Abstract Epilepsy is the main clinical manifestation of neurocysticercosis (NC). We studied an adult subject who presented a seizure disorder mimicking an acute confusional state as clinical expression of NC. Diagnosis was made with neuroimaging and western blot determination of specific antibodies on serum. Computed tomography and magnetic resonance imaging displayed multiple calcifications and a few transitional cysts in the cerebral parenchyma. Electroencephalography showed a pattern of periodic lateralized epileptiform discharges (PLEDs) which could be related topographically to a cystic lesion located in the left parietal lobe. In our view there was a clear pathogenic correlation between the seizure disorder and the parasitic cyst located in the left parietal lobe. Neither antiepileptic drugs nor steroids were prescribed. Follow-up to one year ruled out other clinical manifestations of the disease. This case is an example of acute symptomatic seizure related to a transitional cystic lesion of NC.

Key words Neurocysticercosis • Epilepsy • Seizure • PLEDs • Calcifications • Cyst

Introduction

Cysticercosis is a parasitic disease caused by infestation with the larval form of Taenia solium. It occurs commonly in developing countries, representing locally a major cause of epilepsy [1, 2], while it has been rarely diagnosed among European residents in recent years. Neurocysticercosis (NC), parasitic localization in the central nervous system, results in calcified and cystic lesions. Calcifications are chronic lesions caused by dead cysticerci while cysts represent an earlier and active stage of the disease [3].

In 1944, Carpio et al. classified NC in terms of location (parenchymal and extraparenchymal) and viability of the parasitic lesions, defining three stages of the disease: active (live parasite), transitional (degenerative phase) and inactive (dead parasite) [1]. These evolutionary forms can be detected by neuroimaging techniques. Computed tomography (CT) and magnetic resonance imaging (MRI) are regarded as the most important investigations for the diagnosis of NC [1].

Epilepsy is the main clinical manifestation. Seizures have been referred to both active and inactive lesions of the disease [2]. There is no consensus on the frequency of the different types of seizure [1]. The presence of edema has been regarded as an important finding in patients at the time of seizure activity [5]. Differentiation between acute or provoked and remote unprovoked symptomatic seizures (according to the definitions of the International League against Epilepsy, 1993) [6] has been stressed in some reviews and studies dealing with epilepsy due to NC [1–4]. Electroencephalographic abnormalities have been reported in both active and inactive forms [2] or just in the active forms of the disease [7].

We report a case of NC characterized by a seizure disorder related to a transitional cystic lesion and an electrographic pattern of periodic lateralized epileptiform discharges (PLEDs).
Case report

We studied a 55-year-old Sardinian woman who presented a seizure disorder mimicking an acute confusional state as clinical manifestation of NC. Diagnosis was made with neuroimaging and western blot determination of specific antibodies in serum. A clinical description of the seizure disorder was obtained solely from the patient as she was struck while being most of the time alone out on the road. The patient abruptly started to experience a difficulty in thinking, in speech and in identifying herself to a well-known person. Soon after she also experienced difficulty in planning her way home, then she found herself displaced far from her usual route after a period of one hour before being able to reach her house.

On admission at hospital the patient’s memories of the episode actually seemed to show a temporal gap, suggesting a subsequent impairment of consciousness after the onset of the initial symptoms. Some family members confirmed the excess of time strangely needed by the patient in covering the distance of her usual route.

Clinical evaluation was performed after full recovery of symptoms. Neurological examination was normal. Electroencephalography (EEG) performed during normal clinical conditions showed a mild slowing and a pattern of periodic lateralized epileptiform discharges (PLEDs) over the left parietal region (Fig. 1), suggesting an underlying focal acute lesion. This periodic activity was represented by low amplitude (20–30 microvolts) mono-diphasic waves showing phase opposition phenomena on P3 electrode (10–20 system) and a frequency of 1 cycle every 2 seconds. Amplitude of the background activity was 10–20 microvolts.

CT and MRI of the brain displayed multiple calcified nodular lesions and a few cysts in the cerebral parenchyma. Cysts presented a peripheral ring-like contrast-enhancement on both CT and MRI (Fig. 2).

The largest cystic lesion (2.5 cm x 1.5 cm) was located in the cortex of the left parietal lobe and could be related topographically to the PLEDs. This cyst, surrounded by a slight edema, was better viewed with T1-weighted MR sequences, which revealed a well-defined circular area of hypointensity and the typical scolex inside the cavity. On T2-weighted sequences, the lesion was hyperintense but had less defined borders, probably due to the effect of the surrounding edema. No edema was clearly detected around two other smaller cysts (maximum diameter, 1 cm) in the right temporal lobe and in the left cerebellar hemisphere. Both CT and MRI were able to detect the calcified lesions while MRI was best in detecting the two smaller cysts, especially in the posterior fossa. CT failed to detect the scolex in the left parietal cyst.

Fig. 1 Interictal electroencephalogram: periodic lateralized epileptiform discharges (PLEDs) over the left parietal region

Fig. 2a, b T1-weighted MR images of the brain. a Plain image. b After administration of gadolinium. Parasitic cyst in the left parietal lobe with peripheral contrast-enhancement. Note the scolex inside the cavity