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IMAGING FEATURES OF AGGRESSIVE FIBROMATOSIS IN PSOAS MUSCLE

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Aggressive fibromatosis (AF) of psoas muscle origin is extremely rare and little is known about its radiological features. We here present such a case in a 24-year-old man with psoas AF and ilium bone involvement. The authors stress the contibutive diagnostic role of MRI.

Key-word : Fibromatosis.

Aggressive fibromatosis (AF) is a rare neoplasm that originates in musculoaponeurotic structures. It shows characteristic infiltrative growth features and has a tendency for local recurrence (1). Due to low incidence, only a small number of cases of AF in extremities or in other locations have been reported (1-3). To the best of our knowledge, there is no previous report concerning the CT or MRI features of AF in psoas in the medical literature.

Case history and radiological findings

A 24-year-old Chinese male was admitted to our hospital with progressive pain in his right back and waist for ten months without obvious incentive. No specific past medical and family histories, no abnormalities in lab examinations and conventional radiographs except mild dyskinesia in the right lower limb were reported. Histopathology of the excised mass confirmed it was AF (Fig. 1).

CT images revealed an 8.0 × 6.1 × 4.3 cm soft tissue mass in the right psoas major with lobulated shape and ill-defined margins. This mass squeezed right iliacus muscle inferiorly, embedded incompletely into the right psoas muscle from L3 to S1 (Fig. 2A), had similar CT attenuation to its surrounding muscles (Fig. 2B) and heterogeneous moderate enhancement (Fig. 2C). Additionally, it induced spiculated periosteal reaction on the internal surface of ilium next to sacroiliac joint and local cortical bone erosion on the right auricular surface adjacent to the periosteal reaction (Fig. 2D).

T1-weighted MRI showed a mixed low- and moderate-intensity-signal mass with poor definite contour (Fig. 3A). T2-weighted MRI showed the signal intensity was heterogeneously increased in some parts of this mass. Fat-saturated sequence

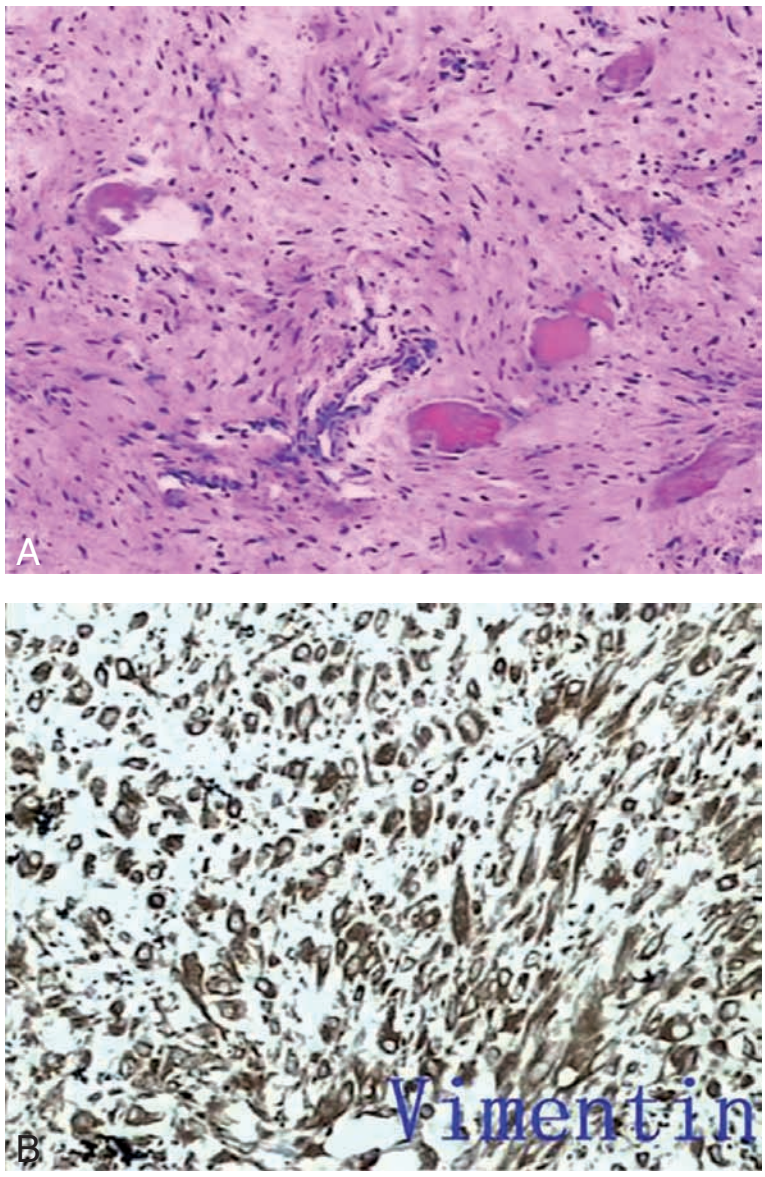

Fig. 1. — Histological analysis of two stained tissue slices shows that (A) the tumor has an infiltrative growth pattern and the striated muscle tissue can be seen among tumor cells (Hematoxylin eosin stain; original magnification ×200); (B) most lesion cells show immunoreactivity to vimentin (ABC; original magnification ×400).

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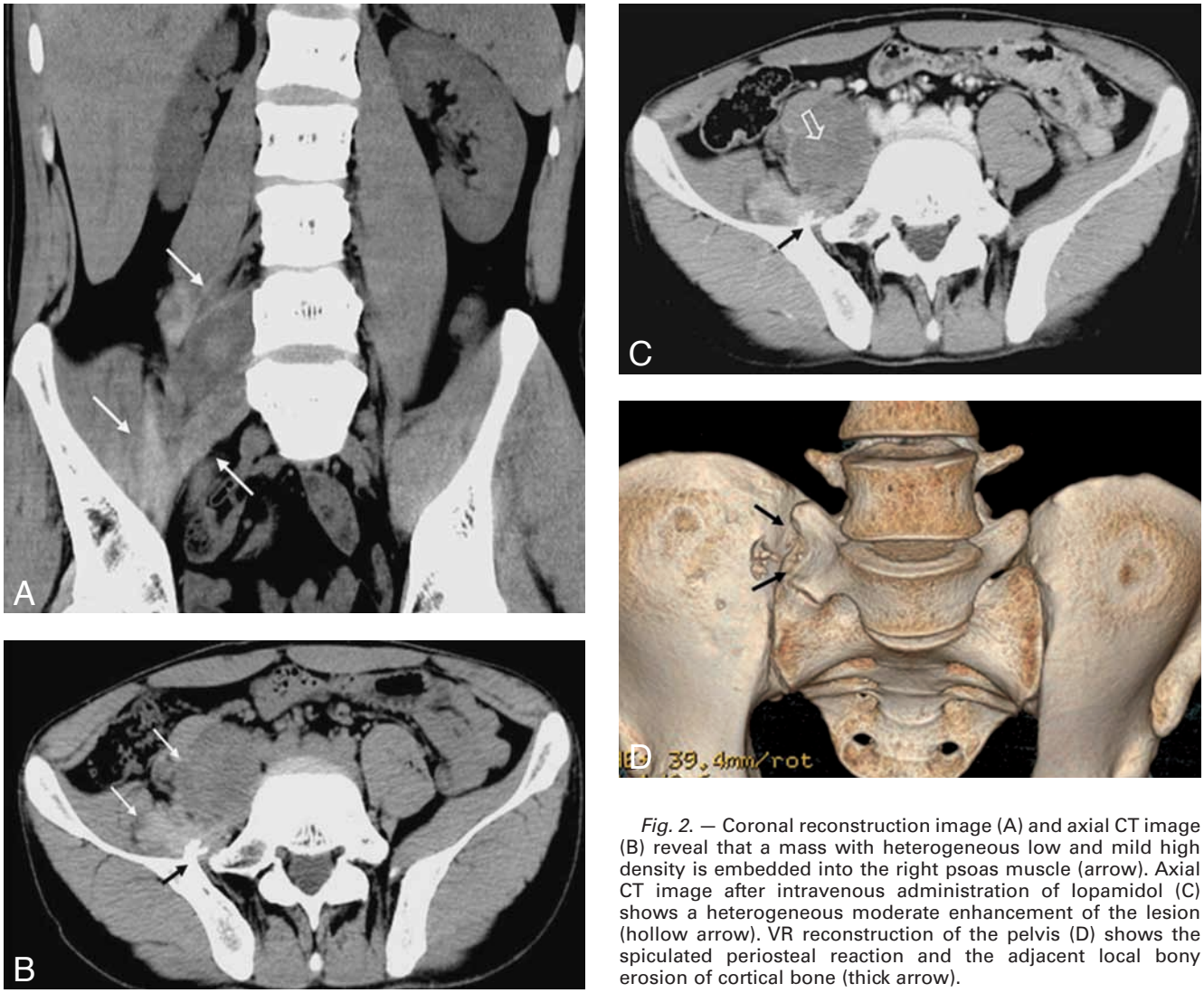

Fig. 2. — Coronal reconstruction image (A) and axial CT image (B) reveal that a mass with heterogeneous low and mild high density is embedded into the right psoas muscle (arrow). Axial CT image after intravenous administration of Iopamidol (C) shows a heterogeneous moderate enhancement of the lesion (hollow arrow). VR reconstruction of the pelvis (D) shows the spiculated periosteal reaction and the adjacent local bony erosion of cortical bone (thick arrow).

images demonstrated no fat ingredients in the lesion (Fig. 3B). After administration of contrast materials, this lesion displayed a heterogeneous and strong enhancement (Fig. 3D). The homogeneous low-intensity bands which might be considered as fibrosis tissue were detected in all sequences (Fig. 3C and Fig. 4).

Discussion

To know the etiology of AF is helpful for diagnosis. Although most cases of AF occur in a sporadic form, a minority is associated with some familiar neoplastic syndromes, such as familial adenomatous polyposis (FAP). Gardner's syndrome, a variant of FAP, is characterized by polyposis, osteoma and various soft tissue tumors among which AF is included. Mutation of adenomatous polyposis coli gene is considered as its causative agent (4). Pregnancy or estrogen hormone is also a risk agent for development of abdominal AF (5). Besides, trauma, especially surgery, plays an important role in the initiation of fibrous tissue proliferation in abdominal wall and intra-abdominal cases (6).

CT findings of AF can provide us with accurate information about subtle pressure erosions of adjacent bone, but they are often non-specific (7). Other diseases like soft-tissue sarcoma in psoas could have the similar CT appearances (2). Therefore it is impossible to rely on the CT findings of AF to make a definite diagnosis. MRI can not only provide similar information to the CT findings but can offer us several additional specific characteristics, including (a) bands with low signal intensity across all pulse sequences in lesion, (b) infiltrative growth pattern, (c) crossing fascial boundaries, and (d) no necrosis, fat and calcification inside the tumor, which could help radiologists recognize this entity and make a diagnosis (2, 8). It is very uncommon that calcifications may be present and influence the signal of the tumor (9). Though Lee thought that the first characteristic was nonspecific because it occurred only in 10% cases, it reached a consensus that the remaining three were the typical manifestations of AF (2, 8). This may indicate MRI could play an irreplaceable and crucial role in diagnosing AF of rare origin.

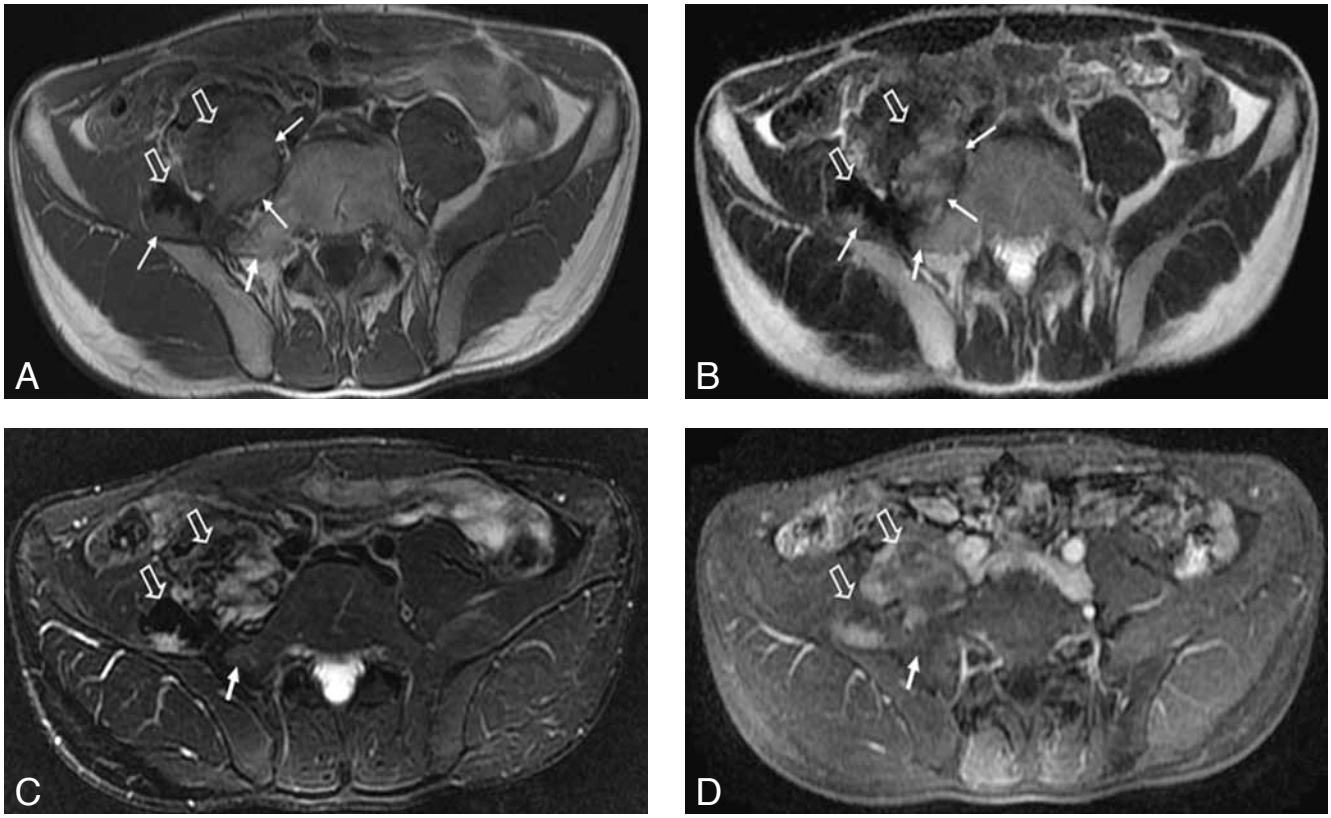

Fig. 3. — T1-weighted fast spin-echo (450/7.4) (A), T2-weighted fast spin-echo (2117/82) (B) and Short T1 Inversion Recovery (6000/107) transverse 3-T MR images (C) which are obtained before administration of gadolinium contrast material show that a large lobulated mixed-signal–intensity mass arises within psoas muscle and affects the surrounding musculature and bone. And part of it shows intermediate-to-high signal intensity on T1 weighted and high signal intensity on T2 weighted images due to predominant cellularity (arrow). Low signal intensity bands which are believed to stand for fibrosis (hollow arrow) are prominent. These bands are not enhanced on the Liver Acquisition with Volume Acceleration (LAVA) images (D) (hollow arrow). The abutted cortical bone is eroded by the mass but the medullary canal isn't invaded (thick arrow).

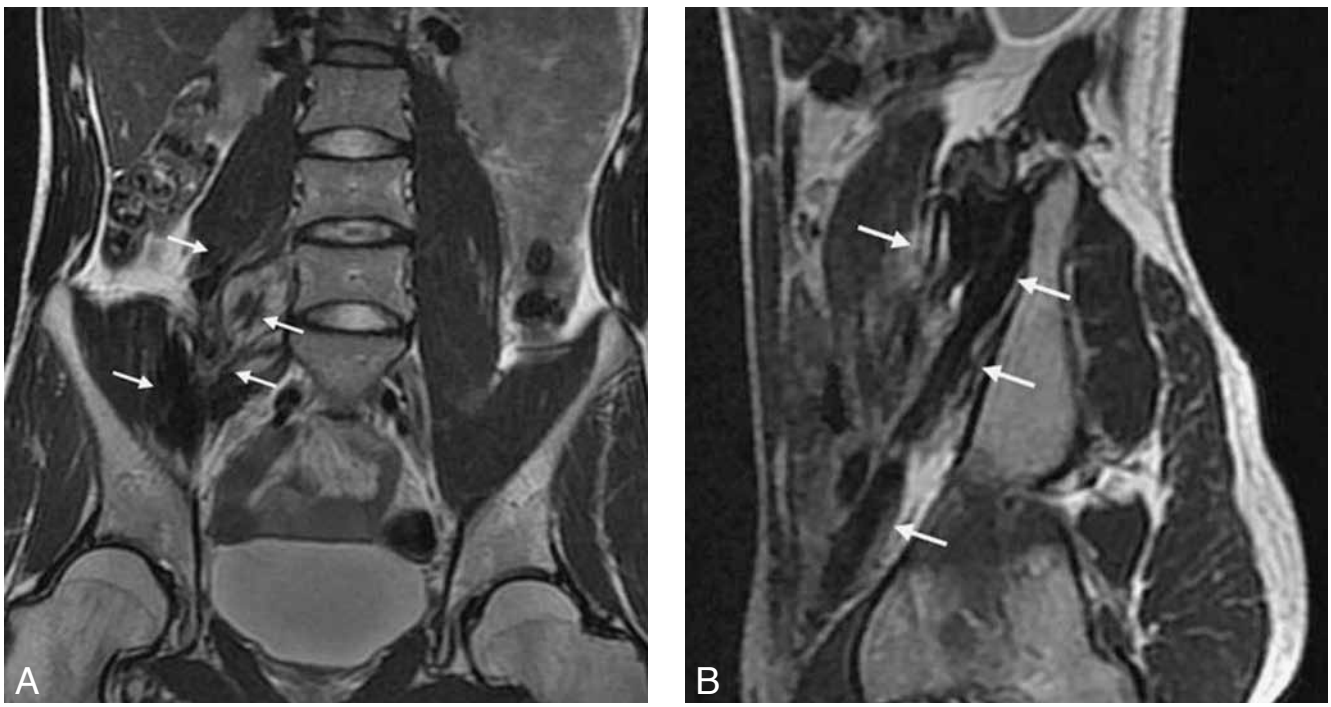

Fig. 4. — Coronal and sagittal T2-weighted fast spin-echo 3-T MR coronal (A) and sagittal (B) image show that the lesion is characterized by low-signal-intensity bands paralleling the muscle fascial planes and psoas tendon (arrow).

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