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When Back Pain Turns Deadly: An Unusual Presentation of Lung Cancer

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ABSTRACT

Back pain is a common presenting concern in physician offices and emergency departments alike, with etiologies ranging from minor injuries to severe life-threatening illnesses. This case details the clinical course of a 68-year-old former smoker with no pulmonary symptoms who presented with back pain multiple times before developing cord compression syndrome and being diagnosed with non-small cell lung cancer (NSCLC). It demonstrates the importance of lung cancer screening and the necessity of monitoring for red flags in cases of back pain.

1. Introduction

Lung cancer manifests in a myriad of ways, but according to an analysis of 2293 patients diagnosed with NSCLC, 54.7% had cough and 45.3% had dyspnea at the time of diagnosis, making these the two most common presenting symptoms [1]. However, the patient presented in this case study had no pulmonary signs or symptoms and reported overall good health other than persistent back pain. He subsequently developed cord compression syndrome which led to the diagnosis of NSCLC, and, despite treatment, he died within several months. Although advanced lung cancer with bone metastasis and cord compression has been described, the absence of pulmonary symptoms in this setting is atypical.

2. Case presentation

A 68-year-old male veteran with past medical history of HTN, COPD, and former heavy tobacco use presented repeatedly over several months for right-sided back pain suspected by multiple providers to be secondary to a musculoskeletal etiology. Review of systems (ROS) was consistently unremarkable for pulmonary symptoms, his lungs were clear to auscultation, and two CXRs showed no acute abnormalities. After about three months of symptomatic treatment with oral and topical analgesics and a trigger point injection, he again presented to the ED, this time with severe back pain and electric-like radiation across his right chest. He was able to ambulate but reported lower extremity numbness and weakness. He had no saddle anesthesia or incontinence.

CT of the thoracic spine showed a right paraspinal soft tissue mass along T4-T6 (Fig. 1). During subsequent thoracic MRI, the numbness in his legs increased, he developed altered sensation from the nipples down, and he was no longer able to ambulate. The MRI revealed acute spinal cord compression secondary to tumor invasion through the T3-T4 and T4-T5 neural foramina (Fig. 2). He was emergently transferred to a higher level of care where he underwent decompression of the spinal canal with T4, T5, and T6 laminectomies and debulking of the tumor on the right side of the spinal canal. During this hospitalization, the ROS remained negative for weight loss, cough, dyspnea, and hemoptysis. Laboratory analysis was only remarkable for macrocytic anemia. The surgical pathology was immediately concerning for aggressive malignancy. After the surgery, the patient began to regain his strength in his lower extremities and was able to ambulate with assistance prior to discharge.

Given the thoracic location and the patient's significant smoking history, lung cancer was high on the differential despite his lack of respiratory symptoms. Pathology confirmed that the patient had NSCLC with high PD-L1 expression. EGFR status was indetermine. PET/CT showed metastasis to the distal thoracic spine and bilateral adrenal regions consistent with advanced disease.

Under the management of the hematology/oncology department at an outside facility, the patient began chemoradiation with paclitaxel and carboplatin. Per the National Comprehensive Cancer Network guidelines, pembrolizumab is the preferred first-line treatment in patients with PD-L1 greater than 50% and negative or indeterminate driver mutations [2]. In this patient, there was planned radiation and the outside oncologist decided on a platinum-based therapy initially with other treatment options mentioned in subsequent notes. Unfortunately,

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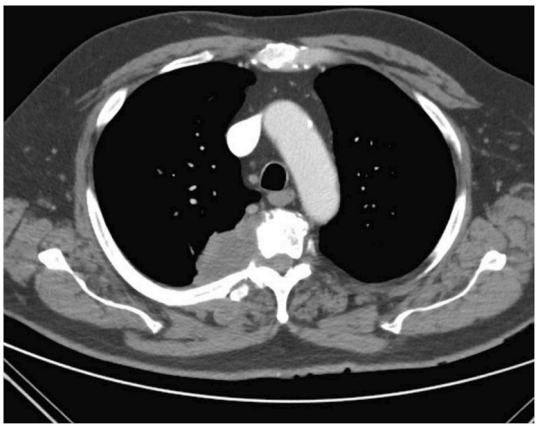

Fig. 1. CT thorax with contrast, axial view, showing right paraspinal soft tissue mass along T4-T6. No other concerning lung lesions.

Fig. 2. MRI thoracic spine, coronal view, showing mass in posteromedial right upper lobe, 6.6 × 4.0 × 3.9 cm. Enters T3-T4 and T4-T5 foramina; cord compression evident.

the patient's clinical status rapidly declined. Repeat imaging revealed extensive liver metastasis (Figs. 3 and 4), growing adrenal metastases, mild to moderate cord compression from enlarging primary tumor, and acute pulmonary emboli in the right middle lobe and segmental right upper lobe pulmonary arteries. Hospice was consulted and the patient died shortly thereafter.

3. Discussion

Although lung cancer may present in numerous different ways, it often includes pulmonary symptoms [1]. Unfortunately, bone metastasis is also common with lung cancer, occurring 30–40% of the time [3]. The vertebral bodies are the most common site and bone pain may be an initial symptom of lung cancer 6–25% of the time [4]. When all cancer types are taken into consideration, bone metastasis presents as cord compression about 5% of the time. Lung cancer is second only to breast cancer as a cause of metastatic cord compression and is responsible for approximately 15% of these cases [5].

Current United States Preventative Services Task Force guidelines

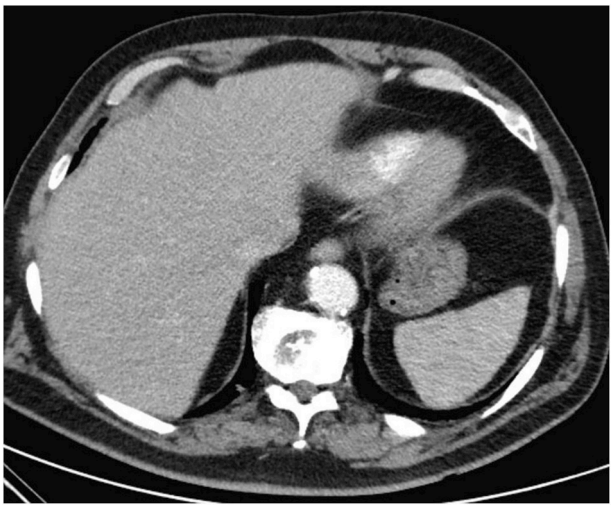

Fig. 3. Initial CT thorax with contrast, axial view, showing no concerning liver lesions.

Fig. 4. CT angiography, axial view, showing numerous new liver lesions. The patient died 1 week later.

recommend annual lung cancer screening with low-dose CT (LDCT) scan for adults age 55 to 80 with at least a 30 pack-year smoking history who currently smoke or did smoke within the past 15 years. This is a Grade B recommendation, and it is based on the National Lung Screening Trial from the National Cancer Institute which showed a 20% decrease in lung cancer mortality in the LDCT group as well as a 7% decrease in all-cause mortality, in terms of relative risk. This translates into 4 additional prevented lung cancer deaths for every 1000 and 5 additional prevented all-cause mortalities for every 1000 people screened via LDCT scan when compared to screening with CXR [6,7].

Despite a 40–50 pack year smoking history with recent quit date and good functional status prior to his cancer diagnosis, annual LDCT scan was never discussed with the patient. It is uncertain what the outcome of this patient's disease would have been had he received the recommended screening. Interestingly, the symptom of back pain eventually led to the diagnosis in the absence of more common pulmonary symptoms.

4. Conclusion

The American College of Physicians 2007 guidelines for the diagnosis and treatment of low back pain recommend more involved

investigations into the etiology of back pain when certain high-risk features are present. Some of these “red flags” include a history of osteoporosis, a history of cancer, weight loss, older age, fevers, neurologic concerns such as incontinence and saddle anesthesia, and also pain that does not improve after 1 month [8]. Although this patient’s back pain was in the thoracic rather than lumbar location, his older age and persistent pain were both concerning features, and although CXRs were obtained, the malignancy was not apparent on plain radiography. Providers must therefore be vigilant of pain as an indicator of serious illness, especially in high-risk patients, even if initial imaging is unremarkable.

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Manuscript preparation

All authors had access to the data and a role in writing the manuscript.

Declaration of competing interest

I, Melinda Vasser, D.O., and Matthew Koroscil, M.D., declare no conflicts of interest at any point during the production of the manuscript entitled, “When Back Pain Turns Deadly: An Unusual Presentation of Lung Cancer."

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.rmcr.2020.101009.

References

[1] F. Kocher, W. Hilbe, A. Seeber, et al., Longitudinal analysis of 2293 NSCLC patients: a comprehensive study from the TYROL registry, Lung Canc. 87 (2) (2015) 193–200.
[2] National Comprehensive Cancer Network, Non-Small Cell Lung Cancer (Version 7.2019) (2019).
[3] F. Macedo, K. Ladeira, F. Pinho, et al., Bone metastases: an overview, Onco Rev. 11 (1) (2017) 321.
[4] D.E. Ost, S.J. Yeung, L.T. Tanoue, M.K. Gould, Clinical and organizational factors in the initial evaluation of patients with lung cancer: diagnosis and management of lung cancer, 3rd ed: ACCP evidence-based clinical practice guidelines, Chest 143 (5 Suppl) (2013) e121S–e141S.
[5] G. Selvaggi, G.V. Scagliotti, Management of bone metastases in cancer: a review, Crit. Rev. Oncol. Hematol. 56 (3) (2005) 365–378.
[6] Lung cancer: Screening, U.S. Preventative Services Task Force, 2013. Update 2015. Accessed 2019.
[7] L. Horn, C.M. Lovely, D.H. Johnson, Neoplasms of the lung, in: nineteenth ed., in: D. L. Kasper, A.S. Fauci, S.L. Hauser, et al. (Eds.), Harrison’s Principles of Internal Medicine, vol. 2, McGraw-Hill Education, New York, NY, 2015, pp. 506–523.
[8] R. Chou, A. Qaseem, V. Snow, et al., Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of physicians and the American pain society, Ann. Intern. Med. 147 (2007) 478–491.