Synovial Sarcoma of the Thoracic Spine: A Case Report

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Abstract

Synovial sarcoma is a rare malignant tumor. We report the case of a 33-year-old patient who presented with back pain that had been evolving for 3 years, and that was resistant to any regular analgesic. Neuroradiological investigations (CT, MRI) revealed an osteolytic lesion of the sixth thoracic vertebra (T6) with excavation as well as multiple cystic pockets more lateralized on the left. Surgical removal and cementoplasty were performed. The evolution after a 12-month follow-up was favorable, with the total disappearance of the pain and the paresthesia.

Keywords: sarcoma, spine, cementoplasty

Introduction

Synovial sarcoma is an aggressive malignant soft tissue tumor of mesenchymal origin (1, 2). It is a soft tissue tumor of high grade malignancy with a poor prognosis (3). Vertebral localization is rarely described in the literature. This condition is managed in a multidisciplinary manner (radiation therapy, surgery, and chemotherapy). We report a case of synovial sarcoma of the dorsal spine in a young adult and its evolution over a period of 12 months in a country with limited therapeutic resources.

Case presentation

We present the case of a 33-year-old male patient, a student without medical insurance and with no known pathological history, who sought treatment for chronic back pain that had evolved over three years. It was a slowly evolving back pain of increasing intensity and continuous burning sensation, resistant to usual analgesics (acetaminophen in combination with tramadol) and anti-inflammatory drugs (ketoprofen), intercostal pain in the left hemi-girdle, and paresthesia of the lower limbs. On clinical examination, he presented with a dorsal spinal syndrome and generalized weight loss. There were no sensorimotor deficits, sphincter disorders, or fever. Patellar and Achilles reflexes were normal. The CT scan of the dorsal spine showed an osteolytic lesion at the level of the sixth dorsal vertebra (D6) extending to the left pedicle as well as an expansive bone lesion with respect to the cortical bone and the posterior wall (Figure.

1). Abdominal and pelvic CT scans did not reveal any other lesions indicative of malignancy. Magnetic Resonance Imaging (MRI) of the dorsal spine showed the same expansive lesion centered on the body of D6, with multiple cystic pockets more lateralized to the left and significant thinning of the cortical wall without clear rupture (Figure 2).

A laminectomy associated with a body recess starting from the left vertebral pedicle of D6 was performed using a diamond bur. The vertebral cortices were hard. The vertebral cavity was filled with surgical cement (methyl methacrylate). The immediate postoperative course was simple. The evolution was favourable, with improvement of the back pain and a disappearance of the paresthesias. The postoperative radiography at six months and the CT spine at one year were satisfactory (Figures 3 and 4).

Pathological examination of the surgical specimen showed an infiltrating grade 2 fusocellular sarcoma based on the National Federation of Cancer Centres (FNCLCC) grading system concluding to a synovial sarcoma (Figure 5).

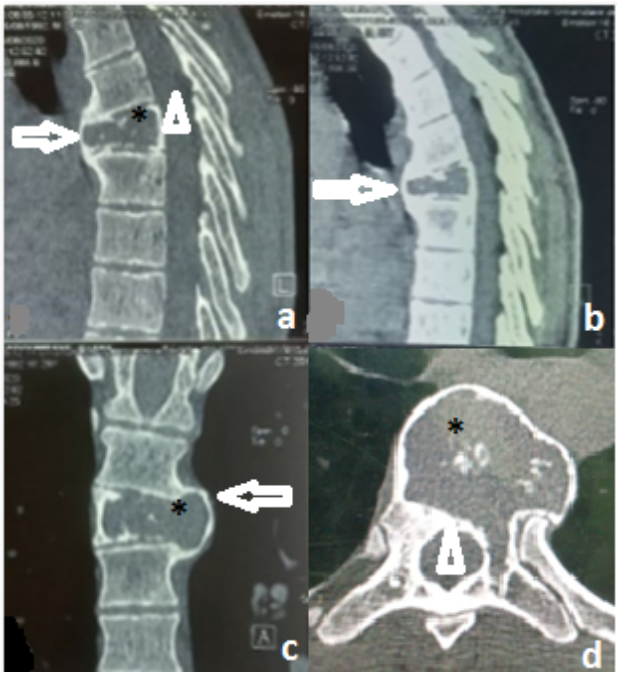

***Figure 1** : CT image of the dorsal spine in bone (a, c, d) and parenchymal (b) windows, sagittal reconstruction (a,b), coronal reconstruction (c) and axial section (d) showing an osteolytic lesion of T6 with cavitation (*) and raised rim extending to the left (arrow), respecting the posterior wall (head arrow).*

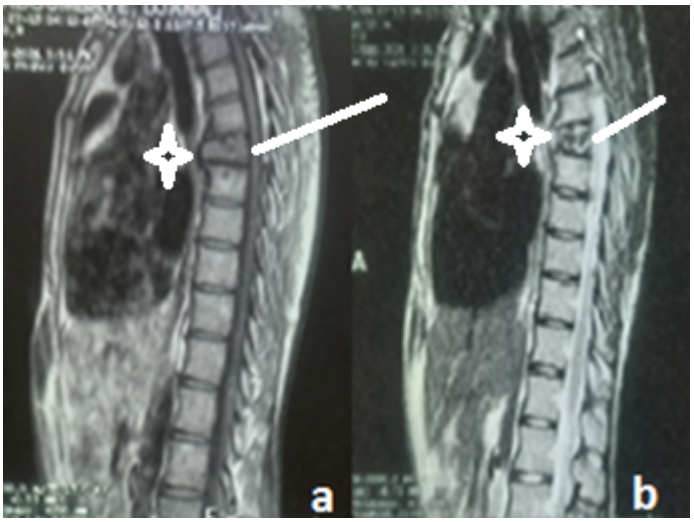

***Figure 2**: MRI of the dorsal spine showing an expansive lesion centered on the body of T6 with multiple cystic pockets more lateralized on the left and significant thinning of the cortex without clear rupture.*

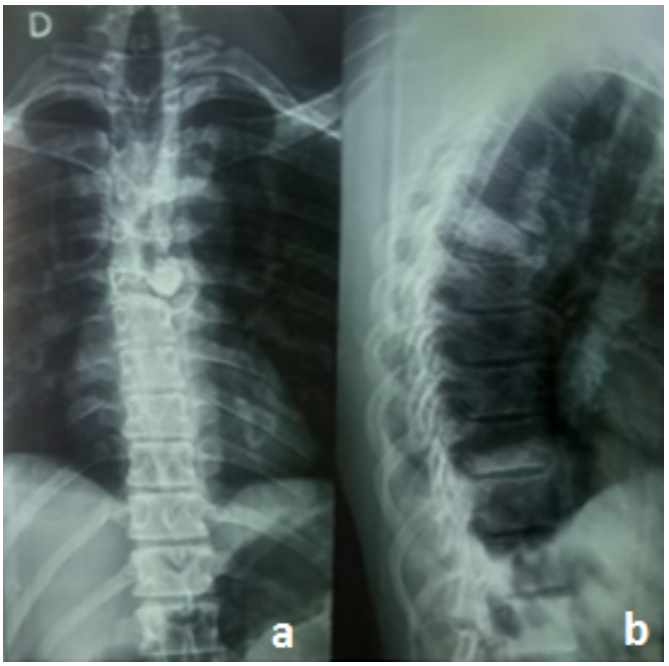

Figure 3: *Postoperative control radiographic images of the front (arrow) and side (star) showing the cementoplasty filling the bone cavity of T6.*

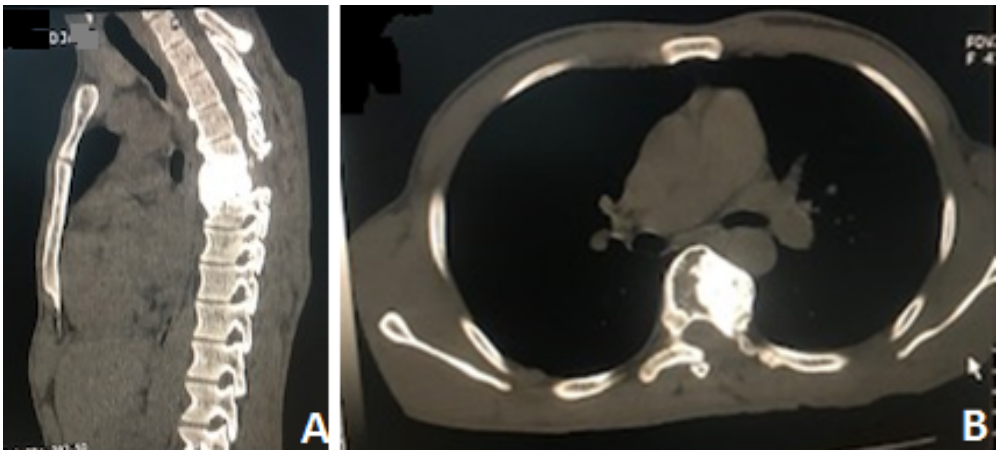

Figure 4: *Figure 4: Postoperative control radiographic images of the front (arrow) and side (star) showing the cementoplasty filling the bone cavity of T6.*

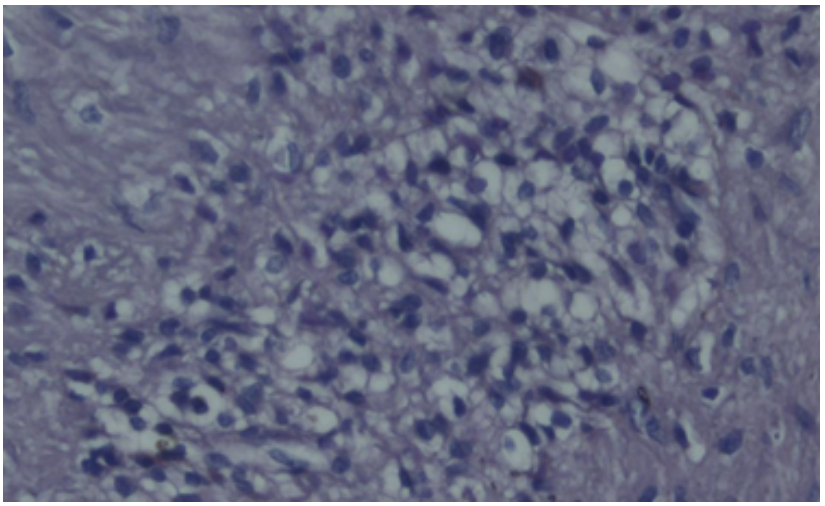

Figure 5*: High-power magnification (400×) photomicrograph Spinal biopsy showing a fusocellular sarcoma grade 2 (FNCLCC) infiltrating: aspect of synovial sarcoma.*

Discussion

Synovial sarcoma is an aggressive and rare malignant tumor (2, 3, 4). It originates in tumor mesenchymal cells that have undergone dedifferentiation, making them resemble the articular synovial membrane (1). Contrary to what the name suggests, synovial sarcoma does not develop from synovial tissue (5). This tumor accounts for 5% to 10% of soft tissue sarcomas (6, 7). Synovial sarcoma mainly affects adolescents and young adults, with preferential involvement of the limbs (8, 9). Vertebral localization is rarely reported (3). Ferrari et al. identified a vertebral location in 2.2% of cases among 271 patients of all ages who had synovial sarcoma. (10). The symptomatology is variable, depending on the location. In our patient, it manifested as chronic back pain accompanied by paresthesia of the lower limbs. The diagnosis is suspected by medical imaging. Computed tomography (CT) is useful to identify bone erosions and tumor calcifications, while MRI shows tumor extension and vascular invasion (11). The diagnosis of certainty is histological (12). There are three anatomopathological forms: monophasic with spindle cells, biphasic with a double epithelial and spindle cell contingent, and finally the undifferentiated form (13). Synovial sarcoma is treated with surgical excision to healthy margins whenever possible, supplemented by external radiotherapy, which can be pre- or post-operative. The indications for chemotherapy remain limited, depending on the characteristics of the patient (pediatric or adult) and the tumor (size, metastasis). Chemotherapy is mainly used when surgical excision is not complete, or when a metastasis has developed (5, 14).

As chemotherapy and radiotherapy were unavailable in our center, three surgical options were available: posterior screw arthrodesis, lateral approach with a bone graft, or cementoplasty. Our patient had undergone a left hemi-laminectomy; the dural sheath was protected with surgical cotton, and then, by a left trans-pedicular approach with a burr, the vertebral body of D6 was emptied. The intracavity specimens of D6 were collapsed. Vertebral consolidation was achieved by cementoplasty. A costovertebral approach could also be performed for this location. There was no indication for adjuvant radiotherapy, as there were no poor prognosis criteria. There were no lesions indicative of malignancy on the thoraco-abdomino-pelvic CT scan. The postoperative course was simple.

The histo-prognostic score of the 'Fédération Nationale des Centres de Lutte contre le Cancer' (FNCLCC), integrates 3 histological parameters: the degree of tumor necrosis, the degree of differentiation, and the percentage of mitoses (15). These histological factors are the most predictive factors for the metastasizing potential of synovial sarcoma. The current literature reports a five-year survival rate ranging from 59 to 75% (16, 17). However, synovial sarcoma is unique in this regard, as it tends to recur much later. Local recurrence occurs after an average of 3.6 years (range 0.5-15 years) and metastasis after an average of 5.7 years (range 0.5–16.3 years) (18). Poor prognostic factors include bone or vascular invasion, tumor size, and partial removal (19). Our patient met this criteria and is still being followed up on after a year. Regular follow-up is necessary to evaluate the evolution. According to Xiong et al. (20) the biphasic subtype favored the best survival, while the epithelioid cell subtype was associated with a poor prognosis, and radiotherapy could provide significant benefit to patients of the monophasic subtype.

Conclusion

Synovial sarcoma of the spinal location is rare; chronic spinal pain was the revealing mode in our context. In accordance with the available therapeutic arsenal, only the surgical approach was performed, associated with a cementoplasty of the vertebra concerned, leading to a complete disappearance of the symptomatology. The one-year follow-up was satisfactory, but regular evaluation is essential.

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