Case Report

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An Extra Dural Haemorrhage Following the Treatment of an Atypical Presentation of a Venous Sinus Thrombosis

Mahavishnu Sahadevan*, TayJiann Shyang and Kushanthini Sivaloganathan

Division of Cardiology, Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

***Corresponding author:** Sahadevan M

drmahavishnu@gmail.com

Division of Cardiology, Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

Tel: + 0166307740

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Abstract

This is a case of a 50-year-old female, who presented with a severe throbbing right sided headache, vomiting and fever for 3 days. An initial ct brain was normal, however a Ct venogram revealed a right cavernous sinus thrombosis. Patient was started on low molecular weight heparin and antibiotics however developed an atraumatic extra dural haemorrhage. This is an account of a case of an atypical presentation of cavernous sinus thrombosis which developed a complication of an EDH during the course of treatment.

Keywords: Venous sinus thrombosis; Extra dural haemorrhage; Headache

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Introduction

Cavernous Sinus thrombosis (CST) may be considered rare, though it is a life-threatening condition and can be a challenging task to diagnose despite medical advancement. The treatment involves using antibiotics and anticoagulation. This too has its risks. There have been very few reported cases of an atraumatic EDH following the use of low molecular weight heparin and this is the first case involving a patient with CST. Although the main stay of treatment in CST is with antibiotics, most experts do agree that adding an anticoagulant is beneficial in reducing the morbidity and mortality in these patients.

Case Presentation

A 50-year-old female with no known medical illness presented with a severe throbbing right sided headache associated with tearing and vomiting for the past three days. She also reported having intermittent fever during this time. She denied any other symptoms at the time of review. An initial neurological examination was normal with no focal motor, sensory, or cerebellar deficits, cranial neuropathy, or evidence of raised intracranial pressure. Laboratory studies demonstrated leucocytosis (18.8 × 10^9 cells/L, neutrophil percentage 84%) as well as an erythrocyte sedimentation rate of 70 mm/hour and a C-reactive protein level of 45 mg/dl at the time of presentation.

Imaging studies

An unenhanced CT brain was done turned out fairly normal. In view of the severe headache, we proceeded to do a contrast enhanced CT venogram which revealed a filling defect within the right cavernous sinus and a mildly dilated right superior ophthalmic vein with retro orbital fat steakiness. This was suggestive of a right cavernous sinus thrombosis with an acute right maxillary sinusitis **(Figure 1)**.

A lumbar puncture was also performed, with an opening pressure of 15 cm H_2O; biochemistry revealed an elevated protein level of 0.66 g/L with normal glucose and cultures turned out negative.

The patient was started on low molecular weight heparin and covered with a meningitis dose of intravenous antibiotics. During her admission in the ward, on the fourth day the patient developed diplopia with aright sided 3rd, 4th and 6th cranial nerve palsy. There was a partial ptosis of the right eye, with myosis of the right pupil. Patient's headache persisted throughout, and required morphine as an analgesia. An urgent MRI was done, and it showed distention with filling defects involving right cavernous sinuses with leptomeningeal enhancement over right temporal lobe, indicating a resolving right cavernous sinus thrombosis with changes suggestive of meningoencephalitis. Treatment with antibiotics and low molecular weight heparin was continued.

The following days in the ward, the patient's headache started showing improvement, her diplopia had resolved and she was showing good signs of recovery. Well into the second week of her treatment, she suddenly appeared confused during the morning review. An urgent CT brain was performed and it revealed an atraumatic Extra Dural Haemorrhage **(Figure 2)**.

The low molecular weight heparin was halted, and patient was kept on close monitoring. A CT Brain was repeated after 48 hrs and the EDH started showing signs of resolution. After 5 days, patient was restarted on low molecular weight heparin. She was monitored closely clinically and with repeated Ct scans. After 10 days on low molecular weight heparin, she was overlapped with warfarin targeting an INR between 2-3. A repeated plain ct brain and a CT venogram was done on the second week of her starting warfarin and it showed resolution of the extra dural haemorrhage and cavernous sinus thrombosis. Patient showed a full recovery after 3 months of treatment.

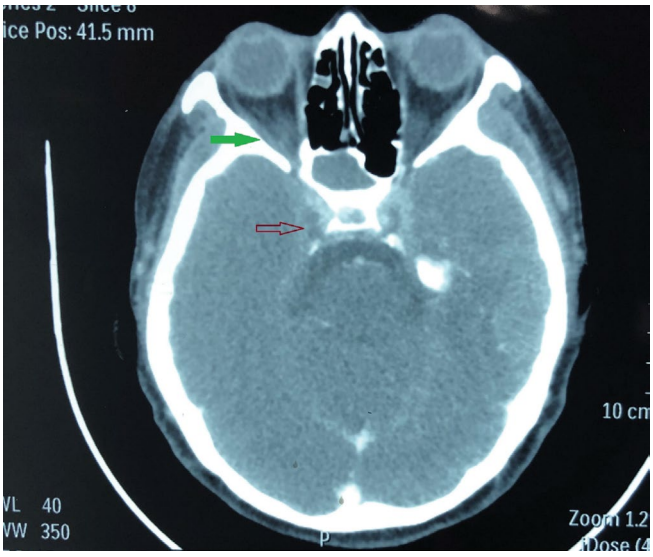

Figure 1 Filling defect in the right carotid sinus (Red arrow), retro-orbital fat streakiness (Green arrow).

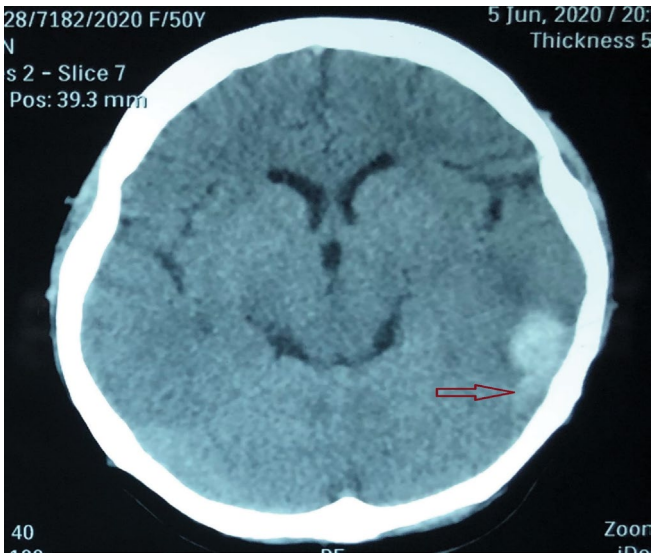

Figure 2 Extra dural haemorrhage (Red arrow).

Discussion

Cavernous sinus thrombosis was first described in the year 1831 [1], it was thought to be a complication from epidural and subdural infections. As time passed, and medicine had advanced, most studies demonstrated that septic cavernous sinus thrombosis (CST) were a result of an acute infection usually originating from the sinuses in an otherwise healthy individual [2,3]. Although these days, with the introduction and widespread use of antibiotics, the outlook of this condition has invariably improved, nevertheless it still carries a high morbidity and mortality with it and should be considered in cases with a strong sense of suspicion.

Patients with CST typically present with severe and usually chronic headaches, and many may not have focal neurological deficits till much later [4]. An unexplained severe unresolving headache usually requires more investigation. Radiography tests such as high-resolution contrast-enhanced CT or MRI as a non-invasive and an efficient diagnostic tool have remarkably assisted clinicians in improving the diagnosis of CST. The direct signs of CST on the contrast-enhanced CT scan include expansion of the cavernous sinus, the convexity of the lateral wall and abnormal filling defects within enhancing CST (septic thrombosis of CST). Indirect signs include concomitant venous obstructions, for example, dilatation of superior ophthalmic vein, exophthalmos, soft tissue oedema, and thrombus in veins and sinuses of cavernous sinus tributaries [3,5].

Due to the rarity of CST, there have been no randomized controlled trials available, and most guides are based on expert opinions. Antimicrobial therapy is indicated for septic CST and broad spectrum antibiotics e.g., third generation cephalosporins are preferred till there is a positive culture. One should consider antifungal therapy if fungal infection is thought to be the aetiology.

Where anticoagulation is concern, most experts agree that low molecular weight heparin is preferred over unfractionated heparin. Retrospective reviews suggest a possible decrease in mortality from 40% to 14% with UFH and a reduction in morbidity, from 61% to 31% when anticoagulation is combined with antibiotics for septic cavernous sinus thrombosis [6].

Conclusion

The European Federation of Neurological Societies (EFNS) recommends three months of anticoagulation in secondary cerebral venous and sinus thrombosis with a transient risk factor, and six to 12 months for idiopathic cerebral venous.

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