Neuropsychiatric Disease and Treatment

Dovepress
open access to scientific and medical research

Open Access Full Text Article

CASE REPORT

Chorea disclosing a polycythemia vera

This article was published in the following Dove Press journal:
Neuropsychiatric Disease and Treatment
5 April 2014
Number of times this article has been viewed

Guidong Liu
Jie Chang
Zhijun Liu
Qiang Qiang
Chunhui Gu
Yingying Zhang
Wenshi Wei

Department of Neurology, Huadong Hospital, Fudan University, Shanghai, People's Republic of China

Abstract: Chorea is a rare complication of polycythemia. We report the case of a 70 year-old woman whose polycythemia vera (PV), with *Janus Kinase-2* (*JAK2*) mutation, presented as chorea. Chorea resolved quickly after hydroxyurea therapy.

Keywords: chorea, polycythemia vera, elderly, *JAK2*

Case report

A 70 year-old woman attended the outpatient clinic of neurology department (Huadong Hospital) with a complaint of involuntary movements in her left limbs during the past 4 days, beginning with involuntary twitching of the muscles in the limbs. A diagnosis of chorea was made and she was treated with haloperidol 2 mg twice a day. One week later, her choreic symptoms had resolved. One month later, she experienced an episode of dizziness, and the next morning involuntary movements reappeared with new symptoms of dysarthria and dysphagia. Five days later, the twitching had escalated to jerking of the muscles which became generalized, extending to the shoulders and face but it ceased during sleep. Her speech and swallowing were moderately affected.

There was no family history of movement disorders, dementia or psychiatric illness, and no medical history of stroke, peripheral vascular disease, metabolic or endocrine disorders, or autoimmune disease. She had otherwise been well except for gingival bleeding as a result of taking aspirin. She was not being treated with chorea-inducing drugs such as antiparkinsonian drugs, amphetamines, tricyclic antidepressants, anticonvulsants, or antipsychotics.

Physical examination showed facial plethora and erythema of the hands with mild clubbing of the fingers but no splenomegaly. Blood pressure was 130/80 mmHg and temperature was 36.5°C. Neurological examination disclosed choreiform movements of the limbs and orofaciolingual muscles with writhing movements of the tongue, grimacing, grunting, and moderately severe dysarthria and dysphagia. All four limbs were hypotonic with decreased tendon reflexes and flexor plantar responses. Peripheral arterial pulses were palpable in all distal extremities. She was in a state of mild euphoria with a mini-mental state examination (Chinese version) score of 29/30.[1]

The results of investigations were as follows and the figures in parenthesis are the normal ranges: hemoglobin 201.0 g/L (113–151 g/L), hematocrit 0.658 L/L, (0.335–0.450 L/L), mean corpuscular volume 89.4 fL (82.6–99.1 fL), oxygen saturation 93.7%, uric acid 390 umol/L (155–357 umol/L), total bilirubin 52.1 umol/L(3.4–25.0 umol/L), direct bilirubin 10.6 umol/L (0–8.0 umol/L), indirect bilirubin 41.5 umol/L(0–17.0 umol/L).

Correspondence: Wenshi Wei
Department of Neurology, Huadong Hospital, Fudan University, 221 West Yan An Road, Shanghai 200040, People's Republic of China
Tel +86 21 138 1839 6027
Email wenshiwei@medmail.com.cn

The bone marrow aspirate and trephine biopsy specimens were hypercellular for the patient's age, with biopsy cellularity approximately 80%; erythroid hyperplasia was present. The granulocyte/erythroid (G/E) ratio was 1:2, megakaryocytic 8–10/higher power field (HPF). Reticulin was graded 1 according to a modified Bauermeister scale.[2] Serum erythropoietin was 5.74 mIU/mL (4.3–29 mIU/mL). Results of the following investigations were normal: vitamin B12, calcium concentrations, thyroid function, tests for syphilis and HIV. Retrospective review of laboratory test results revealed an elevated hemoglobin and hematocrit levels 7 months prior to the development of chorea. Apart from mild ischemic white matter lesions, no abnormalities were seen on magnetic resonance imaging. Chest computed tomography demonstrated slight pulmonary arterial dilation. Genetic analysis showed JAK2V617F in her peripheral blood granulocytes. A diagnosis of polycythemia vera was established according to the World Health Organization (WHO) criteria for polycythemia vera (PV).[3]

She was treated with hydroxyurea 1,500 mg and clopidogrel 50 mg daily which led to resolution of her chorea within 4 days.

Discussion

Polycythemia occurs more often in men (3:2), but polycythemia chorea is seen predominantly in women (5:2), usually after the age of 50, with an overall prevalence of 1% to 2.5%. Neurologic complications have been reported in up to 80% of untreated PV patients, including headache, vertigo, stroke, visual symptoms, tinnitus, and paresthesia.[4,5] Chorea can be caused by many conditions such as hereditary, autoimmune and metabolic/toxic factors (Table 1).[6–10] In such cases, the onset of chorea can be either abrupt or insidious, and is typically generalized. Careful assessment and investigation leads to diagnosis and treatment of the underlying cause. Chorea is a rare complication of PV (0.5%–5%). PV-associated chorea (PVC) has only rarely been reported as the presenting complaint, primarily in older females, and typically involving the orofaciolingual and appendicular musculature. PVC often resolves with phlebotomy or cytoreductive therapy.[4,5,11,12]

The onset of chorea has been linked to worsening hematological values, progression of PV, and the resolution of the chorea has been related to treatment of PV; as in this case.[6] Usually there is no recurrence of chorea or other neurological symptoms after treatment. However, there is a single case report of an elderly woman with subacute hemichorea who was found to have JAK2V617F hematopoiesis but with normal a hematologic profile.[13]

Table 1 Common causes of chorea in the elderly

Vascular: infarction; hemorrhage; arteriovenous malformation; Moyamoya disease; polycythemia vera
Hereditary: Huntington's disease; spinocerebellar ataxia 1–3; pseudohypoparathyroidism; pseudopseudohypoparathyroidism; dentatorubropallidoluysian atrophy; Fahr's disease
Autoimmune: systemic lupus erythematosus; polyarteritis nodosa; Behcet's disease; Sjögren's syndrome; Sydenham's chorea; antiphospholipid syndrome; multiple sclerosis; celiac disease
Metabolic: hyperthyroidism; hypocalcemia (hypoparathyroidism); hypoglycemia; hyperglycemia; hypernatremia; hyponatremia; renal failure; thiamine deficiency; niacin deficiency; hepatocerebral degeneration
Drug induced neuroleptics: antiparkinsonian drugs; neuroleptic drugs; oral contraceptives; anticonvulsant drugs (phenytoin, phenobarbitone, ethosuximide, carbamazepine, valproate); steroids; opiates; tricyclic antidepressants; lithium; digoxin; cocaine
Toxins: alcohol (intoxication and withdrawal); carbon monoxide; manganese; mercury; thallium; post-anoxia
Infectious: Sydenham's chorea; encephalitis lethargica; various other infectious and postinfectious encephalitis
Neoplasia: basal ganglia involvement; paraneoplastic syndrome
Other: senile chorea

The pathophysiology of chorea due to polycythemia is far from clear. Sluggish cerebral blood flow, particularly reduced in the basal ganglia, and impaired oxygen transport probably play an important part in the pathogenesis.[14] The most important determinant of the viscosity of whole blood is the packed cell volume, and an inverse relationship can be shown between cerebral blood flow and packed cell volume.[15] It has also been hypothesized that dopamine receptor hypersensitivity resulting from estrogen deficit in postmenopausal women and, possibly, an excess accumulation of dopamine, due to platelet congestion in cerebral vessels are also reasonable mechanisms.[6,8,11] It has also been suggested that the development of PVC is associated with a reversible alteration in the corticobasal ganglia metabolism and disturbed dopaminergic function.[16]

We suggest that patients aged over 50 years, especially females, presenting with chorea should have a full blood count to exclude PV. Prompt diagnosis and treatment of PV will lead to resolution of the chorea and reduce the risk of deep vein thrombosis, pulmonary embolism, stroke, and other serious complications.[6] In those with a known diagnosis of PV, the physician should be aware that the onset of chorea usually means that the hematological variables are deteriorating.

Acknowledgments

The authors would like to thank Dr Duncan Forsyth of the Geriatric Medicine Department, Cambridge Hospital, UK; and Dr Hongdi Zhang of the Hematology Department, Huadong Hospital, Fudan University, People's Republic of China for their contributions.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res*. 1975;12(3):189–198.
2. Kuter DJ, Mufti GJ, Bain BJ, Hasserjian RP, Davis W, Rutstein M. Evaluation of bone marrow reticulin formation in chronic immune thrombocytopenia patients treated with romiplostim. *Blood*. 2009;114(18):3748–3756.
3. Thiele J, Kvasnicka HM. The 2008 WHO diagnostic criteria for polycythemia vera, essential thrombocythemia, and primary myelofibrosis. *Curr Hematol Malig Rep*. 2009;4(1):33–40.
4. Kremyanskaya M, Mascarenhas J, Hoffman R. Why does my patient have erythrocytosis? *Hematol Oncol Clin North Am*. 2012;26(2):267–283, vii–viii.
5. Silverstein A, Gilbert H, Wasserman LR. Neurologic complications of polycythemia. *Ann Intern Med*. 1962;57:909–916.
6. Janavs JL, Aminoff MJ. Dystonia and chorea in acquired systemic disorders. *J Neurol Neurosurg Psychiatry*. 1998;65(4):436–445.
7. Suchowersky O, Muthipeedika J. A case of late-onset chorea. *Nat Clin Pract Neurol*. 2005;1(2):113–116; quiz 117.
8. Mas JL, Gueguen B, Bouche P, Derouesné C, Varet B, Castaigne P. Chorea and polycythaemia. *J Neurol*. 1985;232(3):169–171.
9. Heathfield KW. Polycythemia and chorea. *Br Med J*. 1968;1(5586):250.
10. Nazabal ER, Lopez JM, Perez PA, Del Corral PR. Chorea disclosing deterioration of polycythaemia vera. *Postgrad Med J*. 2000;76(900):658–659.
11. Bruyn GW, Padberg G. Chorea and polycythaemia. *Eur Neurol*. 1984;23(1):26–33.
12. Midi I, Dib H, Köseoglu M, Afsar N, Günal DI. Hemichorea associated with polycythaemia vera. *Neurol Sci*. 2006;27(6):439–441.
13. Lew J, Frucht SJ, Kremyanskaya M, Hoffman R, Mascarenhas J. Hemichorea in a patient with JAK2V617F blood cells. *Blood* 2013;121(7):1239–1240.
14. Young AB, Penney JB. Neurochemical anatomy of movement disorders. *Neurol Clin*. 1984;2(3):417–433.
15. Hawker K, Lang AE. Hypoxic-ischemic damage of the basal ganglia. Case reports and a review of the literature. *Mov Disord*. 1990;5(3):219–224.
16. Huang HC, Wu YC, Shih LY, Lo WC, Tsai CH, Shyu WC. Reversible abnormal functional neuroimaging presentations in polycythemia vera with chorea. *J Neurol*. 2013;258(11):2054–2057.