

# ***Acute Spinal Cord Injury After Delivery Induced by Giant Cell Tumor of T12 Vertebrae During Pregnancy: A Case Report***

## ***Hamilelikte T12 Vertebrada Gelişen Dev Hücreli Tümöre Bağlı Doğum Sonrası Gelişen Akut Spinal Kord Hasarı: Olgu Sunumu***

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### **ABSTRACT**

This is a case report of a rare incident of acute spinal cord injury induced by a giant cell tumor (GCT) of the T12 vertebrae diagnosed two weeks after delivery. A 26-years-old woman was admitted to our rehabilitation ward with flask paraplegia and urinary incontinence. Her medical history revealed that she had progressively increasing back pain since 21st week of her pregnancy that was nearly 6 months ago. MRI of the thoracic spine showed a collapsed T12 vertebral body and a large paraspinal and intraspinal tumor compressing on the spinal cord. Emergent surgical decompression and removal of the tumor mass was performed. Histopathologic examination of the specimen revealed a GCT. After 10 weeks of inpatient rehabilitation program, ASIA Motor scores improved from 50/100 to 100/100, FIM scores from 54/128 to 111/128 and ASIA Impairment Scale from ASIA B to ASIA E. Bone tumor should be kept in mind in a pregnant woman who has spinal cord compression symptoms like pain or numbness. (*J PMR Sci 2011;14: 48-50*)

**Key words:** Pregnancy, spinal cord Injuries, giant cell tumors

### **ÖZET**

Doğumdan 2 hafta sonra dev hücreli tümör nedeni ile oluşan akut spinal kord travmalı nadir bir vaka raporu. Yirmialtı yaşında bayan hasta flask parapleji ve üriner inkontinans nedeniyle rehabilitasyon kliniğimize kabul edildi. Hastanın hikayesinde yaklaşık 6 ay önce gebeliğinin 21. haftasından itibaren progresif olarak artan bel ağrısı şikayeti vardı. Torasik manyetik rezonans görüntüleme T12 vertebra korpusunda kompresyon/çökme ve spinal kordu basılayan geniş paraspinal ve intraspinal tümör görüldü. Acil cerrahi dekompresyon ve tümör dokusu eksizyonu yapıldı. Materyalin histopatolojik incelemesinde dev hücreli tümör olduğu ortaya çıktı. Hasta cerrahiden 10 gün sonra rehabilitasyon ünitemize başvurdu. On haftalık yatarak rehabilitasyon programı sonrası ASIA motor skorunda 50/100'den 100/100'e, FIM skorunda 54/128'den 111/128'e, ASIA impairment skalada ASIA B'den ASIA E'ye iyileşme gözlemlendi. Gebelik süresince herhangi bir spinal ağrı veya uyuşukluğun kemik tümörü sonucu olabileceği akılda tutulmalıdır. (*FTR Bil Der 2011;14: 48-50*)

**Anahtar kelimeler:** Gebelik, spinal kord yaralanması, dev hücreli tümör

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## Introduction

A majority of women suffer from low back pain during pregnancy and even after delivery. Since it is considered a part of normal pregnancy, referral to a specialist is often delayed. We describe a young woman who developed an acute spinal cord compression and paraplegia caused by a pathological fracture in T12 secondary to giant cell tumor (GCT). Her low back pain started at 21<sup>th</sup> weeks' gestation of her pregnancy however an imaging technique such as X-ray or CT scan had not been ordered to prevent the baby from the potential risks of teratogenicity, potential neurological injury, and future myelogenous neoplasm to the fetus. Paraplegia occurred 2 weeks after her delivery.

## Case Report

A 26-years-old woman was admitted to our rehabilitation ward with flask paraplegia and urinary incontinence. Her medical history revealed that she had progressively increasing back pain since 21<sup>st</sup> week of her pregnancy that was nearly 6 months ago. Her back pain was attributed to pregnancy and imaging was not ordered. Two weeks after delivery she was referred to neurosurgery department with sudden paraplegia and urinary incontinence. MRI of the thoracic spine showed a collapsed T12 vertebral body and a large paraspinous and intraspinal tumor compressing the spinal cord. Emergent surgical decompression (anterior instrumentation, T12 corpectomy, anterior column reconstruction with Harms cage, internal fixation by pedicle screws) and removal of the tumor mass was performed. Figure presents postoperative lateral thoracolumbar X-ray of the patient. Histopathologic examination of the specimen revealed a giant cell tumor. Since her neurological impairment did not improve, she referred to our rehabilitation unit 10 days after the surgery with an indwelling

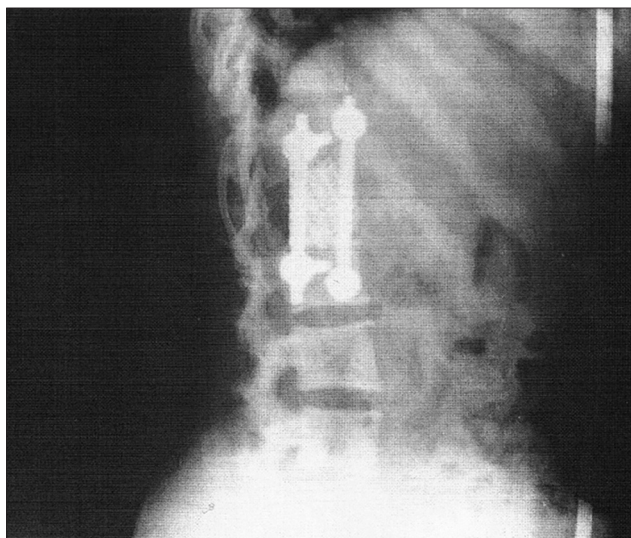


Figure 1. Postoperative lateral thoracolumbar X-ray

catheter. Neurological examination revealed normal tactile and pain sensation. Muscle power in bilateral upper extremity muscles was 5/5 in Medical Research Council (MRC) scale and 0/5 in lower extremities (1). Voluntary anal contraction was absent. Her muscle tone at both lower extremities was decreased. Patellar and Achilles' tendon reflexes were negative but anal reflex and anal sensation were preserved. Her condition was classified as T12 American Spinal Injury Association (ASIA) Grade B (2). A comprehensive inpatient SCI rehabilitation program was delivered including passive and active range of motion exercises, sitting and standing balance exercises, posture and ambulation training, progressive strengthening exercises and endurance exercises. After 10 weeks of inpatient rehabilitation program, ASIA Motor scores improved from 50/100 to 100/100, FIM scores from 54/128 to 111/128 and ASIA Impairment Scale from ASIA B to ASIA E. During her hospital stay her ambulation capacity improved and urinary incontinence resolved completely. She only needed a cane for long distance ambulation without a help of another person. Inpatient rehabilitation process terminated without a significant complication. Recurrent tumor formation was ruled out by an MRI three months after the operation. She is discharged to home with a close follow-up for further risk of GCT recurrence.

## Discussion

There is no valid incidence data of central nervous system (CNS) tumors in Turkey. In USA it is reported as 10-17/100000 for intracranial tumors and 1-2/100000 for intraspinal tumors (3). Most of the spine and spinal cord tumors are of metastatic origin (4). Malignant tumors are much more encountered in older ages whereas younger ones have probably benign tumors. Spinal pain is the most common symptom of spinal tumors.

Giant cell tumor is the primary tumor of the bone with osteoblast lineage origin (5). Although GCT is classically located on the metaphysis and diaphysis of long bones, spinal involvement on sacrum, cervical, thoracic and lumbar vertebral body has also been reported (1-9 % of all GCTs). 5-9 GCT of the spinal column is a local aggressive benign primary bone tumor. In the series of Dahlin, it was reported that bone tumors occupy 4.2%. While half of it is located on sacrum, the next frequency order is followed as thoracic and cervical spinal columns (6). The location of thoracic vertebra is 1-2 (10). While mean age of the involvement is 30 years, it may also be observed between 13-62 years. It was reported to be more prevalent in females with a ratio of 2:1 (6). It rarely metastasized to other sites. Surgical removal is needed if it erodes and expands locally. Local recurrence has been reported after inadequate surgical excision. Contrary to many bone tumors, the highest incidence is in women of reproductive age group during 3<sup>rd</sup> and 4<sup>th</sup> decade. Although it is frequent in pregnancy it is still not

clear whether there is a hormonal influence of tumor growth (Growing Provider Receptors) or the association is only coincidental due to the frequency of the GCT in young females of childbearing age (5). Successful outcomes after the surgical excision of the tumor from 2<sup>nd</sup> (5) and 5<sup>th</sup> (8) lumbar vertebrae as well as progressive paraparesis (7) has been reported. None of the previous studies reported an acute spinal cord injury due to vertebral fracture short after delivery of a woman with GCT.

Maxwell et al retrospectively reviewed the hospital records of 60,000 deliveries in Toronto, for the years 1983–2003, and reported 17 women diagnosed with bone or soft tissue tumors during pregnancy or within 3 months after delivery (9). During the period of 20 years GCT was diagnosed in 4 of these 17 (24%) pregnant women with bone or soft tissue tumors. They concluded that pregnancy has not aggravated the progression of these tumors. Komiya et al reviewed the hospital records of 56 GCT patients (31 women) and reported that 3 GCT grew during pregnancy or just after delivery (11). They investigated the potential hormonal regulation of these tumors but could not find a direct association. Similar to our case, they attributed the delay in detection of the tumor to the misinterpretation of the symptoms such as pain, discomfort, or numbness around the pelvis as symptoms of pregnancy.

Considering that the majority of the patients are young and women as well as the long term consequences of paraplegia due to spinal cord injury, the importance of early diagnosis should be highlighted once more. We concluded that it should be kept in mind that during pregnancy, any pain or numbness in the spine could be the direct result of a bone tumor. The complete neurological and functional improvement of our case without any complications was attributed to the early surgical decompression and our successful rehabilitative approach.

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