

CASE REPORT

Study in a young patient with EDS and cataplexy, sleep paralysis and disturbed nocturnal sleep, diagnosed with Narcolepsy at 19 years old.

ESS: 15, BMI: 22,7 Kg/m². Video-polysomnography showed fragmented nocturnal sleep, with 2 SOREMP and a mean sleep latency of 1,3 minutes in the MSLT. Positive HLA-DQB1*06:02.

Treated with Xyrem, Venlafaxine and Modafinil.

At 23 years old presented to the emergency department with a 24 h history of difficult speaking, headache and tremor followed by changes in behavior, autonomic dysfunction, right focal motor seizure and lethargy. He has received 7 weeks before mRNA-1273 (Moderna) vaccine followed by a SARS-CoV-2 infection 4 weeks after vaccination (positive antigen test).

Past medical history revealed gastroesophageal reflux and cannabis use. An acute episode of rhabdomyolysis at age 18 years was related to medication.

RESULTS

Neurological exam revealed visual fields, cranial nerves, motor and sensory examination and reflexes normal and symmetrical. A standard EEG showed slow background activity. Nasopharyngeal swab polymerase chain reaction (PCR) testing for COVID-19 was negative.

Cerebrospinal fluid (CSF) had highly elevated protein and lymphocytic pleocytosis. CSF bacterial and fungal cultures for viral infections (including HSV1/2 and VZV) were negative.

Brain MRI; Fig 1 & Fig 2

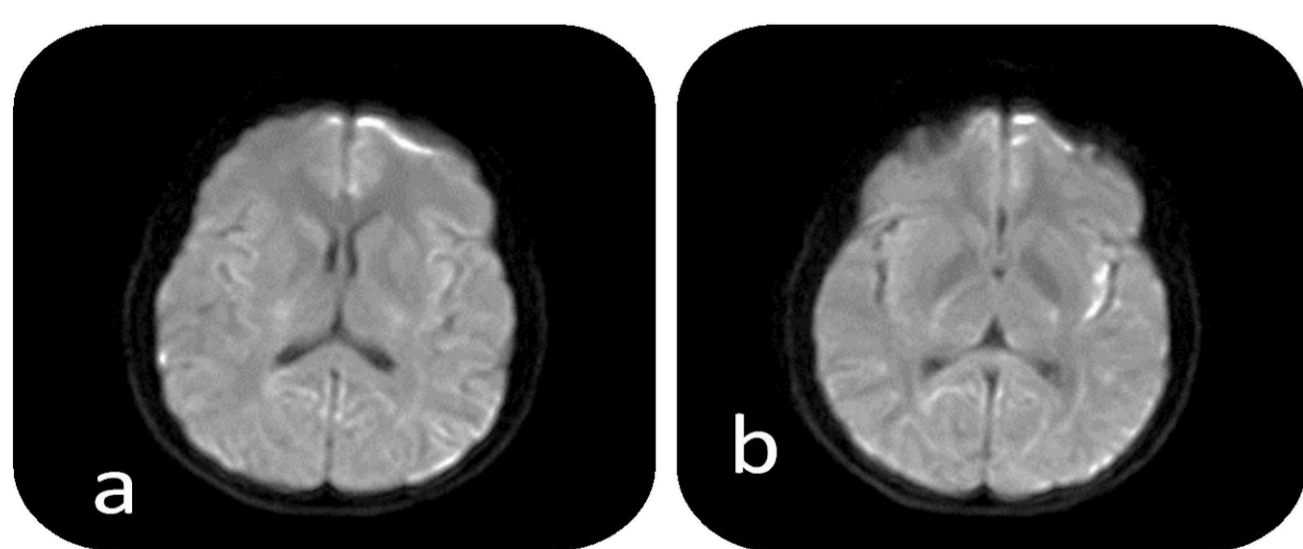


Fig1. **Brain MRI** showed no abnormality on the non-contrast-enhanced sequences (including susceptibility weighted imaging [SWI], T1, and T2-weighted FLAIR), but the diffusion weighted imaging (DWI) shows restricted diffusion with high signal on the left hemisphere mainly in the cerebral cortex with a gyro morphology.

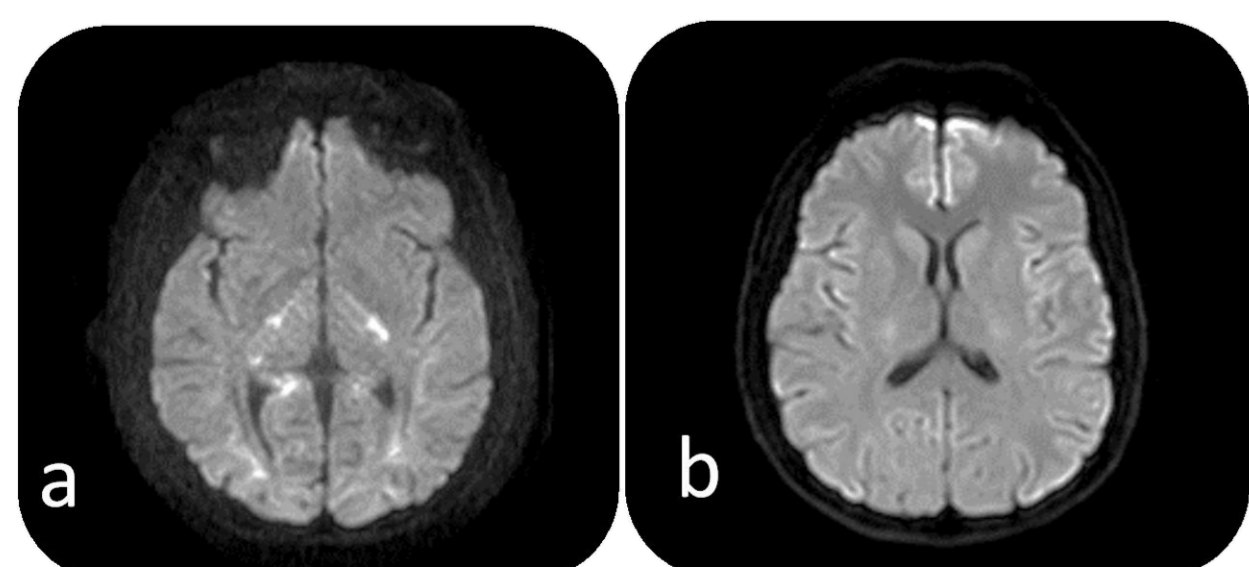


Fig. 2. **Control MRI** (DWI sequence) obtained two months later demonstrated complete resolution of the imaging.

Chest, abdomen and pelvis computed tomography; pelvic and scrotum ultrasound, showed no malignancy. Onconeural antibodies were negative. The patient was treated with plasmapheresis and corticoids with a good clinical evolution over 2 weeks, and repeat MRI (Fig,2) showed near complete resolution of the imaging abnormalities.

CONCLUSIONS

- The comorbidity of Narcolepsy type 1 (NT1) and autoimmune encephalitis (AE) has not been published before.
- The patient fulfilled the diagnostic criteria for AE with subacute onset, focal CNS symptoms, CSF pleocytosis, and MRI suggestive findings (1).
- Reversible neurological and MRI changes following SARS-CoV-2 vaccination have been published (2,3).
- In addition, a NT1 had begun in a patient after recovery following a Covid-19 infection (4). Pfizer and Moderna vaccines, constructed as messenger RNA vaccines, may trigger an autoimmune response, leading to the construction of antibodies against neuronal cell-surface (1,5).
- Infection and vaccination could constitute a risk in a patient with a NT1 and in this case could help to provide a better understanding of the implication of immune-mediated processes in the pathophysiology of the diseases.

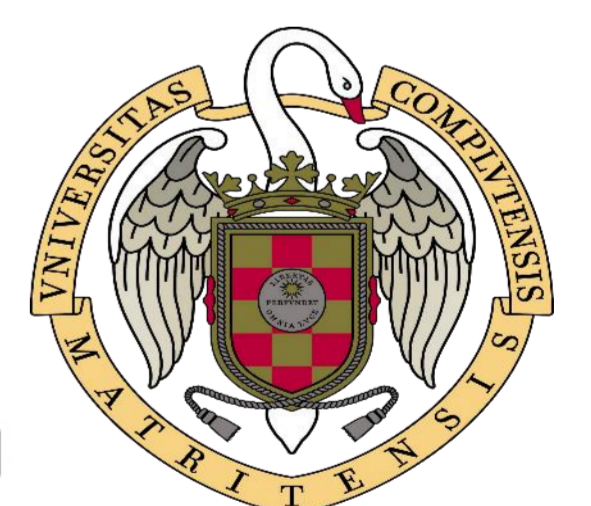
REFERENCES

1. Rastogi A, Bingeliene A, Strafella AP, Tang-Wai DF, Wu PE, Mandell DM. Reversible neurological and brain MRI changes following COVID-19 vaccination: A case report. *J Neuroradiol.* 2022;49(6):428-430.
2. Graus F, Titulaer MJ, Balu R, Benseler S, Bien CG, Cellucci T, et al. A clinical approach to diagnosis of autoimmune encephalitis. *Lancet Neurol.* 2016 ;15(4):391-404.
3. Allahyari F, Molaee H, Hosseini Nejad J. Covid-19 vaccines and neurological complications: a systematic review. *Z Naturforsch C J Biosci.* 2022;78(1-2):1-8.
4. Roya Y, Farzaneh B, Mostafa AD, Mahsa S, Babak Z. Narcolepsy following COVID-19: A case report and review of potential mechanisms. *Clin Case Rep.* 2023, 25;11(6):e7370.
5. Waheed S, Bayas A, Hindi F, Rizvi Z, Espinosa PS. Neurological Complications of COV: ID-19: Guillain-Barre Syndrome Following Pfizer COVID-19 Vaccine. *Cureus.* 2021, 18;13(2):e13426.



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