Psychiatric onset of ADEM in an adult patient

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Background

- **Acute disseminated encephalomyelitis (ADEM)** is a monophasic immune-mediated inflammatory disorder that produces multifocal demyelinating lesions within the central nervous system.
- The incidence of ADEM is estimated to range from **0.4 to 0.8 per 100,000 per year**.
- Although more common in pediatric patients, it can occur at any age and it is often **preceded by an infection** [1]
- A prodromal phase with malaise, headache, nausea and fever may precede neurological features that depend on the CNS site involved, most frequently: pyramidal signs (60 to 95%), acute hemiplegia (76%), ataxia (18 to 65%) and cranial nerve palsies (23%) [2]

We report the case of a **37-years-old** woman diagnosed and successfully treated for ADEM with a **psychiatric onset. This is one of the few cases of psychiatric onset of ADEM described in adults, considering that ADEM is more frequent in children, and that psychiatric onset is a rare occurrence.**

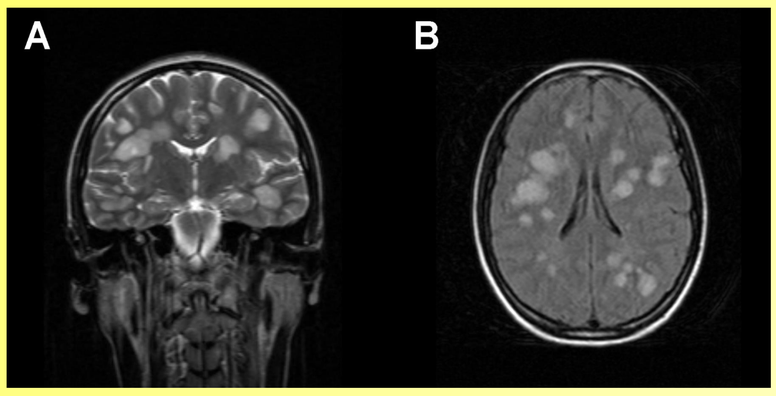

Fig.1 Diffuse and large areas of demylination in T2-weighted (A) and FLAIR (B) sequences at the onset of disease involving mainly frontal and temporal lobes.

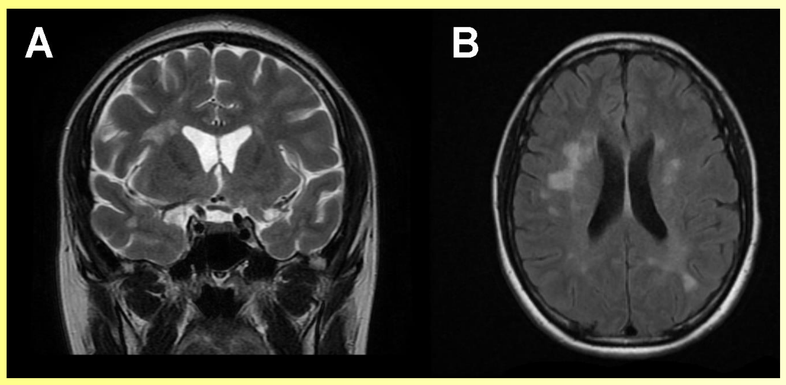

Fig.2. After two months of treatment the ADEM lesions appear reduced in T2-weighted (A) and FLAIR (B) sequences

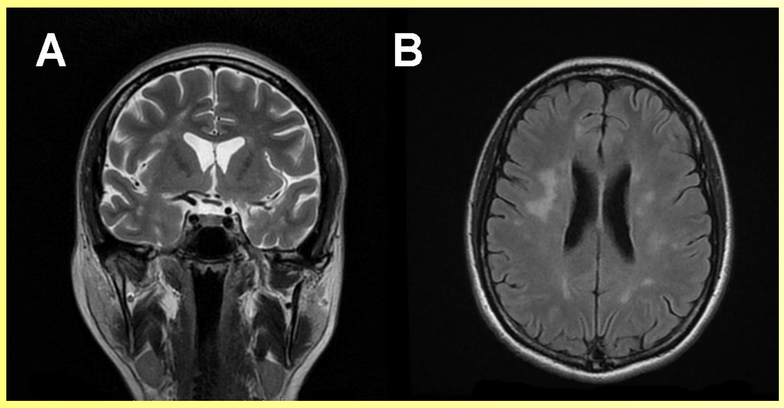

Fig.3. After one year we notice an important reduction of the areas dimension and of the contrast enhancement in T2-weighted (A) and FLAIR (B) sequences

Case Report

- The patient was brought to San Paolo Hospital, Milan, Italy, with a **recent history_**of **abnormal behavior** characterized by **irritability** and **drowsiness** that started abruptly 4 days prior preceeded by about two weeks of **depressed mood**. She had no psychiatric history. Notably, she had a **bronchitis** treated with penicillin and fluoroquinolones three weeks prior.
- At the Emergency Room she was slowed down, oppositive, irritable.
- She underwent a neurological examination and a cranial CT scan, both resulting negative, leading to a **misdiagnosis** of an **acute psychotic illness**
  - in a few days she became **cathatonic**, **dysarthric** and **dysphagic**.
- An EEG showed a severe and diffuse **high-voltage theta-delta activity**, mainly involving the anterior sites (**Fig.EEG1**).
- Cerebral fluid and serum studies searching for NMDA-receptor antibodies, CTM, viruses, bacteria, and fungi were **negative**. Protein and cell counts were normal, the autoimmune panel was negative and only the intrathecal IgG production was elevated.
- T_2 weighted and FLAIR sequences of brain MRI revealed multiple, large areas of **increased signal intensity** throughout the supratentorial white matter and the temporal lobes consistent with ADEM **(Fig. 1)**.
- Neither high dose intravenous methylprednisolone (1g/die) nor Ig infusion succeded in patient healing
  - she became **akathisic**,**unable to speak**, to **comprehend**, and to **execute orders**. She was **hypertonic**, she had a severe **wandering**, **Babinski** and **Hoffman** reflexes, and **frontal release** signs.
- Each attempt at tapering the high dose steroid therapy resulted in a further worsening of the patient health
  - this forced us to **maintain the high dose steroid therapy** until a clear reduction of the lesions contrast enhancement.
- Only after **two months** of treatment with an exceedingly slow tapering of steroid dosages, the contrast enhancement of the lesions begun to reduce allowing a gradual recovery of the associative areas and an improvement of the patient's clinical state **(Fig.2).**
- After two months of rehabilitation, an almost complete recovery of pre-disease functional state was possible. After one year, the patient sporadically shows some abnormal behavioral remnants deriving from ADEM lesions.
  - brain MRI shows reduced ADEM lesions with limited intensity in the anisotropic sequences **(Fig. 3)**
  - EEG shows a symmetric and normal background activity with alpha rhythm **(Fig. EEG2)**

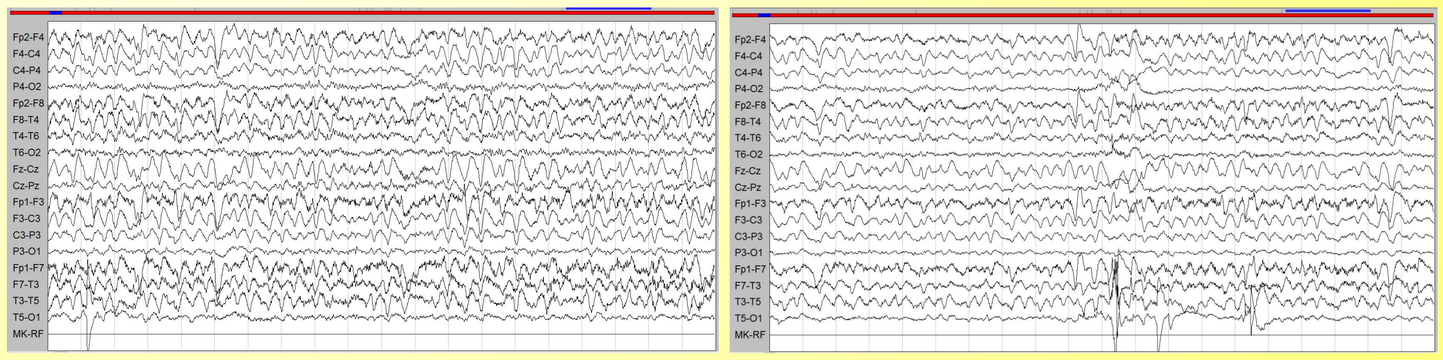

Fig.EEG1 Two sample EEG at the onset of disease. Note the diffuse sloweness of the background activity, mainly involving the F-T sites.

Conclusion

- Clinical features of the case herby reported demonstrate how ADEM onset may be characterized by **behavioral disorders** coupled with depression with no motor impairment [3].
- Interestingly, respiratory conditions were already reported up to 28 days upstream ADEM outbreak [4]
- Just in a few cases described **acute psychiatric onset** can be a rare presentation of ADEM, with **anxiety disorder**, **bipolar disease**, **depression**, **personality changes** or **frank psychosis** [5].
- Uncommonly to ADEM, the patient treated at San Paolo Hospital was an adult. ADEM in adults shows **slower response** to **steroids** and **erratic response** to venous **Ig** infusion [2].
- The development of the clinical condition hereby reported suggests careful evaluation of **possible organic causes (including ADEM) to abrupt appearance of first-time psychiatric conditions following febrile episodes.**
- The steroid therapy in the case reported above lasted several months, requiring a constant monitoring and attentive internistic care
- ADEM lesions should be monitored with MRI throughout the treatment as the only mean to monitor the evolution of the disease.
- **Steroids therapy shall be ceased only at full disappearance of the lesions contrast enhancement at MRI.**

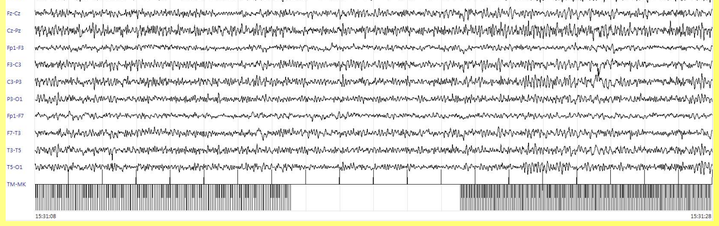

Fig.EEG2. EEG after one year shows a normal background activity

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