Seizure: European Journal of Epilepsy 71 (2019) 219–221

Contents lists available at ScienceDirect

Seizure: European Journal of Epilepsy

journal homepage: www.elsevier.com/locate/seizure

Clinical letter

Rasmussen's encephalitis presenting as progressive parietal dysfunction sans seizures

Divyani Garg[a], Ayush Agarwal[a], Deepa Dash[a,*], Swati Mahajan[b], Rajesh Kumar Singh[a], Rohit Bhatia[a], Manjari Tripathi[a]

[a] Department of Neurology, All India Institute of Medical Sciences, New Delhi, India
[b] Department of Neuropathology, All India Institute of Medical Sciences, New Delhi, India

ARTICLE INFO

Keywords:
Encephalitis
Autoimmune
Rasmussen's encephalitis
Parietal lobe
Apraxia
Hemiatrophy

1. Introduction

Rasmussen's encephalitis (RE) is a rare immune-mediated condition that classically presents in children with focal epilepsy or epilepsia partialis continua, progressive hemiplegia associated with cognitive deterioration and chronic unilateral cortical inflammation and hemiatrophy [1]. Adults may have atypical manifestations including a prolonged prodromal phase, poorly defined residual period and slower progression [2]. Adults have more frequent occipital lobe involvement, bilateral hemispheric involvement or presentation as temporal lobe epilepsy or movement disorders [3]. We report the first case of biopsy-proven Rasmussen's encephalitis in an adult patient with progressive parietal dysfunction without seizures.

2. Case

A 29-year-old male presented with $1^{1/2}$ years of difficulty in perceiving the shape and texture of objects with his right hand associated with numbness. He developed problems with typing without looking at the keyboard. He had inability in performing complex calculations and word-finding and sentence construction errors. Three months after onset, he developed gradual right grasp weakness. Over the next six months, he developed right-left confusion hampering driving. One year from onset, he developed right foot inversion while walking. All complaints were progressive. He had no headache, seizure, cognitive impairment, myoclonus, visual issues, prosopagnosia or systemic complaints. Family history was non-revelatory. Neurological examination at presentation to us 2 years from onset showed normal mini-mental state examination (MMSE) with impaired stereognosis, graphesthesia, hylognosis and two-point discrimination over the right upper and lower limb. Western aphasia battery revealed loss of fluency, occasional paraphasias and impaired repetition. He performed complex written calculations slowly but accurately. He exhibited mild right upper limb (power MRC grade 4/5) and right lower limb (MRC grade 3 to 4-/5) weakness. Right deep tendon reflexes were exaggerated. Remaining neurological and systemic examination was normal. Complete blood count, hepatic, renal and thyroid function were normal. HIV, HBsAg and Anti−HCV serology was negative. Magnetic resonance imaging (MRI) brain done six months apart revealed progressive atrophy hemiatrophy (Fig. 1).

Cerebrospinal fluid (CSF) showed 15 cells (all lymphocytes), protein 85 mg/dL and sugar 108 mg/dL (blood sugar 145 mg/dL). Positron Emission Tomography (PET) brain revealed left frontoparietal hypometabolism. Electroencephalography (EEG) was normal. Antibodies for ANA, ANCA, Rheumatoid factor, anti-Thyroid Peroxidase, anti-Aquaporin 4 and anti-Myelin Oligodendrocyte Glycoprotein, autoimmune panel (including anti-NMDA, anti-VGKC, anti-GABA-A/B, anti-mGluR5, anti-AMPA, anti-GAD) were negative. Anti-measles antibody in CSF and serum was also negative. Anti-GluR3 antibodies are not available at our centre and could not be sent.

Based on these, a provisional diagnosis of autoimmune encephalitis or atypical Rasmussen's encephalitis was entertained. He had

* Corresponding author.
E-mail address: drddash@yahoo.com (D. Dash).

https://doi.org/10.1016/j.seizure.2019.08.001
Received 28 June 2019; Received in revised form 25 July 2019; Accepted 1 August 2019

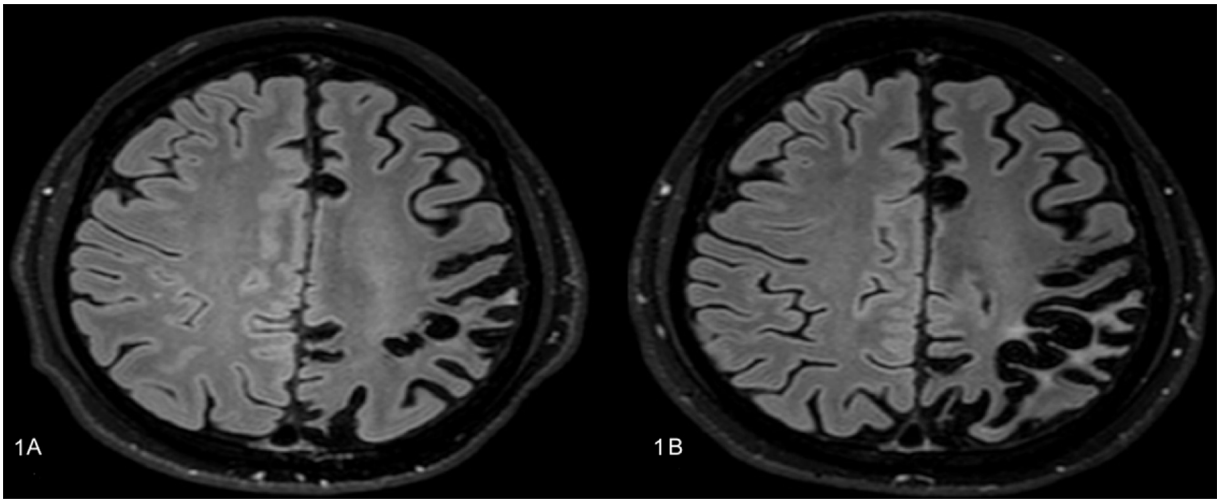

Fig. 1. T2/FLAIR MRI brain (axial sections)-Image (A) done at 1.5 years of illness and (B) done six months later revealed progressive left parietal and posterior frontal atrophy.

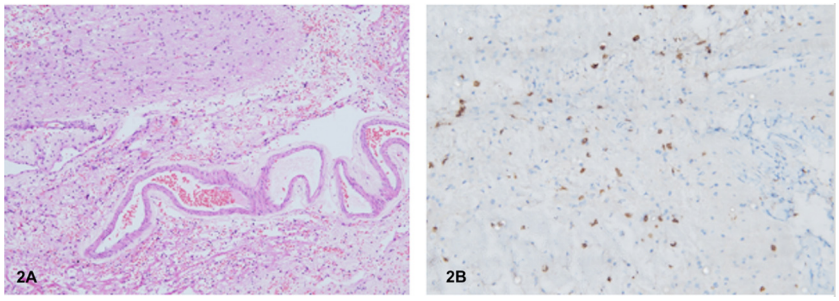

Fig. 2. A: Neuronal loss with mild perivascular inflammation, combined with various degrees of gliosis (H&E x100). B: CD8 immunostaining reveals infiltration of cytotoxic T lymphocytes in the cortex (IHC x 100).

empirically received intravenous immunoglobulins 2 g/kg over 5 days at an outside centre at onset, without improvement. He was not continued on immunomodulatory therapy. After evaluation at our centre, he was administered intravenous pulse methylprednisolone (1000 mg/day) for 5 days followed by oral steroids (prednisolone 1 mg/kg). The patient did not give consent for brain biopsy at this time. The patient eventually consented and underwent brain biopsy three months from presentation to us from the left parietal lobe without complications. He had begun to show mild motor improvement around two months after the steroid pulse. Biopsy revealed changes consistent with RE (Fig. 2a and b). Mycophenolate mofetil was added as a steroid-sparing agent after the biopsy report and built up to 3 g per day with steroid taper, in view of steroid-related Cushing's syndrome. The patient continued to exhibit steady improvement and was able to write and type without difficulty at last follow-up visit one month back.

3. Discussion

Rasmussen's encephalitis is characterised by three phases in the natural history of the disease- prodromal, acute and residual phase [4]. Prodromal phase usually lasts 7 months in the pediatric population with moderate frequency of focal seizures and mild hemiparesis. Acute phase involves increased seizure frequency, worsening baseline deficits along with progressive hemiatrophy, and a residual phase with static deficits, lesser seizures and marked hemiatrophy. Our patient did not follow this pattern. There was no prodromal phase, and he had already seemingly entered the acute phase with worsening deficits albeit no seizures. Studies suggest that these phases may last a longer period in adults than pediatric patients [2].

Cerebral hemiatrophy may be broadly categorised as congenital/ acquired or progressive/ non-progressive. Non-progressive causes include stroke, cranial trauma and irradiation. Progressive causes suggest active disease and comprise Dyke-Davidoff-Mason syndrome, Sturge-Weber syndrome, Parry Romberg syndrome, germinoma-associated hemiatrophy, vascular malformation, status epilepticus including hemiconvulsion-hemiplegia-epilepsy syndrome, as well as RE.

Around 10% of RE has onset in adolescence or adulthood [1]. The diagnostic criteria for RE do not contain age of onset as a diagnostic requirement [4]. It is believed that the course of adult-onset cases is slower and deficits are not as severe as pediatric cases. Semiology in adult-onset cases can be more characteristic of temporal lobe epilepsy. Perisylvian and fronto-insular regions are the usual sites of involvement, leading to hemiparesis and hemianopia [1–4]. Hemiathetosis and hemidystonia are rarely described. There is no case report with predominant parietal lobe dysfunction as the initial manifestation, making our case unique.

Otherwise typical progressive Rasmussen's encephalitis with characteristic histopathological features has been reported with delayed seizure onset, or even the absence of seizures up to 2 years [1]. Such findings suggest that seizures are not an inevitable consequence of Rasmussen's encephalitis. However, our patient was already two years into the course of his illness without seizures. Whether he is an outlier with seizures to yet develop in the course of the illness remains to be seen.

Despite the unique presentation of our case, the presence of progressive neurological deficits documented objectively on detailed neurological evaluation, MRI showing progressive unihemispheric atrophy with T2/FLAIR signal abnormality and biopsy features consistent with RE satisfies all three of Bien's B criteria, enabling us to make a confident diagnosis in the absence of a typical clinical picture [4].

4. Conclusion

Our case report highlights a rare manifestation of a rare illness and adds to the growing repertoire of scientific knowledge regarding Rasmussen's encephalitis. The presence of progressive cognitive deficits in association with unihemispheric atrophy should strongly encourage clinicians to keep this diagnosis foremost to provide patients the benefit of immunomodulation.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

None declared

References

[1] Varadkar S, Bien CG, Kruse CA, Jensen FE, Bauer J, Pardo CA, et al. Rasmussen's encephalitis: clinical features, pathobiology, and treatment advances. Lancet Neurol 2014;13(2):195–205.
[2] Castellano JF, Meyer JA, Lado FA. A case series of adult-onset Rasmussen's encephalitis: diagnostic and therapeutic challenges. Front Neurol 2017;8:564.
[3] Jaillon-Riviere V, Dupont S, Bertran F, De La Sayette V, Beuvon F, Baulac M, et al. Late-onset Rasmussen's syndrome: clinical and therapeutic characteristics. Rev Neurol (Paris) 2007;163(5):573–80.
[4] Bien CG, Granata T, Antozzi C, Cross JH, Dulac O, Kurthen M, et al. Pathogenesis, diagnosis and treatment of Rasmussen encephalitis: a European consensus statement. Brain 2005;128:454–71.