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Case Report
Solitary Thoracic Exostosis Without Spinal Cord Compression Symptoms: A Rare Case Report

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ABSTRACT

Thoracic exostosis (osteochondroma) is rare. In this study, we report a rare case of thoracic exostosis in a 10-year-old boy arising in the T8 spinous process without expansion of mass to spinal canal. The patient's parents noticed a mass in the dorsal aspect of the thorax for the past two years with gradual enlargement over six months. The patient had no clinical symptoms of spinal cord compression, such as pain and myelopathy. In the radiological evaluation, a calcified lesion was detected with the typical characteristics of exostosis. The lesion was removed with en bloc resection, and histologic examination confirmed the diagnosis of thoracic exostosis. The six-month follow-up of the patient showed the event-free survival. This study suggests the importance of early diagnosis and treatment of thoracic exostosis for preventing it from causing long-term neurological deficits and reducing its potential risk of malignant transformation.

1. Introduction

Exostosis, also known as osteochondroma, is the most common benign form of bone tumors, accounting for approximately 40% of all benign bone lesions [1]. They can be present in solitary form (90% of cases) or hereditary multiple form (10% of cases) and mostly involve the metaphysis of long bones such as distal femur, proximal tibia, and proximal humerus [1]. Spinal exostosis is rare, accounting for only 2-3% of all cases [2]. In the majority of cases, solitary exostosis of the vertebral column is present in the cervical spine, but thoracic spine involvement is less common [3]. In most cases, it is associated with pain and results in neurological deficits due to expansion of lesion to spinal canal [4]. Due to its sporadic presentation, its diagnosis is generally difficult; A differential diagnosis with other spinal pathologies such as disc herniation disc and spinal stenosis is required [5]. In this regard, this study presents a case of exostosis in a 10-year-old boy who was referred with a palpable mass in the dorsal aspect of the thoracic spine without expansion to spinal canal and neurologic

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symptoms. We also describe the radiologic and pathologic characteristics of the case.

2. Case Presentation

The case was a 10-year-old boy referred to our center with a palpable mass on the dorsal side of the thoracic spine from two years ago. According to the patient's parents, the mass size was progressive, particularly during the last six months. The patient had no symptoms such as pain and neurological deficits. The patient and his family had no medical history. They reported no history of trauma to the spine. Physical examination revealed no decreased sensation or strength in the lower extremity. No tenderness or deformity was evident. Neurological examinations showed normal results.

Radiographic evaluation of the thoracic spine revealed a calcified lesion at the T8 spinous process (Figure 1). The Computerized Tomography (CT) scan showed the continuity of lesion cortex and medulla with those of the T8 vertebra (Figure 2). T2-weighted magnetic resonance imaging (MRI) showed a low-intensity signal surrounded by a high-intensity signal consistent with the presence of a bone mass with a cartilage cap (Figure 3). Accordingly, the exostosis was diagnosed. The lesion was extracted with en bloc resection, and the extracted tissue was sent to the pathology department for histological examination whose results showed a neoplastic tissue composed of mature bone covered by cartilage cap with no mitosis of necrosis which was consistent with the diagnosis of exostosis. Six months of follow-up showed event-free survival. The patient had no pain and activity restriction. The mass recurrence was not seen clinically and radiologically.

3. Discussion

In this study, we reported a rare case of thoracic exostosis in a 10-year-old boy. Although the lesion was gradually enlarging, the patient had no clinical symptoms such as pain and neurologic deficit. The lesion was removed with en bloc resection, and histologic examination confirmed the diagnosis of thoracic exostosis (Figure 4). The six-month follow-up of the patient showed recurrence-free survival. The patient had no pain or limited mobility.

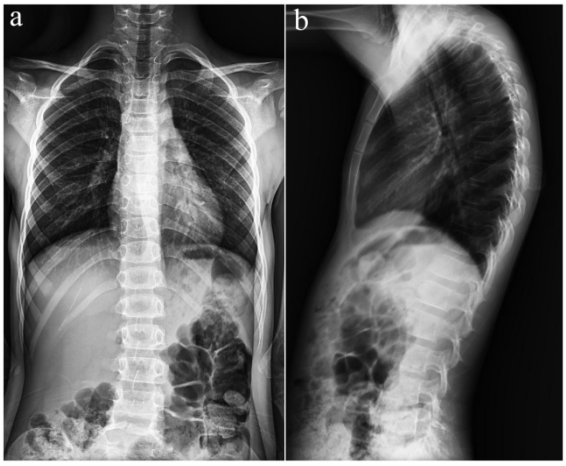

Figure 1. Anteroposterior (a) and lateral (b) radiographs of the patient showing a calcified lesion at the T8 spinous process

Thoracic exostosis has been reported in a number of previous studies. Brastianos et al. reported a case of solitary thoracic exostosis at the posterior portion of the T12 vertebrae in a 26-year-old woman. The patient was presented with spinal cord compression symptoms, including lower extremity weakness and numbness. The lesion was managed with a T12 corpectomy through thoracolumbar fixation and fusion, which successfully resolved the patient's spinal cord dysfunction [6]. Brastianos et al. reported a case of thoracic exostosis in a 34-year-old man who was presented with pain, lower extremity numbness, and inability to walk. He had the symptoms for the past one year which aggravated within six months. The initial diagnosis was lumbar discopathy.

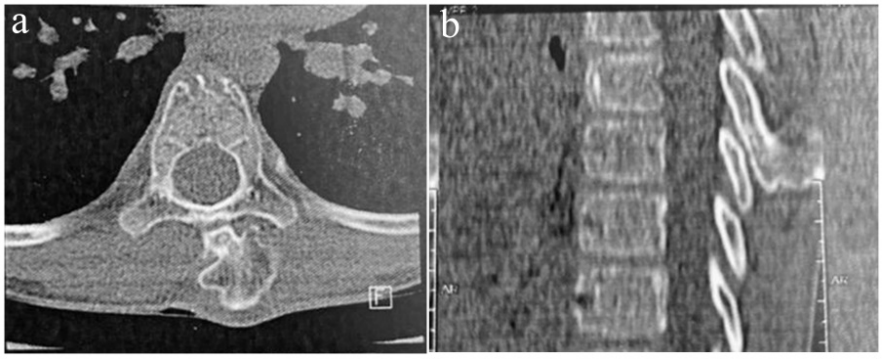

Figure 2. Axial (a) and sagittal (b) CT scan showing the continuity of lesion cortex and medulla with those of the T8 vertebra.

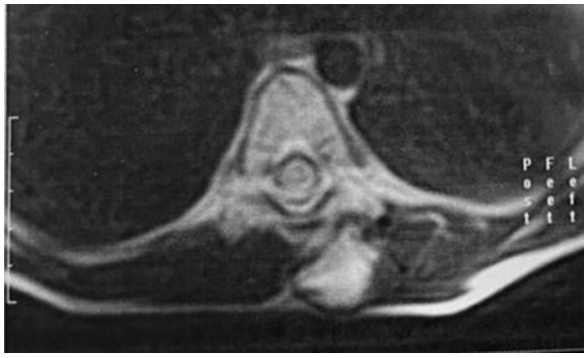

Figure 3. Axial T2-weighted MRI showing a low-intensity signal surrounded by a high-intensity signal.

The patient underwent various medical/physical treatments, which were not effective in resolving the symptoms. The CT scan revealed a calcified bone lesion at the left side of the T1-2 facet joint. The diagnosis of exostosis was confirmed by the histological investigation. Ten-month clinical and radiographic follow-up of the patient was event-free. They suggested that spinal exostosis should be considered in the differential diagnosis of nonspecific neck, back, and lower back pains [6].

Javadpour et al. reported a spinal cord compression secondary to solitary thoracic exostosis arising from the neural arch of T5 in a 54-year-old woman with a 12-year history of neck pain. Neurological examinations showed normal results. The primary diagnosis was meningioma; however, a calcified lesion was noticed on the CT scan image. The patient underwent bilateral laminotomy of the T5 for removing the spinous process and laminae en bloc. Histological examination of extracted specimen confirmed the diagnosis of exostosis. They suggested the role of CT and MRI images in early diagnosis and treatment of thoracic exostosis, and in preventing the permanent neurologic deficit and eliminating the potential risk of malignant transformation [7]. Mehrian et al. reported a solitary exostosis of the thoracic spine in a 19-year-old boy with a five-year history of back pain radiating to the lower extremity, which was more complicated with the toe numbness in the past year. Radiological examination revealed an abnormal bony mass arising from the posterior arch of the T9 vertebrae with marked spinal cord compression. The symptoms resolved after en bloc resection of the lesion, and the diagnosis of exostosis was confirmed by histological examination of the extracted tissue. They suggested to consider rare entities such as osteochondroma in the differential diagnosis of myelopathy [8].

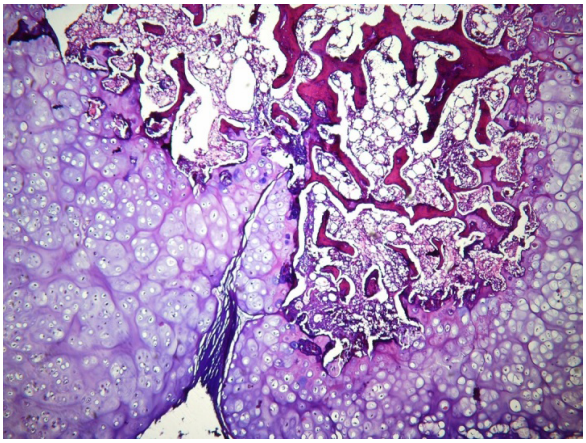

Figure 4. Histologic slide showing a neoplastic tissue composed of mature bone covered by cartilage cap with no mitosis of necrosis

Thoracic exostosis has also been reported in some other studies [4, 5, 9]. In the majority of case reports, in contrast to our case, the patient was presented with a long-term history of clinical symptoms of spinal cord decompression. This discrepancy suggests that thoracic exostosis is often neglected in the differential diagnosis of myelopathy, leading to suffering for a longer period. Delayed diagnosis also increases the risk of persistent neurological deficits and malignant transformation of exostosis. Therefore, complete radiological evaluation is necessary for patients with long-term spinal cord compression symptoms to rule out the diagnosis of thoracic exostosis. Physicians should kept it in mind that thoracic exostosis is not always presented with clinical symptoms.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

Conceptualization and design: Mohammadreza Shakeri; Reviewing the manuscript critically: Mohammadreza Chehrassan; Data collection and Writing – original draft: Saeed Razi.

Conflict of interest

The authors have no conflict of interest to disclose.

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