



## Pulmonary embolism occurring in patient who was treated with spinal cord stimulation

### *Spinal kord stimülatörü takılan hastada gelişen pulmoner emboli*

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#### Summary

Spinal cord stimulation (SCS) has been shown to be an effective method for the treatment of many chronic pain syndromes. In addition, providing pain relief with SCS can reduce immobilization and complications related to immobilization. The present case is description of pulmonary embolism (PE) that occurred in patient being treated with SCS for post-laminectomy syndrome. The possibility of PE must be kept in mind for SCS patients.

Keywords: Immobilization; pulmonary embolism; spinal cord stimulation.

#### Özet

Spinal kord stimülasyonunun (SCS) birçok kronik ağrı sendromunun tedavisinde etkili bir yöntem olduğu gösterilmiştir. Biz bu olguda postlaminektomi sendromu nedeniyle spinal kord stimülatörü uygulanan hastada deneme dönemi sırasında görülen pulmoner emboliye yaklaşımımızı sunduk. SCS hastalarında pulmoner emboli şüphesi akılda bulundurulması gereken bir durumdur. Ayrıca SCS ile ağrı palyasyonunun sağlanması immobilizasyon ve immobilizasyon ile ilişkili komplikasyonları azaltabilir.

Anahtar sözcükler: Immobilizasyon; pulmoner emboli; spinal kord stimülasyonu.

#### Introduction

Spinal cord stimulation (SCS) has been shown to be an effective method in the treatment of many chronic pain syndrome. It is widely used in the treatment of postlaminectomy syndrome, complex regional pain syndrome, radiculopathy resistance to conservative or surgical treatment, peripherally vascular diseases and visceraal pain. It has also been applied to non-pain-related conditions such as congestive heart failure, interstitial cystitis, intractable spasticity.<sup>[1]</sup>

SCS seems to be cost-effective in the treatment of many chronic neuropathic pain conditions.<sup>[2]</sup> Clinical series report between 50% to 70% successful pain relief in patients treated with SCS based on reduction in pain severity scores, improvement in function, and decreased pain medication dependence.<sup>[3]</sup>

Immobilisation occurring dependent on the pain in

the patients with chronic pain, increases remarkably in the trial period of SCS because the electrodes standing out of the body restrict the patient's movements. As a result of this, it is likely that the patients face the problems caused by immobilisation such as thromboembolism. In this case, we present our approach towards pulmonary embolism (PE) occurring in the trial period after electrodes were implanted in a patient treated by SCS because of postlaminectomy syndrome.

#### Case Report

A 59-year-old female patient came with a complained that she had pain in her back and two legs for 5 years. The patient had been operated twice on the region of lumbar spine because of compression fracture. After these operations, she suffered from chronic low back and bilaterally lower extremity pain

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and underwent repeated hospitalization. The pain was characterized as constant, burning and biting. Her visual analog scale (VAS) score for pain intensity was 8–9/10. Electrodiagnostic studies showed lumbar radiculopathy.

Because the patient was not treated by physical therapy, medication (pregabalin 600 mg/day, tramadol 200 mg/day, oxycodone 80 mg/day) and interventional pain treatments (facet median branch radiofrequency thermocoagulation, epidural steroid injection), it was planned that SCS should be implanted to the patient. The patient was placed the percutaneous lead with eight electrodes introduced via a 14 gauge modified Tuohy needle and entering the epidural space in a parasagittal approach at L1-2 under fluoroscopy in the operating room. The trial lead was advanced carefully to the T9-10 disc space under fluoroscopy.

The patient was controlled and observed during trial period because she was suffering from anemia, and fatigue. After the internal medicine consultation, the patient was diagnosed as having iron deficiency anemia.

One week after the electrodes were implanted, slight chest pain and cough occurred in the patient, and her fatigue increased. The patient's physical examination was normal and X-ray was usual. The patient was consulted by cardiology. The cardiac pathology was not determined. Then, her cough became less severe, but her chest pain and fatigue continued. She was also consulted by chest disease specialist. There upon D-dimer level was analysed because of suspicion of pulmonary embolism in the patient. D-dimer level had increased. The patient was given prophylactic Clexane treatment. Then, the patient had a Computed Tomography Pulmonary Angiography (CTPA). At the PTCA, filling defects that compatible with pulmonary embolism were determined at the branches of pulmonary artery feeding the right lung lower segment. Dose of Clexane was increased to 0,6 ml twice a day. Treatment of Clexane was continued during the trial period of evaluation of SCS. The patient reported significant pain relief on her lower back and legs with decreased VAS scores for pain intensity. The patient was implanted the spinal cord stimulator generator accompanied by the treat-

ment of Clexane. There was not any complication in perioperative and postoperative period. She demonstrated excellent improvement in pain. Clexane was stopped and Coumadin was begun to the patient. The patient was discharged. She could therefore return to her daily life.

## Conclusion

The clinical signs and symptoms of PE may be non-specific, and diagnostic confirmation using imaging and laboratory tests is required.<sup>[4]</sup> The combination of clinical probability estimation, CT pulmonary angiography and serum D-dimer level is usually used to establish the diagnosis.<sup>[5]</sup> Dyspnoea, tachypnoea, chest pain, cough, haemoptysis, tachycardia, syncope and respiratory crepitations are all common symptoms of PE, but none is unique to the condition. Syncope or near syncope, hypotension, extreme hypoxaemia, electromechanical dissociation or cardiac arrest is suggestive of a massive PE.<sup>[4]</sup> Pulmonary embolism is a potentially fatal condition if left untreated.<sup>[6,7]</sup> Its presentation can be relatively mild, sometimes even mimicking myalgia or a simple cough. This causes pulmonary embolism to be a diagnosis that is easily missed.<sup>[6]</sup> There were not other symptoms except slight chest pain, slight cough and fatigue in our case. It helped us to think that the patient was immobile. Many fatal cases are not diagnosed pre-mortem because of the nonspecific clinical symptoms with which patients often present.<sup>[4]</sup>

Pulmonary embolism may occur without any predisposing factors. However, one or more factors may be determined, for instance, diseases that require patients to lie for a long time such as eld, venous thromboembolism, active cancer, paresis, cardiac disease, respiratory insufficiency, as well as congenital or acquired thrombophilia, and using the oral contraceptive.<sup>[5,8,9]</sup> In our case, there was immobilisation related to chronic neuropathic pain in her back and two legs. The electrodes increased the patients immobilisation too. The patient restricted her movements much more to protect the connection of the electrodes. This created a predisposing factor for pulmonary embolism. For this reason, the patients should be supported for mobilisation in the trial period of SCS.

The suspicion of pulmonary embolism must be kept in mind in the SCS patients. We suggested that

providing the pain relief with SCS might reduce immobilisation and complications related to immobilisation. Therefore, costeffectivites of SCS might be increased and the patients could get rid of illnesses depending on immobilisation.

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