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# Vertebral Epidermoid Tumor Mimicking Metastatic Spinal Tumor -A Case Report-

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#### - Abstract

Spinal epidermoid tumors constitue less than 1% of all spinal tumors. A 51-year-old man was admitted for evaluation of incidental vertebral tumor at T12. Magnetic resonance imaging (MRI) revealed a mass lesion on posterior vertebral body and pedicle with no epidural extension and cord compression at T12. The lesion was heterogeneously hyperintense on T1-weighted images and T2-weighted images without any enhancement. Our preliminary diagnosis was a metastatic tumor. So the patient underwent percutaneous vertebral needle biopsy. But histopathologic examination was compatible with keratinous material lined by squamous epithelium, which confirmed an epidermoid tumor. We report one case of vertebral epidermoid tumor mimicking metastatic spinal tumor. To the best of our knowledge, this is the first case of epidermoid tumor developed in vertebrae in the literature.

Key words : Epidermoid tumor, Metastatic tumor

#### Introduction

Epidermoid tumors are benign epithelial mass lesions containing an accumulation of desquamated epithelial cells, keratin, and cholesterol.<sup>1)</sup> They are usually arised from ectodermal tissue displaced during the period of neural closure. They constitute less than 1% of all spinal tumors.<sup>2)</sup> They usually located intradural and extramedullary, and either rarely located extradurally.<sup>3)</sup> Only a few cases of extradural epidermoid tumor in spinal canal have been reported, but no case of that in vertebrae has been reported yet.<sup>4)</sup> We present one case of vertebral epidermoid tumor mimicking metastatic spinal tumor. To the best of our knowledge, this is the first case of epidermoid tumor developed in vertebrae in the literature.

#### Case

A 51-year-old man was admitted for evalluation of

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incidental vertebral tumor at T12. He complained of lower back pain and right leg pain for 6 months. No history of lumbar puncture and associated congenital malformation was noted. Neurologic examination was normal. Other physical examination and laboratory findings were normal. There was no bony abnormality on plain X-rays. Magnetic resonance imaging (MRI) revealed a mass lesion on posterior vertebral body and pedicle with no epidural extension and cord compression at T12(Fig. 1A-D). The lesion was heterogeneously hyperintense on T1-weighted images and T2-weighted images without any enhancement. This signal intensity was secondary to the lipid content of the lesion, which could suggest epidermoid or dermoid tumors. Because metastatic spinal tumors are characteristically extended from posterior vertebral body and pedicle, and epidermoid tumors are exceedingly rarely located extradurally, our preliminary diagnosis was a metastatic tumor. So the patient underwent percutaneous vertebral needle biopsy. But histopathologic examination was compatible with keratinous material lined by squamous epithelium, which confirmed an epidermoid tumor(Fig. 2). We made observations for 1 year and follow up MRI revealed no interval change.





(D) T1WI enhanced, axial

Fig. 1A-D. Magnetic resonance imaging (MRI) revealed a mass lesion on posterior vertebral body and pedicle with no epidural extension and cord compression at T12. The lesion was heterogeneously hyperintense on T1-weighted images and T2-weighted images without any enhancement.



Fig. 2. Histopathologic examination was compatible with keratinous material lined by squamous epithelium, which confirmed an epidermoid tumor. (H-E, X200)

### Discussion

Epidermoid tumors first were described by Love and Kernohan in 1936. They believed that epidermoids arise from pathologic inclusion of surface ectoderm. Dias and Walker stated that epidermoid tumors are primarily a gastrulation dysembriogenesis, with secondary disruption of neural tube closure, during the third to fourth week of gestation. Epidermoid tumors of the spine are rare. They represent less than 1% of all spinal tumors and are uncommon in adults when compared with pediatric population.

The origin of spinal epidermoids can be congenital or acquired. The more common cause is an anomalous implanation of ectodermal cells during closure of the neural tube between the third and fifth week of embryonic life.<sup>2)</sup> Another cause is the accidental displacement of epithelial tissue secondary to previous lumbar puncture, trauma, bullet wounds or surgery, although noncongenitals are rare. Frequent related skin and skeletal changes are dermal sinus, spinal bifida, and segmentation and fusion anomalies of the vertebrae.<sup>5)</sup>

They usually located intradural and extramedullary and either rarely located extradurally. Conus region is most common location in intradural and extramedullary epidermoid tumors.<sup>6)</sup> Chadduck WM and Musa Taghipour reported an epidural epidermoid tumor simulating lumbar disc disease in 1971 and 2006.<sup>7)</sup> But to our knowledge, there was no report of epidural epidermoid tumor in vertebrae.

The histologic examination reveals multiple layers of stratified squamous epithelium and anucleated squames in the cyst. Rupture of cyst evolves foreign body type granulomatous inflammation.

MRI is the study of choice for diagnosing epidermoids. T1 and T2 signal on MRI usually varies from hypointense to isointense but may occasionally have increased intensity on T2WI. This variation in signal characteristics, which might be related to the chemical state of cholesterol or the relative composition of cholesterol and keratin, makes the preoperative diagnosis in the spinal lesions difficult.

Clinical presentations are variable and depend on the tumor location. The tumors usually grow linearly similar to normal skin, and thus symptoms have an insidious onset and course. The most common presenting symptoms of urinary incontinence and paresthesia can be secondary to the involvement of conus medullaris. Infection is a common complication in pediatric pupulation and might lead to an increased morbidity if the diagnosis is delayed. Treatment of choice is total resection of tumor. Capsules of the epidermoid tumors are usually found adherent to the neural tissues and subtotal or conservative resection may be recommended in some of these cases. However, prudent surgery to avoid neurologic aggravation brings a high probability of recurrence. A good long-term outcome is expected due to the benign and slow growing nature of the tumor.

We decided to make close observations because our case was no symptomatic incidental epidermoid tumor. One year later, follow up MRI revealed no interval change and the patient presented no associated symptom.

## Conclusion

We report one case of vertebral epidermoid tumor, MRI findings of which were similar to metastatic spinal tumor. The incidence of epithelial tumors is low, but we should be aware of the possibility of this rare tumor as a differential diagnosis of vertebral tumor.

# 국문초록

유표피종은 탈락된 상피세포, 각질, 콜레스테롤이 축 적되어 형성된 양성 상피종으로 보통 태생기 신경폐쇄 기간에 이동된 외배엽 조직으로 부터 발생한다. 척추에 서는 요천추부의 경막내에 호발하나 유병율은 높지 않 다. 척추 경막외에서 발생한 유표피종은 드물게 보고 되 었으나 척추체에서 발생한 유표피종은 문헌에서 확인 할 수 없었다. 저자는 제12 흉추체에서 발생한 전이성 척추 종양으로 오인된 유표피종 1례를 경험하였기에 문헌 고 찰과 함께 보고 한다.

Key words : 유표피종, 전이성 종양

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