Case report

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Choreoacanthocytosis presenting as schizophrenia-like disorder: a case report

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Abstract

Choreoacanthocytosis (ChAc) is a rare, autosomal-recessive neurodegenerative disorder which may first present to psychiatrists rather than to neurologists due to the associated psychotic symptoms. We present a male patient with probable ChAc, who was brought to the attention of the psychiatric services with schizophrenia-like symptoms that predated the usual presenting features such as seizures and choreiform movements.

Key words: choreoacanthocytosis, neuroacanthocytosis, psychosis, schizophrenia, chorea

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Introduction

Neuroacanthocytosis (NA) is an umbrella term for a group of disorders presenting with neuropsychiatric manifestations (1). There are four core neuroacanthocytosis syndromes, namely, choreoacanthocytosis (ChAc), McLeod syndrome, pantothenate kinase-associated neurodegeneration (PKAN) and Huntington's disease-like 2 (HDL2) (1). ChAc is reported as a rare, autosomal-recessive neurodegenerative disorder with symptoms of chorea and tics, which often manifest in the third decade of a person's life (2). Generalized seizures are known to be present in half of the patients with ChAc and these patients may also have features of Parkinsonism, supra-nuclear palsy and dystonia (3). Some patients may present with cardiomyopathy (3). ChAc shares common features with Huntington disease (e.g., caudate atrophy, chorea) (1). Subcortical dementia is another manifestation of ChAc (4). Psychosis, obsessive compulsive symptoms, anxiety disorders, and depression are less commonly reported in ChAc than in other types of NA and schizophrenia like presentations are reported as rare occurrences in this type of NA (5-7).

We report a male who presented to psychiatric services with psychotic symptoms and had features suggestive of probable ChAc.

Case report

A 37-year-old male was brought by his family to the National Institute of Mental Health, Sri Lanka, in the context of his aggressive behaviour towards the family members as he believed that they were trying to poison him. He reported hearing several voices talking among themselves about him, plotting to kill him and commenting on his behaviours which he found very distressful. These symptoms had been present for around seven years in mild severity but had worsened over the last few weeks before this presentation to psychiatric services. He had developed several episodes of generalized tonic-clonic seizures during the last four years with the last seizure occurring three months ago. In addition, over the last three years, he had developed choreiform movements in both upper and lower limbs bilaterally and dysarthria. He had been started on sodium valproate and haloperidol at a neurology clinic, some months back when he presented with seizures. However, his adherence to medication has been poor. It also did not appear that his symptoms had been adequately investigated.

He was the youngest of seven children of non-consanguineous parents. Two of his siblings (a sister and a brother) had similar movement abnormalities and psychotic symptoms that had manifested when they were in their 30s. The former had passed away due to an unknown cause when she was about 40 years of age, while the latter had committed suicide.

On mental state examination, he was found to have dysarthria and his mood was predominantly anxious. There were persecutory delusions, second- and third-person auditory hallucinations and running commentary. His attention, concentration and episodic memory were

impaired while semantic memory was intact. Extended cognitive functions revealed frontal lobe deficits. The Mini Mental State Examination (MMSE) score was 24 out of 30.

Neurological examination revealed oro-facial tardive dyskinesia and bilateral upper and lower limb choreiform movements. His tendon reflexes, sensory and cranial nerve examination were normal.

His total white cell and platelet counts were within normal limits. Investigations revealed acanthocytes in the peripheral blood smear. Haemoglobin level was 10.9 g/dl (14-18 g/dl), and creatinine kinase level was 811 U/l (55-170 U/l). His liver enzymes were found to be elevated (alanine transaminase 186 U/l (7-55 U/l), aspartate transaminase 374 U/l (8-48 U/l), alkaline phosphatase 287 U/l (44-147 U/l). The Kell antigen was detected in his blood. The fasting blood sugar, serum lipoprotein, blood urea, creatinine, and total bilirubin levels were normal and hepatitis B surface antigen, hepatitis C antibodies, and antinuclear antibodies were absent. The ceruloplasmin level and the serum ferritin level were within the normal range (1.23 µmol/l (0.93-2.65 µmol/l) and 145 ng/ml (24-336 ng/ml) respectively). Hepatic ultrasound scan and computed tomography (CT) and magnetic resonance imaging (MRI) of the brain were normal. Nerve conduction studies, interictal electro-encephalogram (EEG), electromyogram (EMG) and the echocardiogram were normal.

We did not have facilities to conduct gene analysis for Huntington disease and VPS13A mutation.

He was reviewed by the neurology team and was re-started on sodium valproate 200 mg three times a day, clobazam 10 mg at night and tetrabenazine 12 mg three times a day. We started him on haloperidol 3 mg twice daily for the distressing psychotic symptoms. When he was reviewed two months after discharge the choreiform movements, seizures, and psychotic symptoms were controlled to a significant extent. The multidisciplinary team is currently working closely with him to improve his level of functioning.

Discussion

A diagnosis of neuroacanthocytosis requires a blood smear with more than 3% of acanthocytes, while there usually is an increase in serum creatine kinase (CK) levels and normal lipoprotein levels (1).

Unless molecular or protein-based confirmation is there, the symptom patterns are classified as NA syndromes (1). However, clinical and inheritance features may permit a reasonable degree of accuracy in the diagnosis in the absence of definitive testing as in the case of our patient (8). The presence of the Kell antigen is more suggestive of ChAc which was positive in our patient (9).

The causative gene of ChAc is named VPS13A and is located on chromosome 9q21 demonstrating an autosomal recessive inheritance (10). Our patient had a strong family history with two first-degree relatives being most probably affected by the same condition. However, the absence of similar symptoms in either or both his parents made us doubt the possibility of Huntington disease and consider alternative diagnoses. The presence of seizures, chorea, dystonia, acanthocytosis, derangement of liver enzymes, elevated CK and Kell antigen in our patient narrowed down the diagnosis towards ChAc. ChAc and McLeod syndrome are differentiated from other causes of chorea by the presence of seizures and peripheral neuropathy (11). The MRI of the brain in our patient was normal, however metabolic imaging such as brain fluorodeoxyglucose-positron emission tomography (FDG-PET) may reveal striatal hypometabolism (12). Primary movement disorders can be confused with tardive dyskinesia if occurring in a patient on long-term treatment with typical antipsychotics and elevation of CK levels in an unrestrained psychotic patient could be indicative of NA rather than neuroleptic malignant syndrome (13).

Treatment of NA is generally symptomatic with L-dopa and botulinum toxin to reduce dystonia. However, the treatment of psychiatric symptoms has been reported to be challenging and the causation of these symptoms may be associated with dopaminergic dysfunction (14, 15).

Low doses of high-potency neuroleptics (e.g., haloperidol) are useful in suppressing chorea and psychotic symptoms. However, these may worsen the dystonia and Parkinsonism. Atypical antipsychotics on the other hand may lower the seizure threshold (13, 16).

Conclusion

ChAc and other NA syndromes can go unnoticed and be diagnosed as Huntington disease and or schizophrenia. Therefore, clinicians need to be vigilant and investigate for secondary causes of psychosis in patients presenting with neurological symptoms.

Conflicts of interest

None declared.

Author contributions

LYA, FHDSS, DSS, SCA all contributed to the literature survey and writing of the manuscript. All authors approved the final manuscript.

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