



Stroke as an Unorthodox Presentation in Multiple Myeloma

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Abstract

Acute ischemic stroke remains the common complication among patients with cancer. However, studies done to determine the relationship between multiple myeloma and ischemic stroke are limited and the association between them remains unclear till date.

Here we presented a case of elderly male who presented with recurrent strokes, when investigated extensively, found to have cardiac amyloidosis and blood investigations which raised the suspicion of multiple myeloma, which was proven by the appropriate investigations.

This case signifies the importance of promptly identifying the main etiology in every case of stroke which is more important in patients with recurrent stroke. Etiology often includes a malignancy in its early stages but keen observation and correct selection of treatment is required for further prevention of stroke along with the management of main etiology.

Keywords- Stroke, Multiple Myeloma, Amyloidosis, Platelets

Introduction

Acute ischemic stroke remains the common complication among patients with cancer. However, studies done to determine the relationship between multiple myeloma and ischemic stroke are limited and the association between them remains unclear till date. Although stroke is a 5th leading cause of disability-adjusted life year in India. The etiology behind stroke must be investigated thoroughly to prevent recurrent stroke by tackling the core underlying etiology. Here, we are presenting an interesting case of a 62-year-old male patient presenting with recurrent strokes.

Case Summary

Our patient presented to the emergency room with complaints of sudden onset inability to speak but able to understand spoken language for 12 hours. There was no history of loss of consciousness, seizure or headache. The patient had a past history of left hemiparesis due to right middle cerebral artery infarct 7 months back and was on regular treatment. On examination, vitals were stable with regular pulse and normal blood pressure. Pupils were normal size with normal reaction to light bilaterally. Speech evaluation was suggestive of motor aphasia. The motor examination revealed no motor deficits and plantar were flexors bilaterally.

On chest examination, bilateral air entry was normal, cardiovascular and per abdominal examination revealed no significant findings, no murmur. Magnetic resonance imaging of the brain showed infarct in the left parieto-temporal region while an MR Angiography of his brain and neck and 24-hour Holter monitoring was normal. 2-D echocardiography showed Grade - III diastolic dysfunction with global left ventricular ejection fraction of 35%. Cardiac MRI was planned which revealed with suspicion of cardiac amyloidosis. Routine laboratory revealed hypercalcemia with serum calcium levels of 13.2 mg/dl and creatinine levels of 1.4 mg/dl with a normal GFR. The possibility of plasma cell dyscrasia was considered. A serum protein electrophoresis was done which revealed M spike. Free kappa level was 25.53mg/L (normal levels: 3.3 to 19.4 mg/L), free lambda levels 568 mg/L (normal: 5.7 to 26.3 mg/L) and the ratio was 0.040.[Image 1]

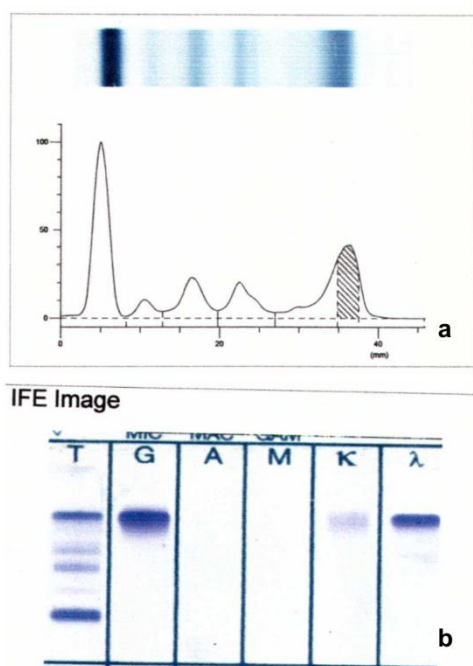


Image 1. a.) "M" protein spike seen in the gamma globulin region; b.) "M" Spike seen in the gamma globulin region is of IgG lambda type
 A Tc99m pyrophosphate SPECT scan was done which revealed the possibility of cardiac amyloidosis. A whole-body positron emission tomography/computed tomography (PET/CT) showed multiple lytic bone lesions. Bone marrow

biopsy showed features consistent with plasma cells dyscrasia with plasma cells increased in number and irregularly distributed in aspiration smears constituting 20% of all nucleated cells.[Image 2]
 Patient was managed on a combination of anti-platelets, statins and diuretics. Patient was started chemotherapy after an oncology consultation. The patient improved significantly with the treatment and was discharged on anti-platelets and anticoagulants. Patient is in outpatient follow-up without any new complaints with improving symptoms.

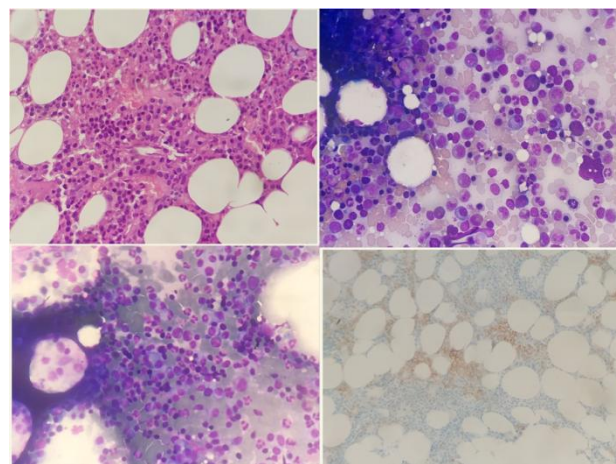


Image 2. Bone marrow aspiration and biopsy showing plasma cells dyscrasia with plasma cells increased in number and irregularly distributed in aspiration smears.

Discussion

Here we presented a case of elderly male who presented with recurrent ischemic strokes, when investigated exhaustively, found to have cardiac amyloidosis and blood investigations which elevated the suspicion of multiple myeloma, which was proven by the appropriate investigations. Multiple myeloma is commonly linked with hyperviscosity, which is a known risk factor for venous thromboembolism. However, it is worth noting that stroke is a relatively uncommon presentation in patients with multiple myeloma. Previous studies have investigated the incidence of stroke in patients with multiple myeloma compared to a control group, and found a higher frequency of stroke in the MM cohort. One study reported a hazard ratio of 1.5

after one year of follow-up and 1.2 after five years of follow-up in patients with multiple myeloma.^[1,2] Thrombosis in patients with multiple myeloma is thought to be caused by several mechanisms, including hyper viscosity, thalidomide therapy, advanced age, immobility, and homeostatic disorders. Hypergammaglobulinemia is the most common cause of both hyper-viscosity and hyper-coagulation. M protein-induced vascular injury may occur through direct involvement of endothelial cells, leading to endothelial injury. Additionally, M protein can compromise platelet function, impair coagulation pathways, and increase the risk of bleeding.^[3]

Lee et al identified additional risk factors including past history of cerebrovascular accidents and serum creatinine levels greater than 2 mg/dL. They also found κ light chain isotype is an independent risk factor for cerebrovascular events, whereas λ light chain isotype found to be increased in only one case reported in the study. In our case, free λ light chain levels were much higher than κ light chain isotype, which was also on the higher side.^[4]

Cardiac amyloidosis coexisting with multiple myeloma carries a poor prognosis. Presence of cardiac amyloidosis can increase the risk of embolic stroke. The proposed mechanism includes the formation of mural thrombus due to stasis of blood and also increased risk of atrial fibrillation due to amyloid fibril deposition.^[5]

There are several interesting aspects to our case. Firstly, the presence of cardiac amyloidosis in the patient may have contributed to the risk of stroke. Secondly, the case emphasises the importance of recognising stroke as a potential initial presentation of multiple myeloma, and recognising the significance of multiple myeloma as a treatable cause of stroke. Lastly, the case underscores the need to consider and thoroughly investigate potential causes of recurrent stroke, such as multiple myeloma in our case, as the management approach may vary depending on the underlying etiology.

Conclusion

Stroke is one of the most common causes of morbidity and mortality in elderly patients. Although the main etiology for stroke is to be identified promptly in every case of stroke, in cases with recurrent stroke it can be challenging to precisely identify the correct diagnosis. Etiology often includes a malignancy like multiple myeloma as in our case, hence awareness and keen observation for the same can lead to early diagnosis and correct selection of appropriate and optimal treatment.

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