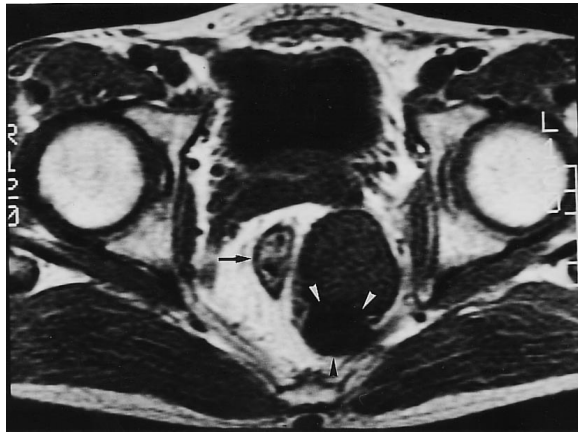
The patient underwent surgery and the pre-sacral mass lesion was completely excised. A well encapsulated, 7 × 6 × 3 cm rubbery mass was located in the pre-sacral retroperitoneal space. No attachment to other structures was encountered at surgery. The cut surface was homogeneously greyish-white and fibrotic in texture, a small area of calcification being noted. On histological examination, the mass was composed of primitive spindle cell containing prominent collagenous tissue and many small vessels. No evidence of mitosis was found (Figure 3). Immunological staining of the tumour cells demonstrated positive reaction only for vimentin.



Figure 1. Plain radiograph of the pelvis shows large soft tissue mass lesion (arrows), containing calcification, in the left side of the pelvic cavity.

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(a)



(b)



(c)

Figure 2. (a) T_1 weighted (SE 516/11) axial image shows that the mass is well circumscribed, slightly lobulated, and mostly isointense to the adjacent musculature, with a low signal intensity area in its posterior part (arrowheads). The rectum is displaced to the right by the mass (arrow). (b) T_2 weighted (SE 1300/91) axial image demonstrates an inhomogeneously hypointense mass. The area of dark signal (arrowhead) on the T_1 weighted image remains hypointense, and is due to calcification. (c) T_1 weighted sagittal image with fat-saturation technique after administration of contrast medium shows a well enhancing, pre-sacral tumour mass (arrows) with internal calcification (arrowheads).

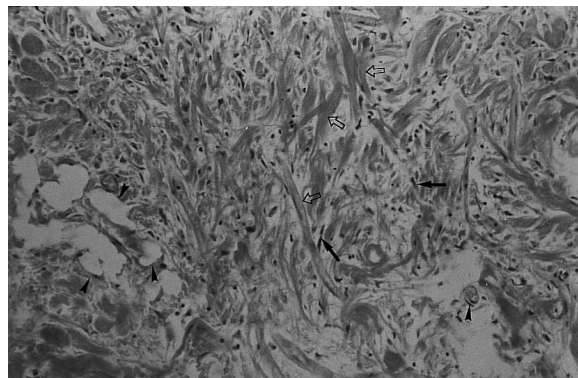


Figure 3. Micrograph (hematoxylin eosin stain, original magnification: $\times 100$) shows occasional fibroblast-like mesenchymal cells (arrow) and small vessels (arrowheads) interspersed by thick band of collagen (open arrows). Even in most cellular areas, cellularity is moderate and anaplasia is absent.

Discussion

Benign solitary fibrous tumours rarely arise from regions other than pleura, including the lung [3], mediastinum [4], pericardium, peritoneum [5], nose and paranasal sinuses [6] and retroperitoneum [7]. These extrapleural lesions may present with symptoms related to the tumour site or with systemic

symptoms which include hypoglycaemia, arthralgia, osteoarthropathy and clubbing. This tumour can be an incidental finding on radiological studies or during surgery. In this case, the tumour in the left side of the pre-sacral space was found while investigating the cause of right-sided abdominal pain.

On immunohistochemical studies solitary fibrous tumours demonstrate a mesenchymal, non-epithelial phenotype by showing strong vimentin reactivity and by being almost invariably negative for keratin [8].

Several reports have described the imaging features of benign solitary fibrous tumours in the pleura [9, 10]. In a CT-pathological correlation of nine cases of pleural origin, Lee et al [11] described these tumours as having isoattenuation relative to the adjacent musculature and intense enhancement following intravenous contrast medium. Intratumoral low attenuation areas correlated with myxoid or cystic degeneration or haemorrhage. The tumour contained calcification in one case within these series.

MR features of these tumours have also been reported [12–14]. The signal intensity is isointense to muscle on T_1 weighted images, increasing with

intravenous gadolinium, and variable on T_2 weighted images. Lee et al [11] suggested that this variable signal intensity on T_2 weighting mainly depended upon differences in the main components of the tumour, namely, the amount of collagen and fibroblasts, and on the presence of degeneration. In our case, no cystic or myxoid degeneration was seen within the tumour. Intense enhancement after intravenous gadolinium is due to the high vascularity of the pleural tumour [14].

The imaging features of the extrapleural tumours are similar to those reported in pleural tumours, the histopathological findings being identical regardless of the organ involved [2]. Other pre-sacral tumours with similar signal intensity and calcification include teratoma, neurogenic tumour, fibrous histiocytoma, chondroid tumour and treated lymphoma. Although it is extremely rare, benign solitary fibrous tumour should be considered in the differential diagnosis of pre-sacral tumours.

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