Acute symptomatic status epilepticus and subsequent pilomotor epilepsy: a case of Serratia marcescens meningoencephalitis

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INTRODUCTION

Among the neurological manifestations of meningitis and meningoencephalitis, acute symptomatic seizures are frequent during the early phase of the disease. A subgroup of patients later develops longstanding epilepsy, most of them with focal-onset seizures. Ictal piloerection (IP), perceived as goosebumps or shivers, is a rare manifestation of autonomic seizures, which may be associated with temporal lobe epilepsy. Although temporal lobe epilepsy is a well-recognized clinico-pathological entity, a variant characterized by pilomotor seizures following a bacterial CNS infection has not yet been described.

METHODS

A comprehensive analysis of blood and cerebrospinal fluid (CSF), along with detailed brain imaging using computed tomography and magnetic resonance imaging, established a causal relationship between a sphenoid mucopyocele, a CSF fistula, and the development of a rare case of multisenstive Serratia marcescens (strain 1) meningoencephalitis. Electroencephalography and video-polysomnography further revealed the progression from acute symptomatic SE to post-infectious temporal lobe epilepsy, characterized by recurrent unprovoked pilomotor seizures. The patient was treated with levetiracetam and lacosamide and subsequently became seizure-free.

AIM OF THE STUDY

We report a case of Serratia marcescens meningoencephalitis presenting with acute symptomatic seizures and status epilepticus (SE), with subsequent development of post-infectious temporal lobe epilepsy characterized by IP.

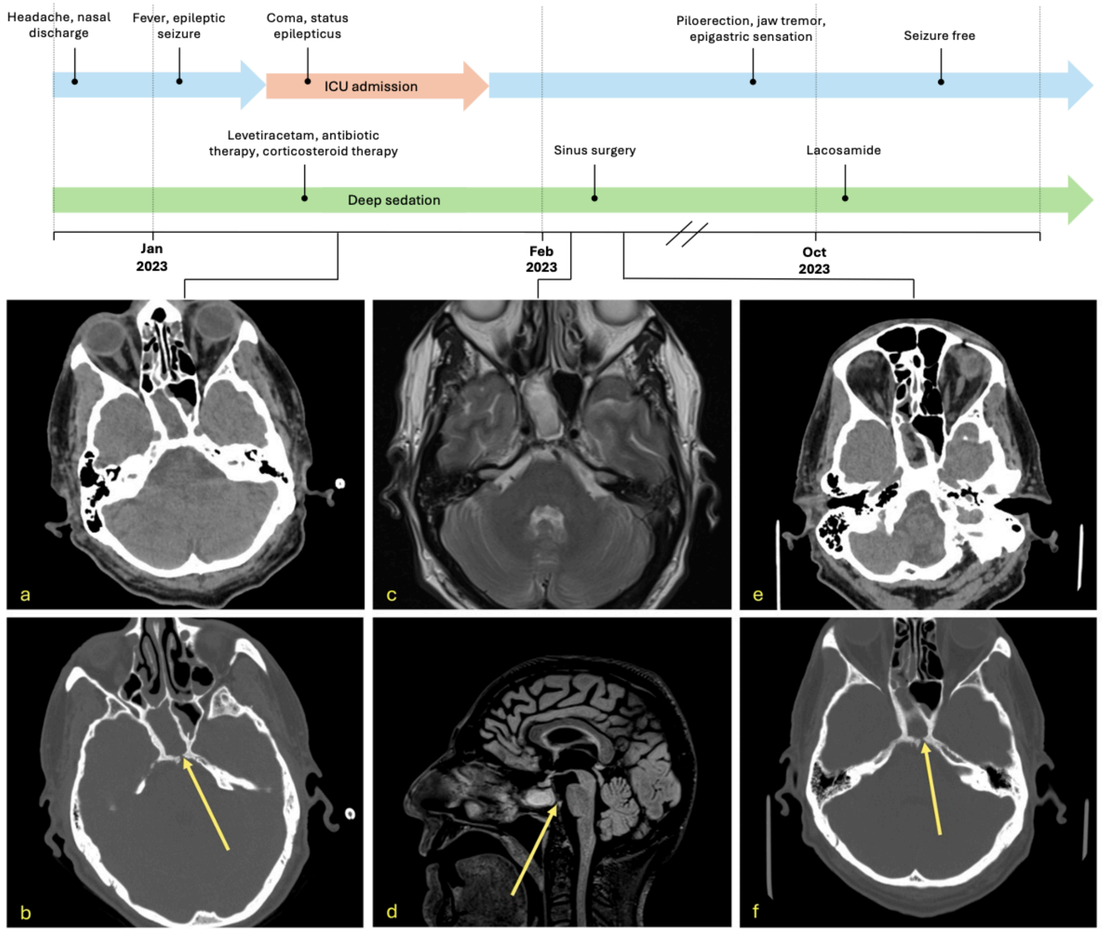

Figure 1 – Timeline and imaging procedures performed during inpatient care. a-b, brain CT scan showing evidence of inflammatory material in the sphenoid sinus, maxillary sinus, and some ethmoidal cells. The arrow highlights a bone defect in the posterior wall of the right sphenoid sinus. c-d, 1.5T brain MRI with contrast showing hyperintense material within the sphenoidal sinus cavity on T2-weighted turbo spin-echo (T2-TSE) sequences. Diffusion restriction was confirmed on diffusion-weighted imaging (DWI) sequences (not shown). Erosion of the posterior wall of the right sphenoid sinus, with intracranial extension of the lesion and associated meningeal enhancement, is demonstrated on contrast-enhanced magnetization-prepared rapid gradient echo (MPRAGE) sequences. e-f, brain CT scan following sphenoid sinus surgery. The arrow highlights the closure of the CSF fistula with adipose tissue.

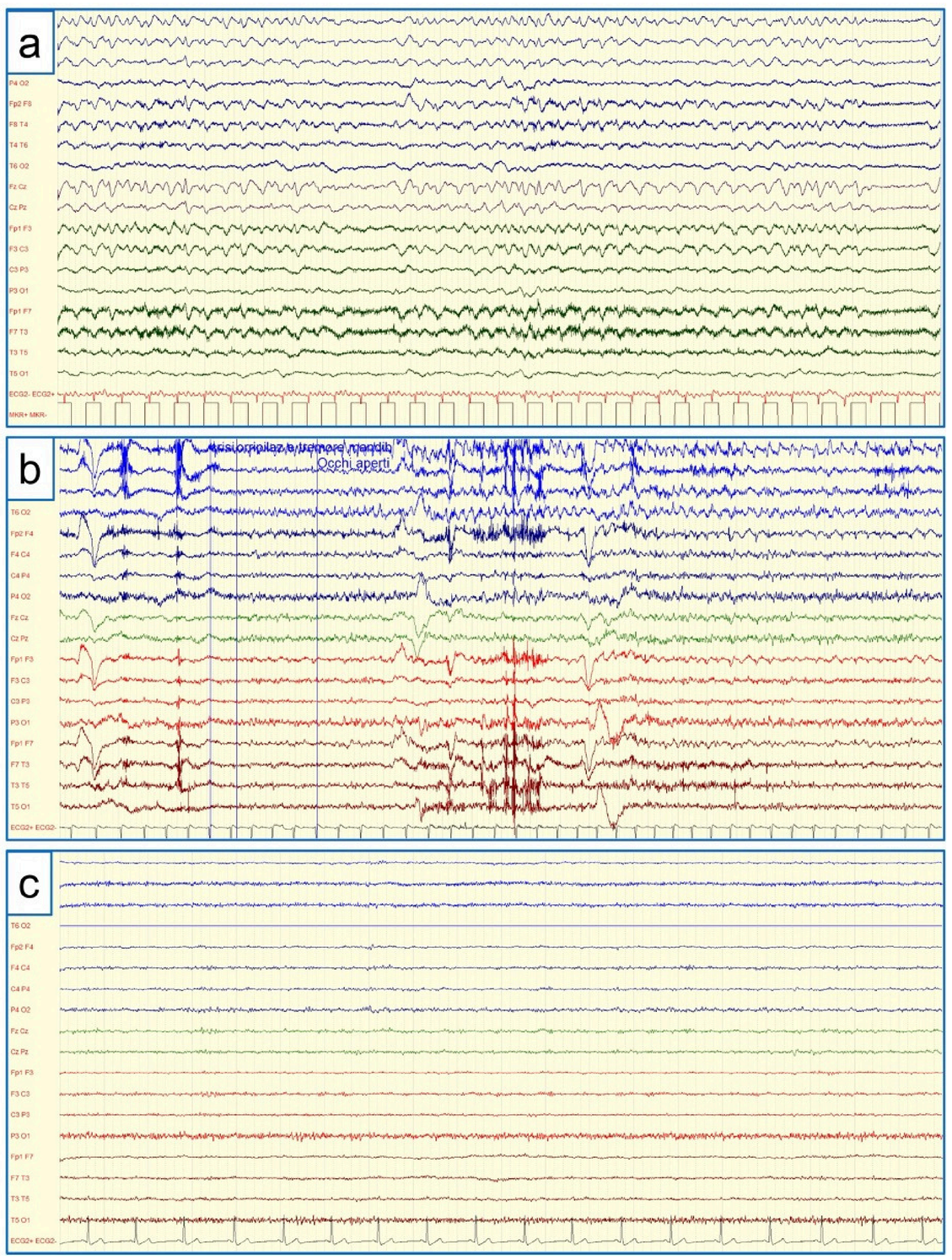

Figure 2 – Temporal evolution of EEG recordings. a, EEG performed in the Intensive Care Unit, showing continuous to subcontinuous sharp-and-slow wave activity predominantly over the bilateral frontotemporal regions, with frequencies ranging from 1 to 3 Hz, suggestive of status epilepticus. b, EEG performed 6 months after discharge, showing rhythmic theta band activity in the right temporal region, progressing to rhythmic delta activity and subsequently evolving into sharp slow-wave complexes. During this activity, piloerection was observed in all four limbs, accompanied by jaw tremor. c, EEG performed 9 months after the introduction of a novel-generation sodium channel blocker, showing low-voltage background activity with mixed frequencies, predominantly beta, bilateral, synchronous, and symmetrical. The recording reveals diffusely desynchronized activity with no epileptic abnormalities.

CONCLUSIONS

This case study illustrates the rare occurrence of S. marcescens meningoencephalitis and its potential association with SE, offering valuable insights into this uncommon condition. Our findings further support the hypothesis that acute CNS infections can induce brain changes that predispose patients to acquired epilepsy, including rare manifestations such as IP. Additionally, this case provides further evidence on these rare seizures, particularly regarding their etiology, lateralization, and therapeutic management. Notably, this challenging clinical entity was successfully treated with the addition of a novel generation sodium channel blocker, highlighting the potential effectiveness of these agents in managing similar cases.

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