Case Report

Granulomatosis with polyangiitis presenting as acute ischemic stroke- A case of an unusual presentation

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Abstract

Ischemic stroke can be a rare atypical presentation of granulomatosis with polyangiitis (GPA). Awareness of this entity is vital when a clinician evaluates a patient for the aetiology of the ischemic stroke. We report a case of a 48-year-old female who presented with acute ischemic stroke and the etiology was found to be related to GPA. She was diagnosed according to the serological markers and MRI brain findings. Correct disease diagnosis is essential, as immunosuppressive therapy can improve the prognosis.

Keywords: Granulomatosis with polyangiitis, Wegener's granulomatosis, Acute ischemic stroke

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Introduction

Granulomatosis with polyangiitis (GPA) or Wegener's granulomatosis is a small to medium vessel vasculitis associated with cytoplasmic anti-neutrophil cytoplasmic antibody (C-ANCA). It can present as a multi-system disease [1]. The most common clinical manifestations are pulmonary hemorrhage, pauci-immune glomerulonephritis and nasal septal destruction, which leads to saddle nose deformity. Neurological involvement can be mainly seen as peripheral nerve involvement instead of central nervous system (CNS) involvement, which is rare [2]. Here we present a case report of a patient diagnosed with GPA who presented with an acute ischemic stroke.

Case report

A 48- year- older woman from Anuradhapura presented with sudden onset of right-side upper limb and lower limb weakness for 2 hours duration. She has diabetes mellitus which was well controlled with oral hypoglycemic agents, hypertension which was also optimized with drugs and ischemic heart disease. However, she has been functioning well. On examination, she was a thin-built woman with a blood pressure of 90/60 mm/Hg and a pulse rate of 76 bpm, which is regular. There were no carotid bruits. On neurological examination, her GCS was 15/15. There were no gaze palsies. Her right-side upper limb and lower limb power were reduced, 3 out of 5 on the Medical

Research Council (MRC) power scale. Babinski's sign was positive on the right side. Within 2 hours from the onset of symptoms, an urgent NCCT brain was taken, and intracranial haemorrhage was excluded. There were no early signs of stroke either. On admission, her capillary blood sugar level was 114mg/dl. The initial NIHS score was 11 and urgent thrombolysis was done with intravenous alteplase after excluding the contraindications. Intravenous thrombolysis was successful, and her weakness improved by NIHS score from 11 to 0. Repeated NCCT brain following thrombolysis did not show any hemorrhagic transformation.

As the patient had completely recovered from the stroke, we evaluated the patient to find an aetiology to prevent further strokes. An echocardiogram was performed and excluded any cardiac source of thromboembolism. A Carotid artery duplex scan was done, and there was no significant stenosis of carotid arteries. Left maxillary sinus opacity was also evident in the NCCT brain. We referred the patient to an ENT surgeon for rigid nasal endoscopy, which revealed a large amount of crusted necrotic debris with an area of unhealthy mucosa. As the results were inconclusive, left-side functional endoscopic sinus surgery (FESS) was done, which revealed nasal septal perforation with healthy edges, which was suggestive of vascular origin. Moreover, the biopsy was suggestive of chronic inflammation.

With the above findings, the patient was investigated for vasculitis. Her ESR was 47, and her CRP was 10.2mg/dl. Her Full blood count showed WBC 9.09 x10^9/l HB 9.6 g/dl, and PLT 316 x 10^9/l and her urine full report (UFR) revealed 20 to 25 red blood cells with 5% of dimorphic red cells. However, her serum creatinine level was 96 µmol/L which was in the normal range. Her chest X-ray showed an opacity in the left lower lobe, and HRCT of the chest reported it as a soft tissue nodule. Her cytoplasmic anti-neutrophil cytoplasmic antibody (C-ANCA) was positive, and her perinuclear cytoplasmic anti-neutrophil cytoplasmic antibody (P-ANCA) was also positive. Then magnetic resonance imaging (MRI) brain was done to evaluate the extent of the infraction, which revealed a sub-acute infraction in the left postcentral gyrus (Figure 1A) and a small infarction in the right occipital region. Those two infractions were in two vascular territories, the nature and the distributions of the infraction were suggestive of cerebral vasculitis as the etiology.

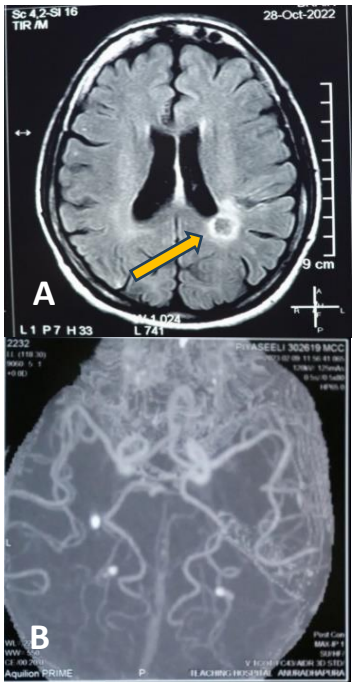

Figure 1: (A) MRI/FLAIR images showing left sub-acute infraction in post central gyrus (B) Axial CT angiogram showing wall irregularities with beaded appearance of bilateral MCA.

To assess her cerebral vasculature, CT cerebral angiogram was done, and it showed wall irregularity with a beaded appearance of bi-lateral middle cerebral arteries, which raises the possibility of vasculitis (Figure 1B).

Considering the above clinical, biochemical and imaging findings, a diagnosis of granulomatosis with polyangiitis (GPA) was made. Based on this, the treatment was started with immuno-suppressive therapies, which include intra-venous methylprednisolone pulses for three days followed by an oral prednisolone tapering regime and intra-venous cyclophosphamide 6-dose-regime with azathioprine. With the above treatment patient's condition was improved, and her creatinine value remained normal while active sediment from the urine was cleared. The patient was discharged from the ward with a tapering-off regime of prednisolone (1 mg/kg/d), azathioprine (2mg/kg/d), aspirin(150mg/d) and atorvastatin (40 mg/d). She is in good health and getting followed up at the medical clinic.

Discussion

Ischaemic stroke is a rare presentation of GPA. This case highlights the importance of considering rare causes for ischaemic strokes such as GPA (a medium vessel vasculitis) especially when the NCCT brain of an ischaemic stroke patient shows a sinus pathology as an incidental finding.

GPA is a small to medium vessel granulomatous vasculitis associated with cytoplasmic anti-neutrophil cytoplasmic antibody (c-ANCA), which can be seen as a localized disease (only with lung involvement) or multi-system involvement. The serological marker c-ANCA is positive in 65% to 75% of patients, but the most specific marker is ANCA directed against protease 3 (ANCA-PR3), which can be seen in 90-95% of GPA patients [3]. Perinuclear-ANCA(p-ANCA) can be positive in 10- 15% of patients. Our patient tested positive for both c-ANCA and p-ANCA.

The most common clinical manifestations of GPA include constitutional symptoms such as fever, fatigability, weight loss and recurrent purulent nasal discharges. Nasal septal perforation is also a prominent feature which leads to saddle-nose deformity. Lung involvement, which leads to pulmonary haemorrhages, and pauci- immune glomerulonephritis are well-known clinical manifestations.

Neurological manifestations are not uncommon in GPA. It is usually associated with the peripheral nervous system, which can be sensory, motor, mixed-type polyneuropathy or mononeuritis multiplex [4]. However, CNS involvement is not commonly reported. According to the medical literature, CNS manifestations were documented as cranial nerve involvements, headache, vestibular syndromes, and hearing impairments [4]. Ischemic stroke remains a rare atypical presentation of GPA; however, it can be a presenting symptom or complication of GPA [5].

In this patient, the presenting symptom was an acute ischemic stroke. Her MR cerebral angiogram showed features supporting cerebral vasculitis leading to an ischemic stroke.

As the patient had a history of ischemic heart disease, the patient was evaluated with a coronary angiogram, which revealed triple vessel disease with critical left main coronary artery occlusion. This finding also correlates with recent studies suggesting small vessel vasculitis, including GPA itself, to be a risk factor for cardiovascular events [6].

Treatment for GPA mainly focuses on immunosuppressive therapy. Induction of immunosuppression is achieved through a combination of a glucocorticoid (prednisolone) and an alkylating agent (cyclophosphamide). Then maintenance therapy is done with either azathioprine or mycophenolate mofetil [7].

As our patient presented with an ischemic stroke, a cerebrovascular event, the patient started antiplatelet therapy as a secondary prophylaxis to prevent another stroke. Evidence suggests that antiplatelet therapy has a role in preventing cerebrovascular events in patients with vasculitis [8].

Conclusion

Ischemic stroke can be a presenting symptom of the GPA. When an ischemic stroke patient is evaluated for aetiology if it is more likely to be related to vasculitis, it is essential to do a comprehensive vasculitis evaluation, including serological markers and an MRI/MRA brain, to increase the diagnostic accuracy. Furthermore, immunosuppressive therapy and antiplatelet drugs will improve the patient's outcome.

Consent: The patient has given verbal and written consent to publish her history and images.

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