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Short communication

Limbic encephalitis presenting as a post-partum psychiatric condition

Marc Gotkine [a,*], Tamir Ben-Hur [a], Angela Vincent [b], Adi Vaknin-Dembinsky [a]

[a] Department of Neurology, Hadassah University Hospital, Hebrew University Hadassah Medical School, Jerusalem, Israel
[b] Neurosciences Group, Weatherall Institute of Molecular Medicine, University of Oxford, John Radcliffe Hospital, Oxford, UK

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ABSTRACT

Objective: We describe a woman who presented with a psychiatric disorder post-partum and subsequently developed seizures and cognitive dysfunction prompting further investigation. A diagnosis of limbic encephalitis (LE) was made and antibodies to voltage-gated potassium channel complex (VGKC) detected. These antibodies are found in many non-paraneoplastic patients with LE. Although antibody-mediated conditions tend to present or relapse post-partum, VGKC-LE in the post-partum period has not been described.
Design: Case report.
Results: Clinical and imaging data were consistent with limbic encephalitis. High titres of anti-VGKC-complex antibodies confirmed the diagnosis of VGKC-LE.
Conclusion: The similarities between the psychiatric symptomatology of VGKC-LE and post-partum psychiatric disorders raise the possibility that some instances of post-partum psychiatric conditions are manifestations of immune-mediated, non-paraneoplastic LE.

1. Introduction

Limbic encephalitis (LE) is an immune-mediated disorder characterized by seizures, and neuropsychiatric disturbances [1]. Antibodies against voltage-gated potassium channels (VGKC) have been reported in many non-paraneoplastic cases (VGKC-LE) [1]. During the course of this study, it was found that the VGKC antibodies are frequently directed against Lgi1 or Caspr2, which are both proteins complexed with VGKCs; for that reason, the term VGKC-complex antibodies (VGKC-complex Abs) is preferred [2,3]. Antibody-mediated conditions tend to present or relapse post-partum [4], yet post-partum VGKC-complex LE has not been described. We describe a woman presenting with VGKC-LE post-partum. Similarities between the neuropsychiatric features of VGKC-LE and post-partum psychiatric disorders raise the possibility that some post-partum psychiatric disorders may be due to immune-mediated, non-paraneoplastic LE.

2. Case report

A 21-year-old woman presented with psychiatric complaints 4 weeks post-partum. She described an overwhelming feeling of restlessness and anxiety. Her concentration was severely limited to the point that she was unable to read. Brief episodes of more severe anxiety were diagnosed as panic-attacks by the consulting psychiatrist and an SSRI was started.

Two weeks later she started having brief, frequent involuntary-movements in her right-arm. Neurological examination and EEG were normal. At around 14 weeks following the birth, she had a generalized seizure. Examination after the post-ictal period revealed agitation, with impaired concentration and memory. Neurological examination was otherwise normal.

Initial investigations revealed borderline-low plasma sodium (134 mEq/l, normal range = 135 to 145 mEq/l), and high titres of anti-nuclear antibodies, but were otherwise normal. CSF was acellular with normal protein levels, absent oligoclonal bands and negative HSV PCR. Brain-MRI revealed a hyperintense non-enhancing area in the region of the left hippocampus (Fig. 1a). EEG showed bilateral epileptiform activity, most prominent over the right fronto-temporal region (Fig. 2). No evidence of neoplasm was found on whole body PET-CT.

Treatment with plasmapheresis and high-dose steroids resulted in marked improvement. Pre-treatment serum analysis in Oxford revealed high titres of VGKC-complex-Abs targeting the Lgi1 antigen (444 pM, normal value <100 pM). Treatment was tapered over 6 months, with complete clinical resolution and radiological improvement of the temporal-lobe lesion (Fig. 1b). Six months following resolution of her symptoms she complained of difficulty concentrating and a subjective experience closely resembling her initial presentation. Pre-treatment serum confirmed high titres of VGKC-complex-Abs (anti-Lgi1, 973 pM). Treatment with steroids and plasmapheresis was restarted with full resolution of symptoms within 2 weeks.

* Corresponding author.
E-mail address: marc@gotkine.com (M. Gotkine).

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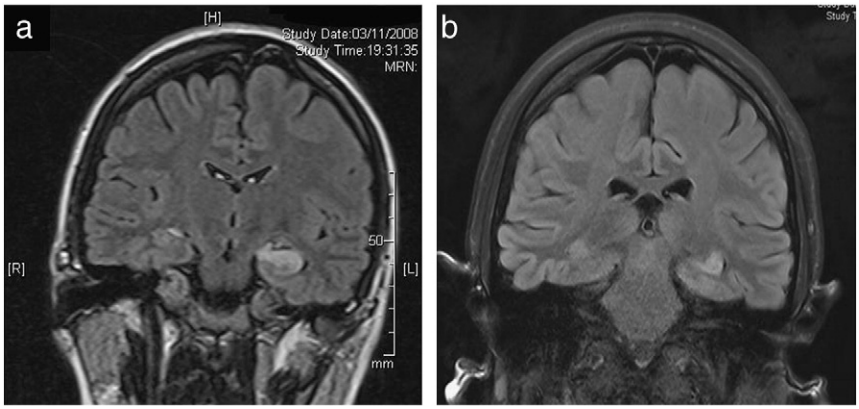

Fig. 1. MRI scan showing hippocampal lesion. Brain MRI FLAIR sequence during acute presentation showing a hyperintense lesion in the region of the left hippocampus (a) which partially resolved in a subsequent study following clinical remission (b).

3. Discussion

To our knowledge this is the first description of post-partum LE with detectable antibodies. The most significant feature was the initial manifestation as a psychiatric condition appearing in the puerperium.

Neuropsychiatric manifestations associated with VGKC-complex-Abs include agitation, amnesia, anxiety, confabulation, confusion, delusions, depression, hallucinations, insomnia, lack of concentration, panic-attacks and psychomotor restlessness [1,5–7]; features also described within the context of post-partum psychiatric conditions [8–12]. Although these clinical features are common to LE from other etiologies, the presence of hyponatremia in this context is suggestive of VGKC-LE, and the brief, frequent involuntary arm movements described here often precede VGKC-LE and have been termed "faciobrachial dystonic seizures", although not all cases have ipsilateral face involvement [13] [1,6]. In the case described here, the eventual progression manifesting as overt

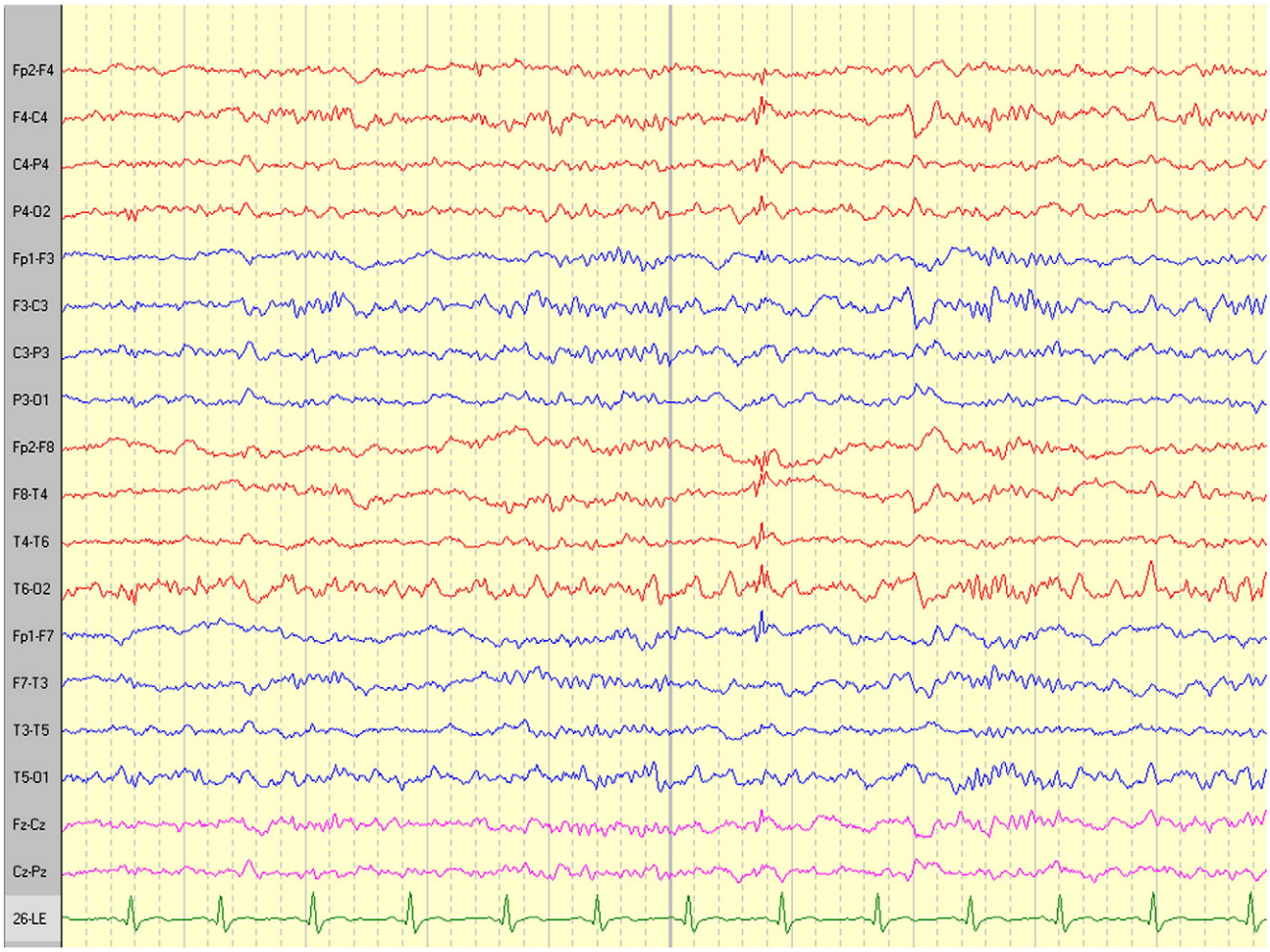

Fig. 2. EEG showing focal epileptiform activity. EEG performed during the acute presentation showed focal epileptiform activity, most prominent over the right fronto-temporal region.

seizures led to the neurological investigation, but VGKC-LE may present as a pure psychiatric condition [5–7].

In the absence of overt neurological involvement, detailed neurological investigation is reserved for psychiatric disturbances considered to be "clinically atypical", especially when there is no appropriate trigger. Post-partum psychiatric conditions may be less likely to be investigated given the presence of such a trigger. Hyponatremia is found in 36–80% of cases of VGKC-LE [1,6] and should provide a clue to the diagnosis. Nevertheless, moderately reduced serum-sodium in the context of a post-partum psychiatric condition could be wrongly attributed to excessive water intake common in breastfeeding women [14] or to psychogenic polydipsia which is common in a variety of psychiatric conditions including [15].

We hypothesize that some post-partum psychiatric disorders represent a limited form of LE, triggered by heightened immunogenicity. We have started screening serum samples from women with post-partum psychiatric conditions for VGKC-complex-Abs as this could have therapeutic ramifications regarding immune-modulating treatments.

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