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Case Report

A case of stroke secondary to iron deficiency anemia in a young female patient

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ABSTRACT

In this article, we are reporting a case of acute stroke that occurred in a young patient with iron deficiency anaemia (IDA). There are only a few cases where the association between IDA and stroke has been established. The possible mechanisms behind the relation between IDA and stroke are anaemic hypoxia-induced to the brain, hypercoagulable state secondary to IDA and thrombocytosis secondary to IDA. In this patient, all causes of stroke were ruled out except Iron deficiency anaemia which came out to be the reason for the stroke. A decrease in the amount of haemoglobin in the blood results in decreased oxygen supply to the brain, causing hypoxia to the brain. This, in turn, leads to ischemic stroke. Therefore, diagnosing anaemia in patients and starting treatment as early as possible is important.

Keywords: Iron deficiency anemia, Young ischemic stroke, Hypercoagulable state, Blood transfusions

INTRODUCTION

Ischemic strokes are prevalent in people over 65 years of age.[1] Here we present the case of a 23-year-old patient who suffered from an ischemic stroke. The patient had severe iron deficiency anaemia (IDA). This is an unusual situation. IDA is a cause of stroke, usually fatal and seen only in children.[2] In this article, we reported that IDA can cause stroke in young adults. In the minds of most doctors, IDA isn't typically associated with stroke. Because IDA is a frequent disease in young adults, early diagnosis and management of IDA must be the utmost important step taken for young patients with a stroke if other causes have been ruled out.

CASE REPORT

After being unconscious while in class, a 23-year-old woman arrived at the hospital. A feeling of dizziness and blurred vision preceded the event. Witnesses to the incident said they didn't notice any seizures. She recovered consciousness within a few minutes and was aware and responsive. There was no evidence of trauma. She supported the continuation of dizziness, blurred vision, and photophobia. She also admitted to some arm and leg weakness on her right side.

She had diminished power in her right upper extremity on physical examination but a normal central nervous system (CNS) examination. A preliminary computed tomography (CT) head revealed no ischemia alterations. However, severe anaemia was discovered in the lab, with a haemoglobin (Hb) of 3.8 mg/dl and a platelet count of 540, indicating reactive thrombocytosis.

Serum iron was 16 g/dl, total iron binding capacity 470 g/dl, iron saturation was 7%, and serum ferritin was 40 ng/ml. The red cell distribution width was 17%, and mean corpuscular volume (MCV) was 60 fL/cell. Among other diagnostic tests, white blood cell (WBC), lipids, urea, and creatinine levels were all within acceptable ranges. Menorrhagia was discovered in the past, with evaluation for near syncope and giddiness. There was no active bleeding on presentation. Fever of low grades, confusion,

fatigue, and mental instability complicated her clinical course even more.

On examination, she had deteriorating right upper limb power, dysmetria bilaterally, and positive Romberg sign, all of which were important neurological findings. Her symptoms were not due to infection, according to a lumbar puncture. At the time, a magnetic resonance imaging (MRI) revealed non-hemorrhagic infarcts in both the cerebellum and the right occipital lobe. A brain MRA ruled out the presence of arterial dissection or thrombus formation. Other causes of thrombophilia like factor V Leiden mutation, ANA positivity, antithrombin III deficiency, homocysteine levels, vitamin B12 level, Hb electrophoresis, protein C and S deficiency, lupus anticoagulant and cardiolipin antibody were all ruled out.

The patient underwent repeated blood transfusions and improved her haemoglobin levels. To rectify the IDA, the patient was given an intravenous iron infusion and ferrous sulfate 325 mg thrice daily. With concurrent inpatient physical therapy, her neurological function improved over 14 days. In the following months, his iron saturation and serum ferritin levels improved. Unfortunately, neuroimaging was not done.

DISCUSSION

Almost half of all anaemia cases in the globe are caused by IDA. It affects 2–4% of nonpregnant women aged 12–49 years and 2–5% of men and women of post-menopausal age.[3,4] Poor food intake, iron absorption issues, and bleeding can all contribute to IDA. The GI and GU systems are also possible causes of blood loss. Usually, strokes occur in people above 65 years old.

On the other hand, patients under the age of 65 account for about 25% of all strokes. Hematologic illnesses, disease of connective tissues, misuse of substances, trauma, and cardioembolic disease are some of the most common causes of these strokes. The association between IDA and stroke is better established in the pediatric age group than in adults. IDA has been linked to ischemic heart disease in several case studies. CVA or venous thrombosis in youngsters (between 6 months and 1.5 years) in cases of severe viral infection.[5-7] Moreover, there are extremely few cases reported in young adults.

Akins et al described severe Iron deficiency anaemia secondary to excessive bleeding P/V, carotid artery thrombosis, and stroke induced by thrombus in 3 women whose ages were 20, 39, and 44 years in a three-case report series.[8] A study conducted by Caglayan et al reported TIA related to carotid artery thromboembolism in severe IDA, hypothesizing that microcytosis induced by IDA and thrombocytosis results in a hypercoagulable state.[9] Endothelial damage is promoted by increased vascular supply to the brain, which produces thrombus. Because of reduced oxygen-carrying capacity in the circulation resulting in decreased supply of oxygen to the brain, hypoxia from severe IDA is also thought to be one of the causes of stroke.

Huang et al found increased death within 3 years among patients who had IDA at admission during the first stroke from an ischemic event related to an atherosclerotic event in a study.[10] This emphasizes the need for the identification and correction of IDA in the context of ischemic stroke since it can improve the condition of patients.

CONCLUSION

In this case, she was 23 years old at the time of his ischemic stroke, which is noteworthy because a full diagnostic work-up revealed no identifiable explanation other than severe IDA. This article is significant because IDA is not a common cause of ischemic stroke in young individuals. This emphasizes the need for early detection and management of IDA in young patients, especially after other common causes of stroke have been ruled out by complete work-up.

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