

# An Unusual Presentation of Lung Cancer: Case Report

## Akciğer Kanserinde Değişik Bir Prezantasyon

Aylin Özgen ALPAYDIN, MD,<sup>a</sup>  
Selim SERTER, MD,<sup>b</sup>  
Pınar ÇELİK, MD,<sup>a</sup>  
Cihan GÖKTAN, MD,<sup>b</sup>  
Serdar TARHAN, MD<sup>b</sup>

Departments of  
<sup>a</sup>Pulmonary Diseases,  
<sup>b</sup>Radiology,  
Celal Bayar University  
Medical Faculty, Manisa

Geliş Tarihi/Received: 13.01.2009  
Kabul Tarihi/Accepted: 11.03.2009

Yazışma Adresi/Correspondence:  
Aylin Özgen ALPAYDIN, MD  
Celal Bayar University  
Medical Faculty,  
Departments of Pulmonary Diseases,  
Manisa,  
TÜRKİYE/TURKEY  
aylin.ozgen@yahoo.com

**ABSTRACT** Intramedullary spinal cord metastasis (ISCM) is a rare form of central nervous system metastasis of systemic malignant tumors. A 73-year-old male patient was admitted to our outpatient clinic with dyspnea, cough and left arm and foot pain. His thorax CT demonstrated an irregular bordered solitary mass lesion of 4 cm diameter. Cervicothoracic magnetic resonance imaging (MRI) was performed for the evaluation of spinal cord due to clinical findings such as left arm and foot fatigue and urinary incontinence. Cervical spinal cord was found expanded from first cervical to first thoracic segment and there was diffuse increased signal intensity in T2 weighted images. In this case report, cervico-thoracic localization of intramedullary spinal cord metastasis in a lung cancer patient is presented and radiological differential diagnosis is discussed.

**Key Words:** Lung neoplasms, spinal cord, neoplasm metastasis

**ÖZET** İntramedüller spinal kanal metastazı (ISKM), sistemik malign tümörlerin nadir bir santral sinir sistemi metastazıdır. 73 yaşında erkek hasta polikliniğimize dispne, öksürük ve sol kol ve bacak ağrısı ile başvurdu. Toraks BT sinde 4 cm çapında düzensiz sınırlı soliter bir lezyon mevcuttu. Üriner inkontinans, sol kol ve bacakta güçsüzlük gibi klinik bulguları nedeniyle spinal kanalın değerlendirilmesi için servikotorakal manyetik rezonans inceleme (MRI) yapıldı. Servikal spinal kanalın birinci servikal segmentten birinci torakal segmente kadar genişlediği ve T2 ağırlıklı imajlarda difüz artmış sinyal yoğunluğu saptandı. Bu olgu sunumunda, serviko-torakal yerleşimli intramedüller spinal kanal metastazı yapmış bir akciğer kanseri olgusu sunulmuş ve radyolojik ayrıntı tanı tartışılmıştır.

**Anahtar Kelimeler:** Akciğer kanseri, spinal kanal, metastaz

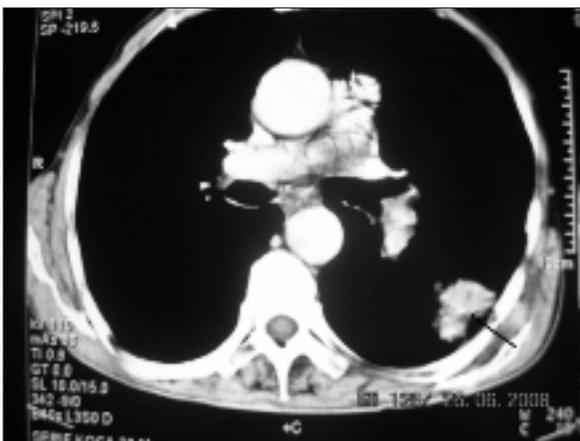
**Türkiye Klinikleri Arch Lung 2009;10(1):35-8**

**I**ntramedullary spinal cord metastasis (ISCM) is a rare form of central nervous system metastasis of systemic malignant tumors. Lung cancer and breast cancer are the most frequent primary sites of intramedullary metastasis, however there are very few cases in this group and sporadic case reports and small series have been reported.<sup>1,2</sup>

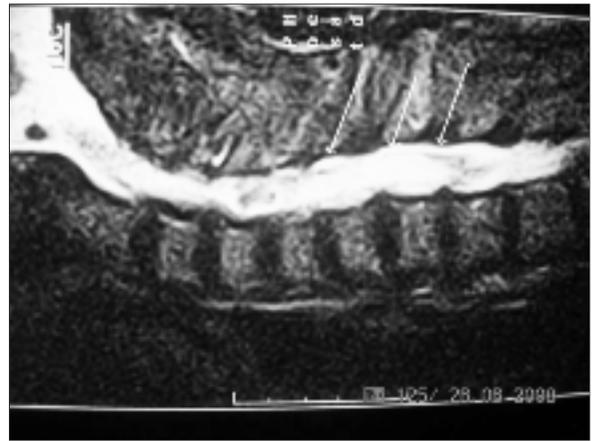
In this case report, cervico-thoracic localization of intramedullary spinal cord metastasis is presented and epidemiology, pathogenesis and diagnostic approach is reviewed in the view of the literature.

## CASE REPORT

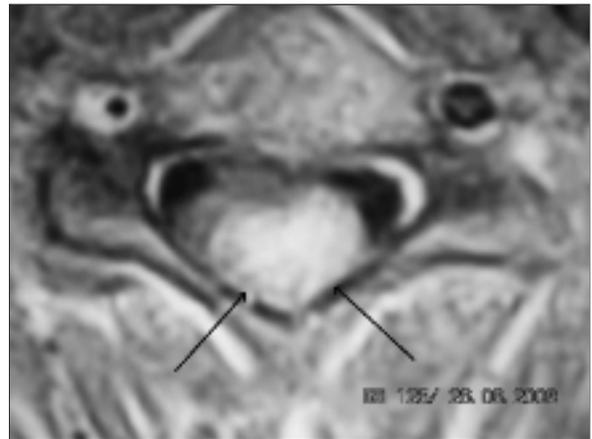
A 73-year-old male patient was admitted to our outpatient clinic with dyspnea, cough and left arm and foot pain ongoing for 20 days. On physical examination he was asthenic, and there were crackles in the left lung. His neurological examination revealed paresthesia on the left arm and foot. Thorax CT demonstrated an irregular bordered solitary mass lesion of 4 cm diameter and postobstructive parenchymal changes in the left lung inferior lobe superior segment (Figure 1). In the fiberoptic bronchoscopy we observed the left lung inferior lobe narrowed and histopathological evaluation of the bronchial lavage was non-diagnostic. Transthoracic needle aspiration biopsy results were compatible with non small cell lung cancer. Cervicothoracic magnetic resonance imaging (MRI) was performed for the evaluation of spinal cord due to clinical findings such as left arm and foot fatigue and urinary incontinence. In T1 weighted (W) images a heterogenic isointense and in T2W images a central hypointense mass lesion of 1,5 cm with a hyperintense rim was observed in the cervical MRI. Cervical spinal cord was found expanded from segment C1 to T1 and there were diffuse increased signal intensity T2 W images. (Figure 2). After IV Gadolinium (Gd) administration, the mass lesion revealed increased heterogenic signal intensity (Figure 3). These findings were ac-



**FIGURE 1:** Thorax CT demonstrating an irregular bordered solitary mass lesion of 4 cm and postobstructive parenchymal changes in left lung inferior lobe superior segment.



**FIGURE 2:** T2W fat sat image in cervical MRI showing diffuse increased signal intensity over a long segment resulting manifest expansion in the cervico-thoracic spinal cord.



**FIGURE 3:** Post contrast T1W axial image showing intense contrast enhanced intramedullary solitary mass lesion of 1.5 cm with central low signal intensity in the spinal cord in cervical MRI.

cepted as intramedullary spinal metastasis and diffuse spinal cord oedema. The patient was diagnosed as stage 4 non small cell lung cancer and chemotherapy and radiotherapy were planned.

## DISCUSSION

Intramedullary spinal cord metastasis has been reported very rarely except in the course of central nervous system tumors.<sup>1,2</sup> Accurate incidence is not known as cord metastases originating from other tumors are usually diagnosed postmortem. Cord metastases originating from other tumors are un-

common and most of them (50%) originate from pulmonary malignancies. The incidence of cord metastases due to lung cancer is 3% within all other neoplasms and cord metastases are more frequent in small cell lung cancer with respect to non small cell lung cancer.<sup>3</sup> Nonneurogenic spinal cord metastases have been reported usually in the dorsal region, however a predilection of a special region for lung cancer has not been described.<sup>1,3</sup>

Nonneurogenic spinal cord metastases are usually associated with brain metastases and they are observed multiple in the spinal cord level. This is one of the signs of the haematogenous dissemination of the cord metastases of nonneurogenic malignancies. Haematogenous dissemination is the most frequent way of dissemination; other ways include dissemination by deep venous plexus, perineural lymphatics, and invasion from adjacent bones to durameter by cerebrospinal fluid and arterial embolization.<sup>4</sup> In our patient we did not determine brain metastases and also metastatic lesion was solitary, so we excluded haematogenous dissemination. We thought the metastatic lesion developed as a result of the anastomoses between venous systems due to increased intrathoracic pressure by a mass lesion and associated infectious processes.<sup>4,5</sup>

Diagnoses depending on neurological symptoms have been defined in one third of the patients.<sup>6-8</sup> Epidural type metastases may also present with similar symptomatology, however they usually present with symmetrical involvement and differential diagnosis can not be done without radiological examinations.<sup>4,9</sup>

Spinal cord metastases can be diagnosed by neurological signs, CSF evaluation and MRI findings. The best investigation for spinal cord metastatic tumors is MRI. Typical ISCM is a small isolated oval shaped lesion. They are observed isointense in T1W images and hyperintense in T2W images.<sup>10,11</sup> The part of the lesion showing signal enhancement with Gd administration represents high intensity in T2 due to diffuse oedematous changes adjacent to the mass lesion.<sup>12</sup> In our case, we observed a fairly long segment of spinal cord expanded in T2 sequences due to a contrast enhanced mass as well as diffuse oedema. However, it should be considered that a paraneoplastic neuropathy or a coincidental demyelinating, inflammatory, vascular myelopathy and transverse myelitis may be observed in MRI of a lung cancer patient in neurological evaluation.<sup>10</sup> The differential diagnosis from transverse myelitis in our case was performed by the MR findings demonstrating a contrast enhanced mass lesion over an expanded spinal cord associated with increased signal intensity in T2 sequences due to oedema.<sup>13</sup> The differentiation from primary intramedullary tumors was done by the rapid onset of the symptoms (these group diseases initiate insidiously and symptoms progress slowly) and oedema in fairly long segment of the spinal cord, bigger than the mass lesion.

In conclusion, in the presence of neurological symptoms, spinal cord metastases are uncommon but possible complications in lung cancer patients. The diagnosis can be done by MRI findings including long segmental involvement both resulting from the mass lesion and diffuse oedema.

## REFERENCES

1. Lee SS, Kim MK, Sym SJ, Kim SW, Kim WK, Kim SB, et al. Intramedullary spinal cord metastases: a single-institution experience. *J Neurooncol* 2007;84(1):85-9.
2. Ishibashi Y, Tokuchi Y, Kamachi M, Harada M, Isoe H. [A case of non-small-cell lung cancer with intramedullary spinal cord metastasis diagnosed pre-mortem]. *Nihon Koryuiki Gakkai Zasshi* 2000;38(12):943-6.
3. Potti A, Abdel-Raheem M, Levitt R, Schell DA, Mehdi SA. Intramedullary spinal cord metastases (ISCM) and non-small cell lung carcinoma (NSCLC): clinical patterns, diagnosis and therapeutic considerations. *Lung Cancer* 2001;31(2-3):319-23.
4. Villegas AE, Guthrie TH. Intramedullary spinal cord metastasis in breast cancer: clinical features, diagnosis, and therapeutic consideration. *Breast J* 2004;10(6):532-5.
5. Jellinger K, Kothbauer P, Sunder-Plassmann E, Weiss R. Intramedullary spinal cord metastases. *J Neurol* 1979;220(1):31-41.
6. Connolly ES Jr, Winfree CJ, McCormick PC, Cruz M, Stein BM. Intramedullary spinal cord metastasis: report of three cases and review of the literature. *Surg Neurol* 1996;46(4):329-37.
7. Schiff D, O'Neill BP. Intramedullary spinal cord metastases: clinical features and treatment outcome. *Neurology* 1996;47(4):906-12.
8. Koeller KK, Rosenblum RS, Morrison AL. Neoplasms of the spinal cord and filum terminale: radiologic-pathologic correlation. *Radiographics* 2000;20(6):1721-49.

9. Grem JL, Burgess J, Trump DL. Clinical features and natural history of intramedullary spinal cord metastasis. *Cancer* 1985;56(9): 2305-14.
10. Crasto S, Duca S, Davini O, Rizzo L, Pavanello IG, Avataneo T, et al. MRI diagnosis of intramedullary metastases from extra-CNS tumors. *Eur Radiol* 1997;7(5):732-6.
11. Gasser TG, Pospiech J, Stolke D, Schwechheimer K. Spinal intramedullary metastases. Report of two cases and review of the literature. *Neurosurg Rev* 2001;24(2-3):88-92.
12. Fredericks RK, Elster A, Walker FO. Gadolinium-enhanced MRI: a superior technique for the diagnosis of intraspinal metastases. *Neurology* 1989;39(5):734-6.
13. Choi KH, Lee KS, Chung SO, Park JM, Kim YJ, Kim HS, et al. Idiopathic transverse myelitis: MR characteristics. *AJNR Am J Neuroradiol* 1996;17(6):1151-60.