

Mastoiditis Presenting as Isolated Lateral Sinus Thrombosis and Venous Infarct in an Adult Female: A Case Report

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ABSTRACT

Mastoiditis is a known cause of cerebral venous thrombosis but rarely presents as an isolated lateral sinus thrombosis (LST) and venous infarct. We report an adult female patient who presented with chronic mastoiditis complicated by LST and venous

infarct, documented by computerised tomography and magnetic resonance venography. This implicates mastoiditis as a potential and important cause of isolated LST and venous infarcts in brain.

Keywords: Lateral Sinus Thrombosis; Mastoiditis; Venous Infarct

INTRODUCTION

Lateral Sinus Thrombosis (LST) was considered a frequent complication of middle ear infection at the beginning of the last century and mortality reached up to 100% in untreated cases [1]. Over the last fifty years, its incidence has greatly decreased due to the widespread availability of antibiotic drugs and mortality has dropped below 10% [2]. Morbidity, related to LST, is approximately 30% and is associated with septic cardiomyopathy, acute respiratory distress syndrome and seizures [3]. Antibiotic resistance has now been recognized as the main factor for the increasing incidence of LST as a complication of acute and chronic otitis [4]. Especially in young adults, LST is now more often seen in association with a generalized hypercoagulable state, inherited or acquired [5, 6].

CASE REPORT

A 50 years old postmenopausal female with insignificant past medical, surgical, obstetric and drug history was admitted to the Postgraduate Department of Medicine in January 2015, with history of intermittent fever and headache for two months. Patient had received various medicines (likely oral antibiotics and analgesics) before she developed multiple episodes of vomiting and

increased intensity of headache which brought her to our hospital. On general physical examination, patient was febrile with normal vital parameters. Systemic examination was normal. Right ear examination revealed tender mastoid process with intact tympanic membrane and no ear discharge. Laboratory investigations showed systemic inflammatory response syndrome, white blood cell count of 15,000/ μ l, haemoglobin of 11 gm/dl and erythrocyte sedimentation rate (ESR) of 120mm/hour. Liver function test, kidney function test and urine examination was normal. Patient was evaluated for possible thrombophilic or vasculitic disorder. Antinuclear antibody, rheumatoid factor, antiphospholipid antibody tests were negative. Factor-V Leiden mutation, ant thrombin III deficiency, protein-c and protein-s deficiency tests were normal. Bone marrow aspiration, cytology and biopsy were within normal range. Computed tomography (CT) scan of the brain and temporal bones without contrast (Figure 1a and figure 1b) was performed revealing dense clot sign of lateral sinus thrombosis and diffuse clouding of the right mastoid air cells and signs of mastoiditis without bone erosion. Patient underwent magnetic resonance imaging (MRI) and magnetic resonance venography (MRV) which confirmed the diagnosis of isolated LST, venous infarct and signs suggestive of mastoiditis (Figure 2a, 2b and Figure 3) respectively.

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Figure 1 (a), (b): Dense clot of Lateral sinus thrombosis on NCCT head

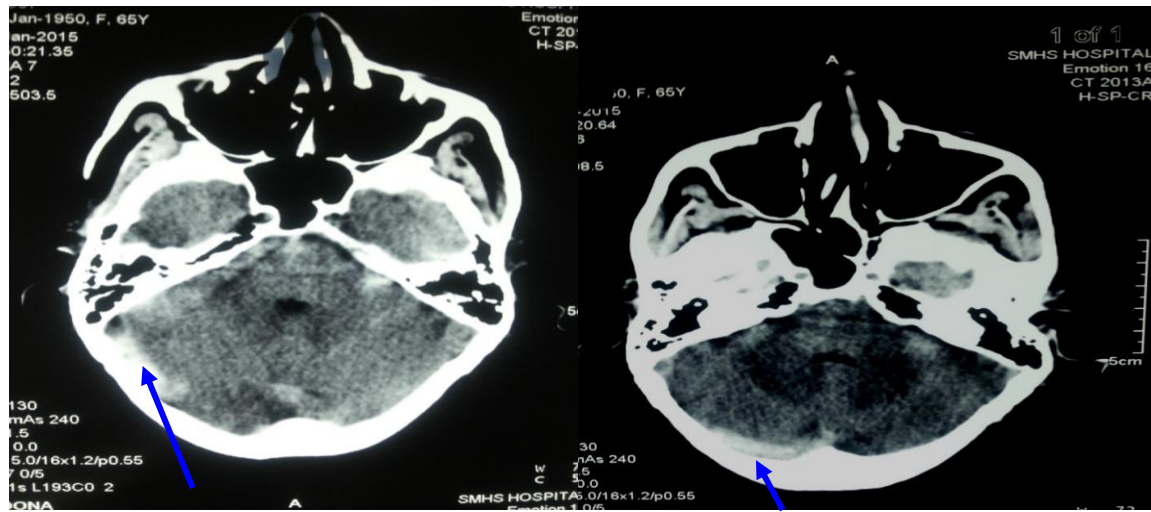


Figure 2 (a): MRI brain showing haemorrhagic infarct

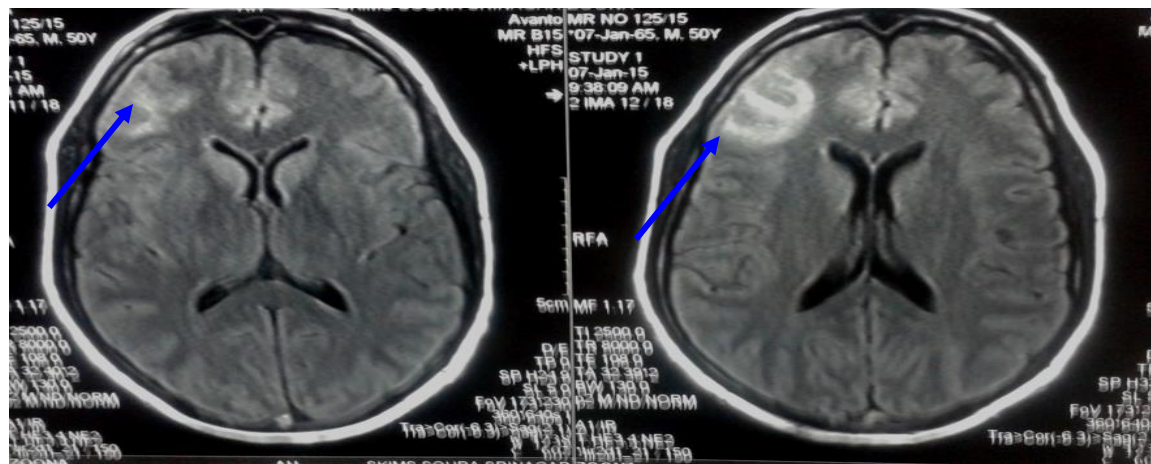
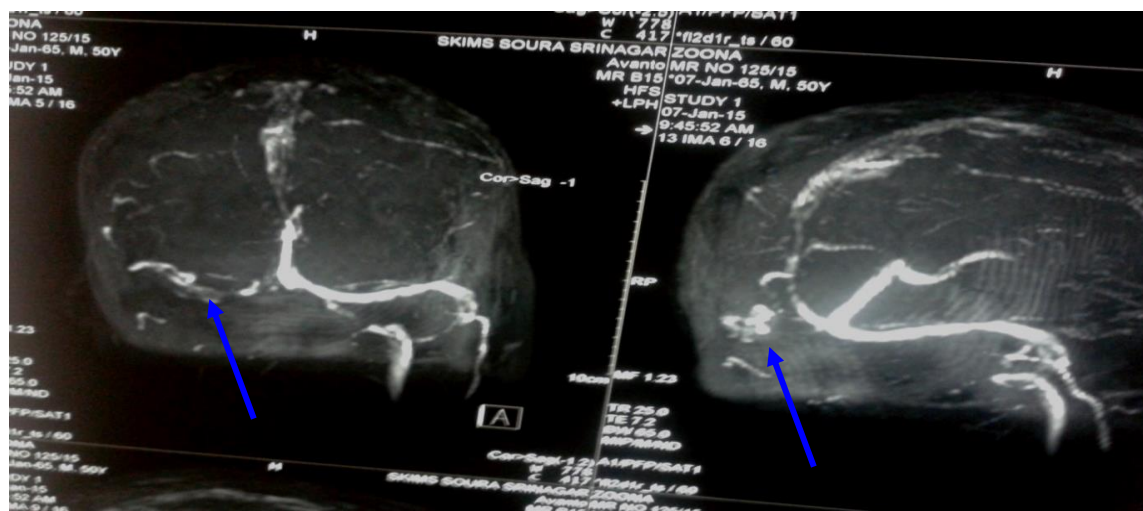


Figure 2(b): MRI brain showing Infarct and lateral sinus thrombosis



Figure 3: MRV showing lateral sinus thrombosis



During hospitalization, patient received intravenous antibiotic therapy, low molecular weight heparin and oral anticoagulants. Her symptoms improved and after two weeks patient was discharged on oral anticoagulation after achieving the target INR and reversal of mastoiditis signs on repeat imaging.

DISCUSSION

LST is usually associated with acute or chronic middle ear diseases. It has been proposed that the propagation of infection from the small venules of the mastoid process into the sigmoid sinus could result in direct spreading of inflammatory process causing the formation of a perisinus abscess [3-5]. Subsequently, adherence of fibrin, blood cells and platelets can produce a mural thrombus. The persistence of inflammation and the increase in thrombus volume might result in an obliterative LST [1]. Hypercoagulable states, inherited (antithrombin III, protein C or protein S deficiency, factor V Leiden mutation or prothrombin gene mutation) or acquired (neoplasm, trauma, autoimmune disorders, neurosurgical interventions, myeloproliferative disease, anti-phospholipid syndrome, pregnancy or use of oral contraceptives) are considered as risk factors in LST [4]. Thus, once LST has been diagnosed, investigations to identify all possible haematological predisposing risk factors are necessary [4]. At least two clinical pictures, related to LST, are described: the septic form and the aseptic form. The first is associated with clear signs of otomastoiditis and is rarely complicated by cerebral infarct. The case described is a typical occurrence of the septic form. The most

common manifestation in patients with LST is fever, which is usually sustained or occurs in a spiking pattern. Other symptoms are headache, nausea, vomiting and meningeal signs. Papilloedema and the Griesinger sign, consisting of oedema and tenderness over the mastoid process (due to the septic thrombosis of the mastoid emissary veins) are often present [1]. LST can also be associated with sixth and seventh nerve palsy, hydrocephalus or signs of thrombus propagation, that can also cause, proximally, jugular bulb and, distally, occlusion of other dural sinuses and then neurological symptoms due to involvement of the lower cranial nerves (IX, X, XI pairs) [2, 4].

In the diagnosis of LST, MRI is considered to have a higher resolution than CT on account of its ability to show low or absent flow in the venous sinuses, clot formation and the presence of inflammation in the brain and meninges [6]. Using MRI, the presence of a thrombus appears as increased signal intensity in T1 and T2 images. MRA is useful in confirming the diagnosis of thrombosis in doubtful cases on MRI. Treatment of LST has recently become more conservative [3]. Anti-coagulant treatment has been proposed to prevent complications associated with thrombus persistence or its possible propagation [4]. In the case presented here, mastoidectomy associated with anti-coagulant treatment, represented the therapeutic approach correlating with extension of disease and local complications.

Isolated lateral sinus thrombosis (LST) is rare but important complication of chronic mastoiditis and may be a presenting complication in some patients. High degree of suspicion is key to

diagnosis. MRI and MRV are useful investigations. Antibiotics and anticoagulation forms mainstay of treatment.

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