

Multiple Ring Enhancing Lesions in a Patient with Unilateral Limb Jerking

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Abstract

Multiple ring enhancing lesions in the brain can be caused by a variety of diseases including infections, inflammatory and neoplastic conditions. We present the case of a patient with new onset unilateral jerking movement of the arm who was found to have sixteen ring enhancing lesions in the brain on MRI. Further workup revealed a primary small cell lung cancer. The differential diagnosis of multiple ring enhancing lesions is discussed. The astute clinician should be aware of this rare but important radiological finding.

Keywords: Metastasis; Small Cell Lung Cancer (SCLC); Ring; Necrosis

Introduction

The finding of multiple ring enhancing lesions in the brain is of significant concern and carries a broad differential diagnosis. Often, it is diagnosed incidentally during workup of a focal neurological symptom. We present the case of a patient who was noted to have multiple ring enhancing brain lesions during evaluation of unilateral jerking movements of his arms and led to the ultimate diagnosis of metastatic small cell lung cancer. The differential diagnosis of multiple ring enhancing brain lesions is discussed.

Case

A 66 yr old man presented to his PCP with complaints of jerking movements of the right arm that began 2 months ago. He had seven episodes of jerking that began suddenly and lasted for 2-3 minutes. During this time, there was no loss of consciousness. Other symptoms included numbness of the right third, fourth, and fifth fingers. Neurological exam revealed increased tone in the right upper extremity. The findings of MRI are shown in (Figure 1). What is the differential diagnosis?

Answer

The differential diagnosis of multiple ring enhancing lesions in the brain includes infectious diseases (bacterial, tuberculous, syphilis, fungi like Nocardia, actinomyces, histoplasma, aspergillus, cryptococcus and mucor), parasitic infections (neurocysticercosis, amoeba, toxoplasma), primary brain neoplasm (glioblastoma multiforme and anaplastic astrocytoma), metastatic cancers (lung, breast cancer and melanoma) and demyelinating disorders (multiple sclerosis, sarcoidosis and Whipples) (Figures 1A and 1B) [1,2]. There is no characteristic feature on CT scan that suggests malignancy and diagnosis is often established by search for the primary tumor or biopsy of the brain lesion.

Generally, abscesses produce rings that are uniform while irregular rings are usually found in malignancies with a necrotic center. MRI is an excellent technique to not only identify these lesions but also suggest a cause. A ring enhancing lesion with a bright center on diffusion weighted image usually suggests a tumor while one with a dark center usually suggests pus from an abscess. Blood or proteinaceous material in the center of a lesion however can also give a hyper intense signal on diffusion weighted MRI. Deep white matter lesions especially those surrounded by vasogenic edema are usually either neoplasms or abscesses (Figure 1C). Lung, breast cancer and melanoma are the primary tumors most commonly associated with brain metastases. The patient in this case was noted to have a spiculated mass in the right upper lobe (Figure 2A) and a left hilar mass (Figure 2B). Biopsy of the lung mass revealed a differentiated Small Cell Carcinoma (SCLC) of the Lung.

Approximately ten percent of patients with SCLC present with brain metastases at the time of diagnosis and another 50% develop it at some time during the course of the disease. Current treatment options are limited and comprise whole brain radiation therapy either alone or in combination with chemotherapy. Survival however remains poor [3,4].

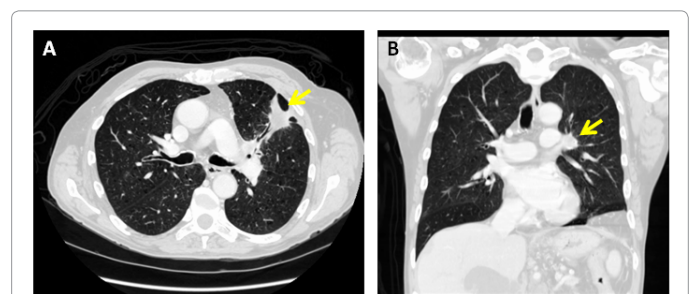


Figure 2: CT scan of the chest with intravenous contrast reveals a spiculated mass in the right upper lobe of the lung (A) Coronal CT scan of the chest reveals a mass in the left hilum (B).

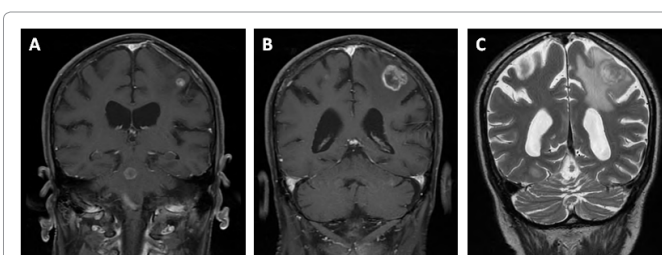


Figure 1: Coronal T1 weighted MRI of the brain reveals multiple ring enhancing lesions in the brain (A,B). A total of sixteen such lesions were identified in all. T2 weighted coronal MRI reveals ring enhancing lesion with surrounding vasogenic edema (C).

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The patient described was started on palliative whole brain radiation therapy.

In conclusion, the present case illustrates how malignancies like lung cancer can present as multiple ring enhancing brain lesions that can cause focal neurological symptoms like seizures. MRI is the preferred imaging modality but diagnosis usually requires biopsy of either the brain lesion or a suggestive primary neoplasm. Patients with neoplasms metastatic to the brain do poorly despite chemotherapy and radiation.

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