

Case Report

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Neuroimages: Ischemic Zone and Tubercular Zone-Two Faces of the Same Coin

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Abstract

Central nervous system tuberculosis (CNS TB) is one of the extrapulmonary manifestations of tuberculosis which poses a great burden in the developing world in the form of high morbidity and mortality if not recognized and treated timely. Vascular complications in infectious diseases including tuberculosis (TB) are of paramount importance as they mimic atherosclerotic lesions of small as well as large vessels. Moreover, mortality in patients with CNS TB increases to threefold if there are vascular complications in the form of stroke.

Keywords: neuroimages; ischemic zone; tubercular zone

Introduction

Central nervous system tuberculosis (CNS TB) is one of the extrapulmonary manifestations of tuberculosis which poses a great burden in the developing world in the form of high morbidity and mortality if not recognized and treated timely. Vascular complications in infectious diseases including tuberculosis (TB) are of paramount importance as they mimic atherosclerotic lesions of small as well as large vessels. Moreover, mortality in patients with CNS TB increases to threefold if there are vascular complications in the form of stroke [1]. The infarction patterns vary from small, medium and large vessel infarction. The small vessel infarction patterns are characteristic in the setting of infection and absence of risk factors for atherosclerosis which are discussed here.

Case Presentation

Case 1

36-year-old male recently diagnosed with miliary pulmonary tuberculosis presented with fever and weakness of left upper and lower limb with upper motor neuron type left facial palsy for 4 days. Diffusion-weighted (DWI) Magnetic Resonance Imaging of the Brain revealed an area of diffusion restriction involving anterior limb of internal capsule, head of caudate (Right>Left) and anterior thalamus suggestive of “Tubercular Zone” infarction (Figure 1).

Case 2

34-year-old male presented with fever and headache for 15 days followed by altered sensorium for 1 day. His Cerebrospinal fluid (CSF) TB Polymerase Chain Reaction (PCR) was positive with lymphocytic pleocytosis (Total cells 90; 85% lymphocytes) and raised proteins (134 mg/dL). MRI Brain DWI sequences revealed diffusion restriction in left posterolateral thalamus, suggesting “Ischemic Zone” infarction (Figure 2).

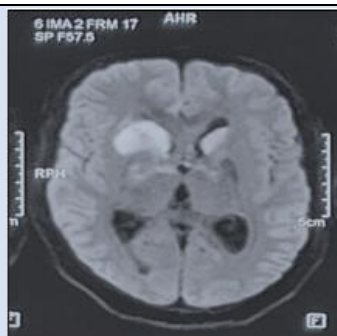


Figure 1: (Right) MRI Brain DWI shows area of diffusion restriction involving anterior limb of internal capsule, head of caudate (Right>Left) and anterior thalamus.

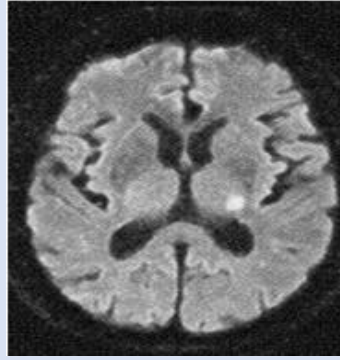


Figure 2: (Left) MRI Brain DWI shows area of diffusion restriction involving posterolateral thalamus.

Discussion

Classically described by Hsieh et al., infarctions in CNS TB follow two patterns: Tubercular Zone (supplied by medial lenticulostriate arteries) which consists of head of caudate, anterior limb and genu of the internal capsule and anteromedial thalamus and Ischemic Zone (supplied by lateral lenticulostriate arteries) which consists of the lentiform nucleus, posterior limb of internal capsule and posterolateral thalamus [2,3]. Infarcts in “Tubercular Zone” are more common as compared to the ischemic zone. The exact pathophysiology is not known but the most common hypothesis for development of these non-atherosclerotic infarcts is attributed to direct infection of the small vessels leading to infective vasculitis, inflammatory infiltrates and subsequent thrombosis in these areas [3,4].

Conclusion

Infarction patterns in patients with CNS TB may vary from small to large vessel infarction. One should look for “Tubercular Zone” infarctions especially while

dealing with patients with CNS TB as these are of prognostic value when considered with CSF and clinical picture.

References

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