

Vertebroplasty of Primary Vertebral Ewing's Sarcoma in Child (Case Report)

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1. Abstract

1.1. Purpose: Ewing's sarcoma is a malignant tumor that affects young people. Primary vertebral involvement is extremely rare and is redoubtable due to its high metastatic potential. The aim is to present the advantage of vertebroplasty of this lesion which has never been reported in child.

1.2. Case Report: We report here the case of 16-year-old child suffering from isolated low back pain and whose radiological explorations showed a single involvement of L4 with radicular compression and epiduritis. He underwent a laminectomy with biopsy followed by vertebroplasty of the affected vertebra and lumbar fusion. This conducts to a considerable reduction in pain and an improvement in mobility. The histopathology study confirmed the diagnosis of Ewing's sarcoma. The patient was referred for the adjuvant therapy. In the last reevaluation, there was no sign of tumor recurrence.

1.3. Conclusion: Vertebroplasty of primary spinal Ewing's sarcoma in child is an effective alternative to en bloc resection and can represent a better prognosis factor for survival than decompression and fusion alone.

2. Introduction

Primary malignant tumors of the spine account for less than 5% of primary bone tumors [1]. The primary vertebral location of Ewing's Sarcoma (ES) is extremely rare, affecting adolescents and young adults with a male predominance and a peak incidence between 10 and 20 years [2]. This malignant tumor is redoubtable by its high metastatic potential and poor prognosis [3].

Conventional treatment is based on surgery, chemotherapy and radiotherapy. Vertebroplasty is classically used in adult ES [4], but referring to existing literature, it was never reported in child.

In this article, we describe our first successful experience and reviewing the advantages of vertebroplasty of lumbar ES in child.

3. Case Presentation

A 16 years-old child with 3months history of intense back pain, resisting to analgesic therapy without spinal trauma. Clinical examination revealed isolated severe back pain (graded EVA= 8) associated to back leaning forward when walking (analgesic attitude) without neurological abnormalities (Frankel E). MRI showed a vertebral collapse of L4 with an extending epiduritis mass from L3 to L4. The mass was isointense on T1, T2 without enhanced contrast and cauda equina compression (Figure 1A and 1B).

Additional assessment based on the thoraco-abdominopelvic CT and biological examination did not reveal evidence of metastatic disease. The patient underwent L3-L4 laminectomy and excision of the epidural mass. We proceeded with a biopsy of L4 vertebra and we finished the procedure with an open L4 vertebroplasty using methacrylate cement and L3-L5 fusion (Figure 2). The pathology and immunohistochemical studies confirmed the diagnosis of Ewing's sarcoma. After surgery, we noticed a good improvement of the back pain (EVA 2) and he can walk normally. The patient was referred for the adjuvant therapy. In the last reevaluation, he experienced complete solution of back pain, and there was no radiological sign of tumor recurrence.

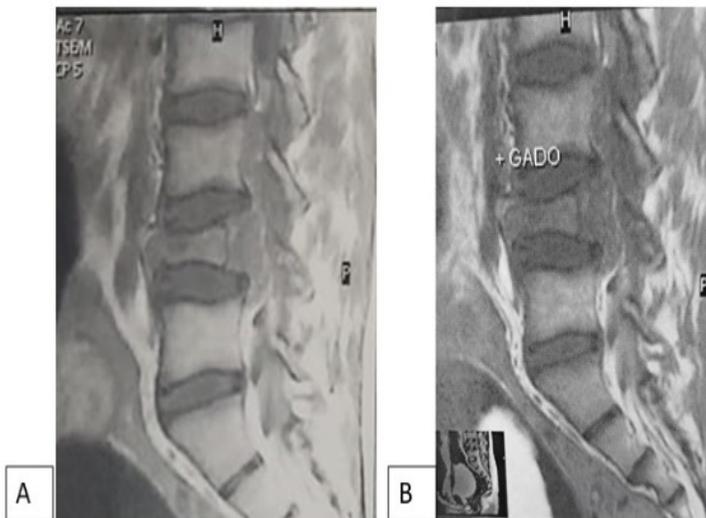


Figure 1: MRI T1-WI (a) and T1-WI after gadolinium (b) revealed lytic lesion of L4 with iso-signal intensity without enhancing after gadolinium injection and epiduritis extending of L3-L4



Figure 2: Post-operative X-ray, lateral and AP, after spinal fusion and L4 vertebroplasty

4. Discussion

We describe a first case never previously reported of vertebroplasty for primary spinal ES in child. Ewing's sarcoma is a primary malignant bone tumor, which predominantly affects children and adolescents. The primary vertebral location of Ewing's sarcoma is extremely rare, accounting for only 3.5 to 5% (1.5). The involvement of the non sacral pinere presents only less than 1% of all primary spinal ES [6]. Primary vertebral Ewing's sarcoma is often revealed by back pain. Spinal cord compression is often delayed presentation. Deterioration of general condition, as well as the presence of fever, is not uncommon and testifies to metastatic dissemination. Our patient only suffered from isolated low back pain, without neurological deficit. No radiological sign is pathognomonic in Ewing's sarcoma [7], but images of osteolysis with vertebral compression associated to epiduritis are often found, which is the case in our study with the presence of an osteolytic compression of L4. This is important to choose the best surgical strategy.

The current standard treatment involves chemotherapy and local disease control with surgery and radiotherapy [8,9]. In comparison to ES in adult, the age is a controversial prognosis factor and could not influence the survival rate [10]. The most significant factors to determine the prognosis are the presence of metastatic disease and local control of the primary site [3, 7]. Local disease control can be achieved by en-bloc resection and fusion, but in spinal location this technic is challenging. To increase this local control, vertebroplasty could be an alternative procedure to en-bloc resection. Vertebroplasty is a widely used technique in adults but rarely reported in children. The indications in pediatric population are mainly vertebral fractures and benign tumors such as vertebral hemangiomas [11, 12]. To our knowledge, vertebroplasty has never been performed for Ewing's sarcoma in children. We opted for this choice given the symptomatology dominated by pain and significant compression of the vertebra. Vertebroplasty is an easy and save technic that has a sclerosing effect that can kill tumors via local high temperature and cytotoxicity [13]. It allows also to increase vertebral height, participate to stability and alleviate the spinal pain. However, special attention should be taken during vertebroplasty for cement leakage at the posterior margin of the vertebral body caused by excessive injection and increased local pressure in destroyed and fragile vertebra. We believe that it should be restricted only to carefully selected patients.

5. Conclusion

To the best of our knowledge our case represents the youngest age of vertebroplasty reported for primary spinal Ewing's sarcoma in child and suggests that can have a better prognosis for survival than decompression and fusion alone. However, further prospective studies are required to tailor better evidence-based treatment guidelines for indication and to achieve a better prognosis.

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