


LETTER TO THE EDITOR

Generalized Tonic-Clonic Seizures Cause Lumbar Spine Fracture

Jeneralize Tonik-Klonik Nöbetler Omurga Kırığına Neden Olur

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Emergency Department, Konya/Türkiye**E-Mail:** aysegulbayir@hotmail.com**How to cite ?**Bayır A. Generalized Tonic-Clonic
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Genel Tıp Dergisi. 2023; 33(1): 114-116.**ABSTRACT**

A 28-year-old man presented to the emergency department after a witnessed GTC seizure. The patient had a history of systemic lupus erythematosus, previous subarachnoid hemorrhage, and pulmonary embolism. He was on regular methylprednisolone 16 mg, enoxaparin 60 mg once daily, and levetiracetam (LEV) 500 mg twice daily. The patient had recently stopped taking LEV. There was no trauma in the history. Neurological examination was normal. He had severe lower back pain that failed to subside despite treatment with analgesics and opioids; therefore, this patient had an indication for radiological imaging. Urgent non-contrast computerized tomography (CT) scan of the lumbar spine revealed a burst fracture of L1. Non-contrast lumbar magnetic resonance imaging (MRI) revealed a bursal fracture in the L1 vertebral corpus that caused approximately 50% height loss, and there was compression of the posterior corpus of the vertebra on the thecal sac; however, no stenosis of the spinal canal was detected. At this level, there was bone marrow edema in the vertebral corpus (Figure 1,2). He was transferred to the neurosurgery department. Written informed consent was obtained from the patient for the publication of this case.

Key Words: Generalized seizure, spine fracture, complication**ÖZ**

A 28-year-old man presented to the emergency department after a witnessed GTC seizure. The patient had a history of systemic lupus erythematosus, previous subarachnoid hemorrhage, and pulmonary embolism. He was on regular methylprednisolone 16 mg, enoxaparin 60 mg once daily, and levetiracetam (LEV) 500 mg twice daily. The patient had recently stopped taking LEV. There was no trauma in the history. Neurological examination was normal. He had severe lower back pain that failed to subside despite treatment with analgesics and opioids; therefore, this patient had an indication for radiological imaging. Urgent non-contrast computerized tomography (CT) scan of the lumbar spine revealed a burst fracture of L1. Non-contrast lumbar magnetic resonance imaging (MRI) revealed a bursal fracture in the L1 vertebral corpus that caused approximately 50% height loss, and there was compression of the posterior corpus of the vertebra on the thecal sac; however, no stenosis of the spinal canal was detected. At this level, there was bone marrow edema in the vertebral corpus (Figure 1,2). He was transferred to the neurosurgery department. Written informed consent was obtained from the patient for the publication of this case.

Anahtar Kelimeler: Jeneralize nöbet, omurga kırığı, komplikasyon

Dear Editor,

A seizure is a sudden, uncontrolled electrical disturbance in the brain. Seizures that appear to involve all areas of the brain are called generalized seizures. Potential complications of generalized tonic-clonic (GTC) seizures include injuries, such as head trauma, trauma to the tongue, lips, and cheeks, vertebral compression fractures, rhabdomyolysis, aspiration pneumonia, neurogenic pulmonary edema, cardiac arrhythmias, sudden death, and urinary or bowel incontinence (1). Patients may develop multiple and various types of bone fractures during seizures. Patients with osteoporosis are prone to more severe fractures of the long bones, spine, and pelvis. Vertebral fractures following seizures are compression fractures that typically occur in the mid-thoracic region due to contraction of strong paraspinal muscles; however, they do not usually result in neurological deficits. Despite the relative frequency of vertebral compression fractures complicating tonic-clonic seizures, burst fractures are rare (2,3).

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edema in the vertebral corpus (Figure 1,2). He was transferred to the neurosurgery department. Written informed consent was obtained from the patient for the publication of this case.

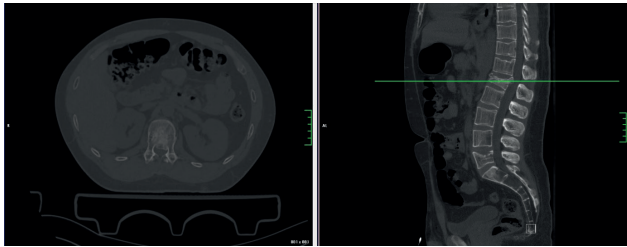


Figure 1: Axial and sagittal reformatted CT images reveal loss of vertebra height due to burst fracture in L1 vertebra corpus and narrowing of spinal canal.

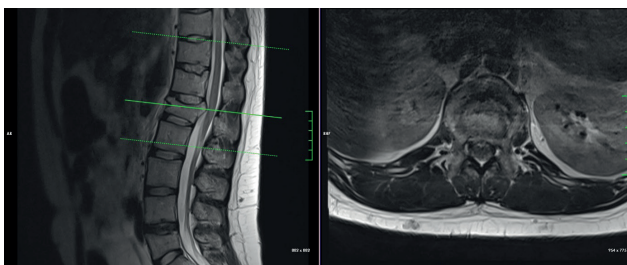


Figure 2: T2 weighted sagittal and axial MRI reveal loss of vertebra height due to burst fracture in L1 vertebra corpus and narrowing of spinal canal.

The most common cause of seizures is idiopathic epilepsy; less common causes of seizures include brain tumors and medication overdoses. Nearly 3% of patients with epilepsy are injured during seizures. Seizures are a rare but well-known causes of fractures (4). Fractures due to seizures vary according to localization and may include the proximal humerus, scapula, hip femoral neck, spine, facial bone, distal radius, or ankle. These injuries may occur either directly due to the severe force of the seizure or secondary to a fall at the time of the seizure (5). Seizure-induced spinal fractures (SISFs) should be ruled out in patients who have a history of seizures and who report dorsolumbar pain or neurological deficits. While rare, postictal thoracolumbar burst fractures are often overlooked due to confounding factors, and this causes delayed treatment and leads to severe neurological damage. SISF usually occurs in the thoracolumbar spine and less frequently in the cervical spine (6).

In this case report, our aim is to describe the characteristics of this uncommon condition. This article serves as a call for physicians managing patients in the postictal period to have a high degree of suspicion for secondary injury and perform a thorough clinical examination. Although radiological examination should include the cervical, thoracic, lumbar, and sacral vertebrae in addition to the pelvis. X-ray is the first-line examination in radiological imaging in vertebral fractures, CT and MRI should be considered, respectively, in detailed examination. If the postictal patient is unresponsive or uncooperative, spinal assessment should be continued until the vertebral

column is clinically or radiographically clear. Bone loss with fractures also occurs in patients treated with drugs targeting the immune system, such as anticonvulsants, unfractionated heparin, low molecular-weight heparins (LMWHs), oral anticoagulants, and proton pump inhibitors (7). Osteoporosis is recognized as a contributing factor to increased fracture risk in seizures. (8). Drug-induced osteoporosis is common. Glucocorticoids (GCs) are the drugs that most frequently cause osteoporotic fractures. GCs increase osteoclastic activity and cause bone resorption while reducing osteoblast-directed bone formation. Approximately 30–50% of patients who take GCs develop fractures (9,10). LMWHs have effects on the skeleton, like unfractionated heparin, but the degree of bone loss is less severe (11, 12). However, LEV therapy is thought to have no detrimental effects on bone strength and metabolism. It has been reported that LEV monotherapy may have no harmful effects on bone mineral density and bone metabolism for 1 year in patients with epilepsy (13, 14). Although our patient was not officially diagnosed with osteoporosis, he had the relevant risk factors, such as a sedentary lifestyle and taking drugs that reduce bone mineral density. This supports the hypothesis that the post-seizure vertebral fracture observed in our case developed due to secondary osteoporosis. Therefore, GTC can lead to serious musculoskeletal injuries. Strong muscle contraction during seizures can result in vertebral fractures. The absence of a history of high-energy trauma may delay diagnosis. Radiological evaluation should be performed in patients with a complaint of thoracolumbar pain in the postictal period after a seizure in addition to patients with risk factors for osteoporosis.

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