MELAS syndrome: a diagnostic pitfall — A case report highlighting the challenges of early recognition

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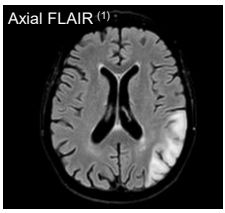
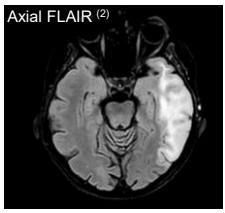
OBJECTIVES

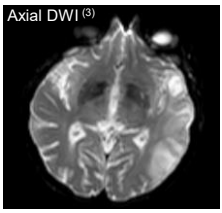
MELAS syndrome (Mitochondrial Encephalomyopathy, Lactic Acidosis, and Stroke-like episodes) is a rare mitochondrial disorder. Due to its heterogeneous clinical presentation, it is often misdiagnosed or diagnosed late. This case underlines the importance of considering MELAS syndrome in the differential diagnosis of stroke-like presentations to avoid inappropriate treatments.

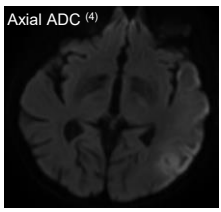
CASE REPORT

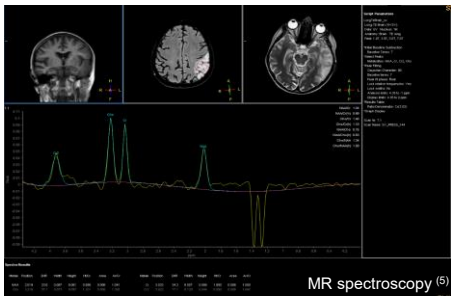
A left-handed 60-year-old woman presented to the emergency department with speech disturbances lasting for days. Her medical history was unremarkable except for arterial hypertension, bilateral hearing loss, cardiac arrhythmias and diabetes mellitus complicated by renal failure. Neurological evaluation showed motor aphasia without other pathological findings. A suspected subacute ischemic lesion in the left temporo-insular region was detected on brain CT scan without contrast enhancement. Hospitalization was recommended but the patient decided to go home and dual antiplatelet therapy was started. Due to worsening symptoms (global aphasia and behavioural disturbances), the patient was hospitalized a few days later. Given the subacute clinical progression and the left temporal lesion on the previous CT scan, autoimmune encephalitis was suspected. Electroencephalogram, lumbar puncture, and a full autoimmune panel on serum and cerebrospinal fluid (CSF) - including NMDA-R, GABA, LGI1, and IgLON5 antibodies - were performed without pathological findings. Brain MRI revealed a recent T2/FLAIR hyperintensity in the right temporo-parietal lobe(Fig.1-2). Considering the strong familial history of diabetes and sensorineural hearing loss, markedly elevated lactate levels in serum and CSF, and MRI spectroscopy(Fig.5) (decreased N-acetylaspartate, a pathological lactate peak, normal choline levels), the suspicion of a mitochondrial disorder was raised. Therefore, genetic testing on blood was performed showing a slight positivity of m.3243A>G mutation. The mutation was after confirmed on urine samples, establishing the diagnosis of MELAS. Cardiac MRI and OCT revealed multi-organ involvement consistent with mitochondrial pathology.











DISCUSSION AND CONCLUSION

MELAS is mostly associated with m.3243A>G mutation in mitochondrial DNA. In our case, the genetic test on blood samples was not diagnostic, so that the same test on urine samples was necessary. Given the clinical variability of MELAS that could resemble cerebrovascular accidents or autoimmune encephalitis, neuroimaging findings not respecting vascular territories and elevated lactate levels represent key diagnostic clues. Metabolic screening and detailed family history were essential to reach the correct diagnosis. In fact, timely and accurate diagnosis is crucial for optimizing patient management and outcomes in complex neurological presentations.

References:
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