A CASE OF ACCELERATED PULMONARY SILICOSIS WITH METASTATIC ECHINOCOCCUS ALVEOLARIS OF THE LUNGS AND BRAIN

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ABSTRACT

We describe a rare case of silicosis accompanied by metastatic echinococcus alveolaris. The patient was admitted to emergency service with nausea, vomiting and headache. Brain computed tomography (CT) and magnetic resonance imaging (MRI) were performed to reveal the intracranial pathology. Thorax and abdominal CT and MRI were also performed to investigate the lungs for silicosis and liver for echinococcus alveolaris. Thoracic CT and MRI are useful techniques in diagnosing these patients. We believe that echinococcus alveolaris can be included in the list of infections that accompany silicosis, such as tuberculosis and other mycobacterial, fungal and bacterial pulmonary infections.

Key words: Echinococcus alveolaris, Silicosis, DCE-MRI

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Introduction

Silicosis is a pneumoconiosis caused by chronic exposure to silica dust³. As well as being fatal itself, silicosis also leads to other diseases such as infections; autoimmune, pulmonary and renal diseases; and cancer²,³. Alveolar hydatid disease is a highly malignant form of echinococcosis caused by Echinococcus multilocularis. Alveolar hydatid disease always affects the liver primarily and rarely affects other organs such as the lungs and brain⁴,⁵. In the literature, there are reported cases of silicosis coincident with tuberculosis, but no case reports of silicosis with alveolar echinococcosis².

Clinical presentation

The patient was diagnosed with echinococcus alveolaris (EA) in 2007 and silicosis in 2008. Computed tomography (CT) and magnetic resonance imaging (MRI) of the brain were performed to reveal the intracranial pathology. Thoracic and abdominal CT and MRI were also performed to investigate the lungs for silicosis and liver for echinococcus alveolaris.

Following the biopsy of the liver, the patient was diagnosed with echinococcus alveolaris. The patient’s intake interview and radiological examination confirmed the infection in the lungs. In the brain, biopsy ruled out abscess and malignancy, but the pathological findings were nonspecific. Based on the results of the cranial radiology, the lesions were assumed to be metastases of alveolar echinococcus.

Discussion

Silicosis is a chronic and incurable pulmonary condition resulting from extended inhalation of crystalline silica dust. A novel, recently identified cause of silicosis in Turkey is denim sandblasting. Cases of silicosis in denim sandblasters have
recently increased and are often fatal\(^6,7\). Though alveolar echinococcus is not a neoplastic disease like silicosis, it is a rare parasitic infestation with a similarly malignant progression\(^8\). The two conditions in combination became especially aggressive.

Non-contrast enhanced abdominal CT showed lesions with heterogeneous density. Lesions had peripherally localized calcifications and irregular margins. There were no significant contrast enhancements in contrast enhanced series. There was a slight diffusion restriction in the periphery of the lesions in diffusion weighted images. CT and MRI features of liver lesions were consistent with echinococcus alveolaris (Figure 1a-c).

Thoracic CT showed interstitial thickening, multiple centrilobular micronodules (CLN) and progressive massive fibrosis (PMF) (Figure 2a,b). Furthermore, alveolar echinococcus metastases were found; these areas were distinct from the CLN and PMF of silicosis in several aspects. The micronodules were larger in size and there was no contrast enhancement in the dynamic contrast enhanced (DCE)-MRI, and some were observed to be calcified in CT. In addition, DCE-MRI provided critical information about the characterization of these lesions. Some of the lesions showed contrast enhancement in dynamic series, while some showed no significant contrast enhancement (Figure 3a-d).

Non-contrast enhanced cranial CT showed craniotomy defects in the left frontoparietal region and hypodense lesions in the frontoparietal subcortical white matter. Due to the patient’s young age and lack of conditions other than silicosis, the discovery of metastatic EA in the brain led us to the conclusion that the current clinical state of the patient was the result of the coincidence of silicosis and EA.

In this paper, we describe a rare case of silicosis accompanied by metastatic echinococcus alveolaris. Thoracic CT and MRI are useful techniques in diagnosing these patients, and contrast enhancement characteristics are important features for the differentiation of separate lesions. We believe that echinococcus alveolaris can be included in the list of infections that accompany silicosis, such as...
tuberculosis (pulmonary and extrapulmonary) and other mycobacterial, fungal and bacterial pulmonary infections.

References


A Case of accelerated pulmonary silicosis with metastatic echinococcus alveolaris of the lungs and brain

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