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Case Report

Postoperative lumbar fusion paraspinal desmoid tumor case report☆,☆☆

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ABSTRACT

Desmoid tumors are rare soft tissue tumors with slow growth and high recurrence rates. They typically arise sporadically in the abdominal wall or retroperitoneum, with a few rare cases reported after trauma and surgery. Postoperative desmoid tumors in adults are very rare with only 7 reported cases involving the paraspinal location. This is the first reported case of a male patient with a postoperative paraspinal desmoid tumor.

Introduction

Desmoid tumors, also called aggressive fibromatoses, are rare soft tissue tumors from fibroblast proliferation, which have been reported to occur in the abdomen, proximal extremities, or retroperitoneum. Although they have a slow growth rate, many are associated with painful symptoms due to the mass effect on adjacent organs, nerves, vasculature, etc. Many desmoids occur sporadically with unknown pathophysiology, although majority of cases are associated with mutations in the catenin beta-1 gene, which plays a factor in cell-cell adhesion which is important for mesodermal regeneration [1]. A small subset has been reported after trauma and surgery. Since 1961, only 7 cases of postoperative desmoid tumors in adults have been reported in the paraspinal location. All cases have been female with age range 39-57 with 4 of 7 cases involving posterior spinal instrumentation [2]. This is the first reported case of a male patient with a postoperative paraspinal desmoid tumor.

Case report

A 76-year-old male with chronic back pain and lumbar spondylolisthesis was referred for spinal surgery due to progressive and severe pain that failed years of conservative treatment with pain medications and epidurals. Preoperative imaging showed moderate to severe central canal stenosis in-

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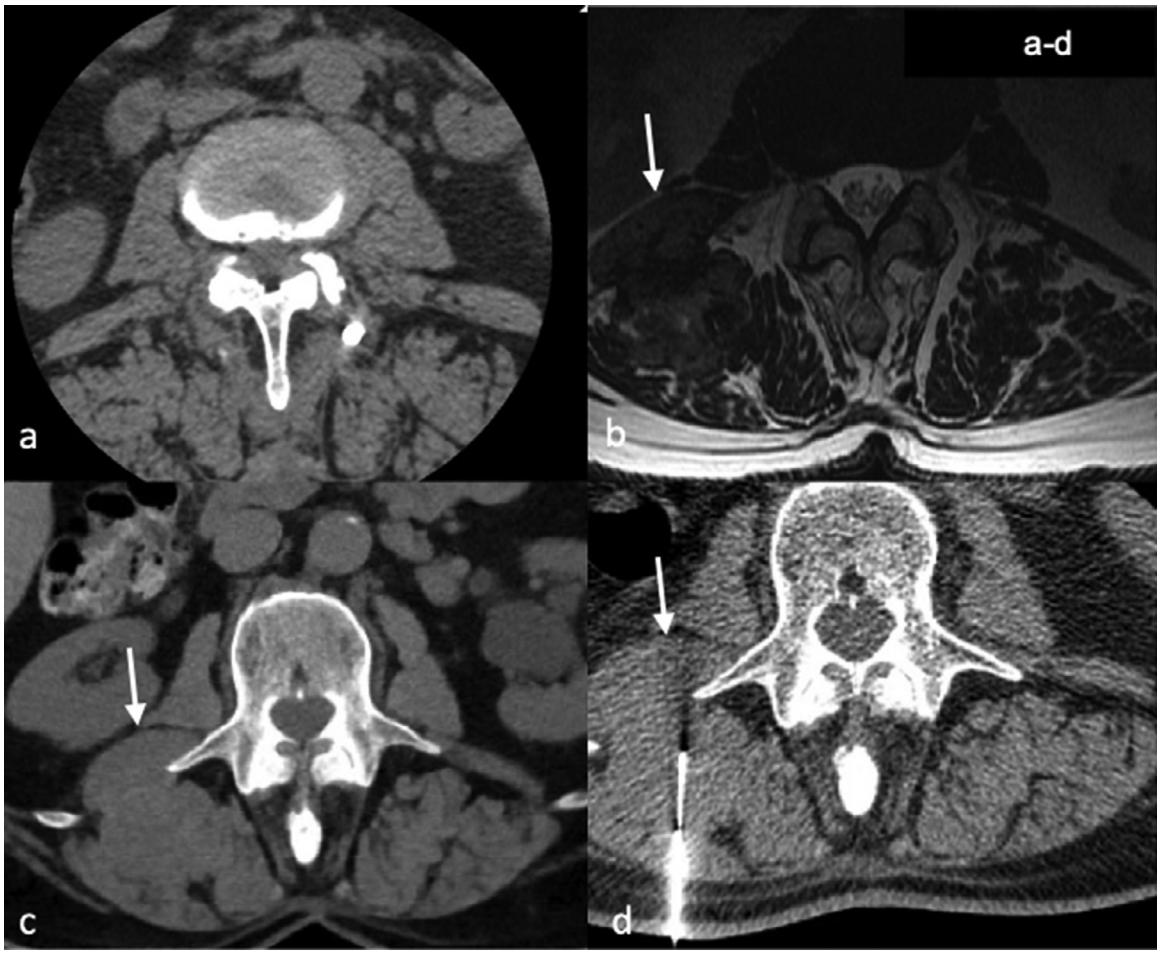

Fig. 1 – (A) Immediate postoperative CT showing normal paraspinal muscles. (B) Two years later, MRI lumbar spine for recurrent back pain showing T2 hypointense lesion in right paraspinal soft tissue at L1-L2 (white arrow). (C) Repeat CT abdomen pelvis confirming soft tissue mass, unchanged in size 1 month later. (D) CT-guided biopsy of mass with pathology proven desmoid fibromatosis.

volving L3-L4 and L4-L5 levels with moderate to severe, right greater than left, neural foraminal stenosis impinging on the right L4 nerve root. No other relevant medical history was reported. Patient underwent L3-L5 decompression and posterior spinal fusion. No postoperative complications were noted and patient was discharged 3 days later.

Three-month postoperative imaging showed a normal appearance of paraspinal muscles and no hardware complications (Fig. 1A). Two years later, patient was noted to have mild recurrent back pain and underwent follow-up imaging with MRI lumbar spine which showed a new T2 hypointense lesion in the right paraspinous soft tissues at the L1-L2 level, measuring 5.0 × 4.0 cm (Fig. 1B), indeterminate etiology and noted to be possibly a chronic calcified hematoma. Recommendation was given for further evaluation with a CT abdomen pelvis, which the patient obtained at an outside imaging center a month later (Fig. 1C). Repeat imaging redemonstrated the mass, unchanged in size and appearance with no other acute findings or other suspicious masses in the abdomen/pelvis. Due to the indeterminate nature and size of the lesion, the patient was referred for CT-guided biopsy.

The right L2 paraspinal muscle/soft tissue mass was biopsied using a standard 18-gauge 6 cm Bard biopsy needle with sterile technique (Fig. 1D). Three core biopsies were taken and pathology results confirmed desmoid fibromatosis. Since the patient was asymptomatic, decision was made to continue with conservative management with no surgical plan at this time.

Discussion

Desmoid tumors are rare soft tissue overgrowths with unclear etiology but often occurring after trauma or surgical instrumentation. Through a PubMed search of postsurgical desmoids in adults, this is the eighth reported case of paraspinal tumor location and first male patient in reported literature. The first paraspinal desmoid tumor was described in 1961, and all 7 prior cases of paraspinal desmoid tumors have been in females aged 39-57 [3–9]. Four of the 7 cases involved spinal fusion/fixation hardware, 2 of which were for resections of tumors (schwannoma and vertebral heman-

gioma) [6–9]. One case was resection of thoracic meningioma without spinal instrumentation [5]. Two remaining cases were for cervical laminectomy without hardware placement [3,4].

Although pathogenesis of desmoids is still unclear, 85% of cases are shown to have a mutation in the CTNNB1 gene involved in the beta-catenin pathway, which plays a role in bone regrowth [10]. Since many reports of desmoids are in areas of previous trauma, instrumentation in the same region may mimic bony destruction similar to trauma and cause upregulation of beta-catenin and other growth hormones which may result in tumorigenesis.

Treatment has historically been surgical excision with wide margins, but recurrence is high, with ranges of 25%-60% [11]. Adjuvant radiation therapy may play a role in reducing recurrence especially when wide surgical margins cannot be achieved, but recurrence rates are variable. Additional medical therapies including antihormonal therapies, tyrosine kinase inhibitors NSAIDs, and low-dose chemotherapy such as doxorubicin have had some success but is usually for patients with rapidly progressing desmoids and nonsurgical candidates. Due to the variability in reported data, a global consensus meeting held in 2018 determined that first line approach should be active surveillance every 1-2 years with follow-up imaging to evaluate for growth rate [12]. If there is disease progression, location should be a consideration for next steps where abdominal wall tumors should first undergo surgery and intraabdominal/retroperitoneal, extremity, or intrathoracic tumors may first undergo medical therapy (antihormonal therapy and NSAIDS) then proceed with radiation/surgical treatment.

Conclusion

Spinal instrumentation is a common procedure and standard therapy for lower back pain that has failed conservative measures. Most common complications include retroperitoneal hematoma or hardware fracture/failure resulting in pain recurrence. Postoperative paraspinal desmoid tumor is a very rare complication with only 7 reported cases since 1961, all in middle-aged women, likely due to the relationship between tumorigenesis and hormonal factors. This is the first reported male case of paraspinal desmoid tumor after spinal instrumentation, and is an important postoperative consideration since it may be a mimicker of scar or hematoma.

Ethical approval

For this type of study formal consent is not required.

IRB approval

Institutional IRB approval was obtained for the study.

Patient consent

For all research involving human subjects, informed consent to participate in the study was obtained from participants (or their parent or legal guardian in the case of children under 16).

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