

Case Report

Paraneoplastic limbic encephalitis: a case report

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Abstract

Paraneoplastic limbic encephalitis is a multifocal inflammatory disorder of the central nervous system (CNS) that is associated with remote neoplasm. The most common malignancy associated with it is bronchial carcinoma, typically small cell carcinoma of the lung but it has also been reported to happen with squamous cell lung carcinoma. Paraneoplastic limbic encephalitis should be considered as differential diagnosis in any patient with known malignancy who presents with altered behavior, involuntary movement of body or dementia. Here, we present a case of a 62-year-old male who presented as paraneoplastic encephalitis with squamous cell lung carcinoma.

Keywords: Paraneoplastic limbic encephalitis, squamous cell lung carcinoma, temporal lobe.

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Introduction

Paraneoplastic limbic encephalitis (PLE) is one of the most common causes of neurologic paraneoplastic syndromes.¹ Pathogenesis of PLE is still unclear, but it seems to be related to an autoimmune process in which autoantibodies against neuronal and glial antigens produce a significant and progressive impairment of the central nervous system.² Patients often present with cognitive impairment, personality change, short-term memory loss and seizures.³ Classical limbic encephalitis with temporal lobe seizure is associated with onconeural antibodies directed against intracellular antigens, including anti-Hu⁴, anti Ma2⁵, anti-amphiphysin and anti CRMP5.⁶ PLE is most frequently

associated with lung cancer (approximately 50% of cases), and 80% of these cases are small cell lung cancer.⁶ PLE treatment options include immunotherapy and anti-cancer therapy.⁷ Immunomodulators such as steroids and intravenous immunoglobulin (IVIg) have been used to treat all types of limbic encephalitis with variable results. Treatment may be unsatisfactory in many cases. We herein report a case of 62-year-old male who presented with altered behavior, memory problem and known squamous cell lung carcinoma, was later found to be a case of PLE.

Case report

A 62-year-old hypertensive male presented with the complaints of irrelevant talking for 14 days and disorientation for 7 days. The presentation of the symptoms was insidious in onset, progressive and in the form of odd or inappropriate talking and activities. He also had nocturnal myoclonus, mood swings, insomnia, day time sleepiness along with fecal and urinary incontinence. Furthermore, he was unable to recall recent memories. All these presentations were for the first time. There were no history of fever, neck stiffness, headache, blurring of vision, weakness or numbness of the body, convulsion or loss of consciousness. He was diagnosed as a case of moderately differentiated squamous cell carcinoma of left lung based on imaging and Fine needle aspiration cytology (FNAC) findings around 1 year from the

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presentation of behavior and neurological problems. His Chest X-ray (CXR) and Computed tomography (CT) scan of chest (figure 2) demonstrated a mass lesion in the upper lobe of the left lung. Subsequently, he was treated with 6 sessions of cisplatin and paclitaxel based chemotherapy followed by radiotherapy. Follow-up Positron emission tomography (PET) scan after anti-cancer treatment showed interval reduction of the lung mass. He was doing quite well physically till the neurological problems.

On examination, he had normal vital signs. Respiratory system examination was consistent with left upper lobe mass lesion. Neurological examination revealed his Confusion assessment method (CAM) score was 3/4, suggestive of delirium. Plantar response was flexor bilaterally and all the jerks were normal while other motor and sensory examination could not be interpreted properly due to his disorientation.

His laboratory investigations including routine urinalysis, renal function tests, serum electrolytes, blood sugar and electrocardiogram were normal. Full blood count with erythrocyte sedimentation rate (ESR) showed anemia (Hemoglobin-9.9 g/dL) along with high ESR. CXR showed left upper lobe mass lesion (figure 1). CT scan of brain with contrast showed bilateral symmetrical



Figure 1 CXR P/A view showing left upper lobe mass lesion.

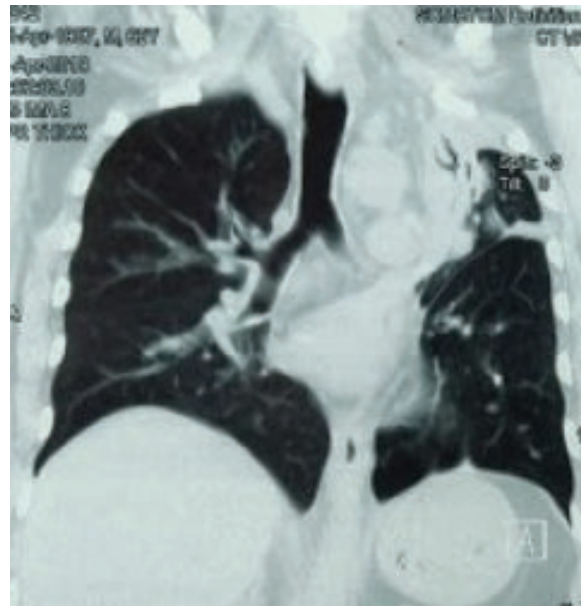


Figure 2 CT scan of chest showing the left upper lobe mass lesion with hilar and paratracheal lymph nodes in the same patient.

hypodense lesions involving predominantly the temporal lobes (figure 3). Magnetic resonance imaging (MRI) of brain T2-weighted and Fluid attenuation inversion recovery (FLAIR) sequences showed hyperintense

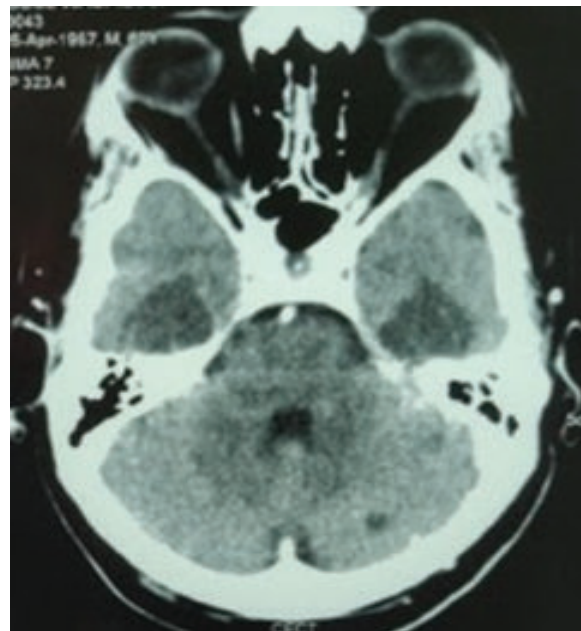


Figure 3 CT Scan of Brain showing bilateral symmetrical hypodense lesions involving predominantly temporal lobes.

lesion in the above mentioned area (figure 4, 5). Electroencephalogram (EEG) showed diffuse slowing of the waves suggestive of encephalitis. Cerebrospinal fluid (CSF) study showed elevated protein (210 mg/dL) along with lymphocytic pleocytosis. CSF

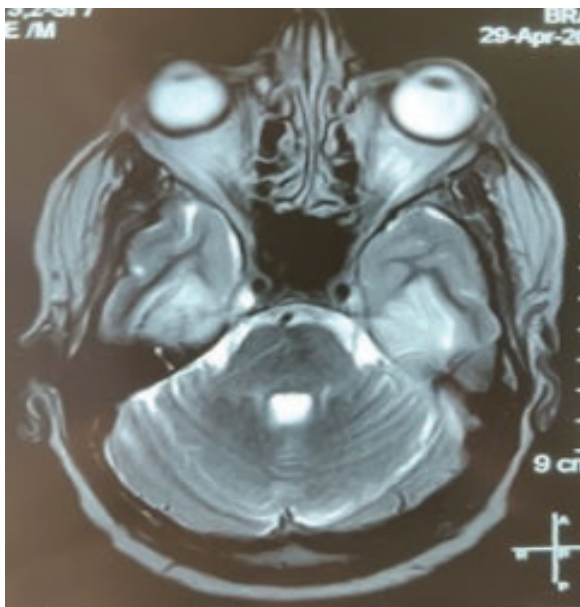


Figure 4 MRI brain T2 image showing hyperintense lesion in both temporal lobes.

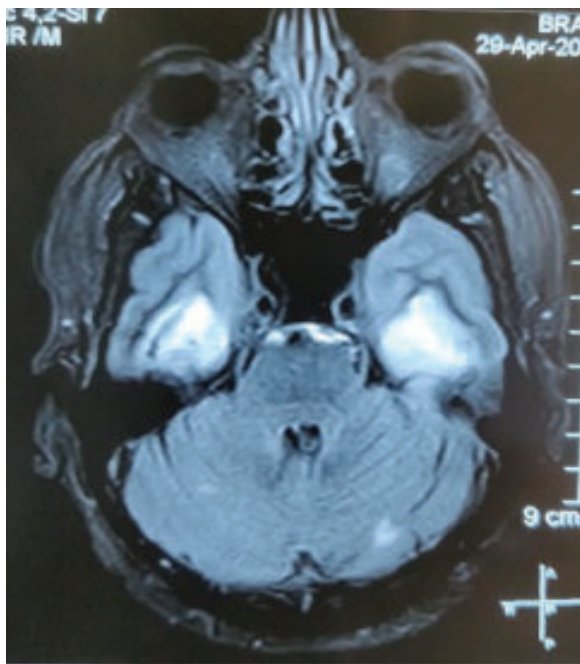


Figure 5 MRI Brain FLAIR image showing bilateral symmetrical hyperintense lesion involving predominantly temporal lobes.

Mycobacterium tuberculosis (MTB) polymerase chain reaction (PCR) was negative. CSF autoimmune antibody panel (Anti-Hu, Anti-Yu, Anti CV2, Anti Ma2, Anti Ra) was negative and so was *Herpes simplex virus* (HSV) type-1 and 2 DNA PCR. He was ultimately diagnosed as a case of PLE. Patient was treated with intravenous steroids and was referred to oncologist for further management.

Discussion

PLE is a rare disorder characterized by the development of neuropsychiatric symptoms and associated with cancer in the absence of tumor cell invasion of the nervous system. It is often seen in small cell lung cancer but can also be found in other carcinomas such as breast cancer, thymoma, ovarian teratoma and Hodgkin lymphoma.⁸ The course of most PLE is subacute and symptoms occur before the detection of tumor, although not in our case.

Prominent findings of paraneoplastic and autoimmune limbic encephalitis are recent memory loss, change in behavior and mood and epileptic seizure.⁹ In addition to these, hyperthermia due to hypothalamic dysfunction, somnolence and endocrine disorders can also develop. Although it has been reported in many case series that PLE mostly affects adults, there are also some studies demonstrating that adolescents and children might also be affected.¹⁰

The diagnosis of PLE is generally based on the combination of clinical characteristics, CSF study showing pleocytosis with elevated protein, MRI T2 FLAIR of brain showing high signal intensities in unilateral or bilateral temporal lobes and EEG showing focal or generalized slow activity. PET CT scan might be more sensitive in the diagnosis and evaluation of PLE, especially in patients with normal MRI findings. Additionally, metabolic encephalopathy, neurotoxic drugs, inflammatory diseases, CNS tumors and neurodegenerative disorders must be excluded.¹¹

PLE might be a first presentation of squamous cell carcinoma of the lung.¹²

PLE cases often remain underdiagnosed due to variegated clinical presentation and lack of high degree of suspicion. Thorough history taking and clinical examination are mandatory for all the patients. Management is mainly centered on treatment of malignancy along with immunosuppressive agents.

Prognosis depends on the severity and duration of the symptoms. Since PLE is frequently seen limited stage lung cancer, this presentation aims at considering the importance of a strong suspicion for PLE which might enable earlier diagnosis and lead to better long term outcome.

Conflict of interest: Nothing to declare.

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