

Lateral Sinus Thrombophlebitis: Review of Literature

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SUMMARY

Introduction:

Lateral sinus thrombophlebitis is a very rare and danger complication of otitis media. Lateral sinus thrombophlebitis as a complication of otogenic infection may still pose a serious threat that warrants immediate attention and care. LST should be considered in patients with persistent fever, otalgia and otorrhoea despite receiving antibiotics.

Objective:

To review the literature on Lateral sinus thrombophlebitis and focus on the facts, its management and controversies.

Method:

The literature on Lateral Sinus Thrombophlebitis was basically searched on MEDLINE. Initially there were 47 articles searched from MEDLINE but later on 33 articles were selected to prepare this literature review. After searching the abstract in MEDLINE the author either look for different journals for its full text or search in internet from google.com. While for few articles the authors personally contact the corresponding author for the full text of respected articles and finally got all those 33 full text articles. Articles from 1931 AD to 2004 AD were included in this review. It took around one month to get the full text of all these articles. The article where the authors could not get the full text article was excluded from the study. There are different views regarding this disease since its study is going on. Articles were searched in the MEDLINE using following keywords: Lateral Sinus Thrombophlebitis, Bacteriology, Radiology, Medical and Surgical treatment, role of anticoagulants, complications and controversies.

Literature Review:

Severe generalized fronto occipital headache, earache, nausea, vomiting, diplopia, sixth nerve palsy, loss of visual acuity, hemiparesis and picket fence fevers, were the major signs and symptoms. The bacteriology is a mixed flora with a predominance of gram negative organism. A combination of surgical intervention and antibiotics has reduced the reported mortality but it can be still be high. There is still some controversy regarding the role of anticoagulant therapy and surgical treatment of the thrombus.

Conclusion:

In recent years advanced antibiotics for lateral sinus thrombophlebitis, has decreased the rate and changed the clinical symptoms and its bacteriology. Magnetic resonance imaging along with venography is very helpful in evaluating the patency of lateral sinus. Surgical intervention should be early and aggressive. LST if not diagnosed early, will carry significant morbidity and mortality thus a high index of suspicion is needed.

Key words:

lateral sinus thrombophlebitis, bacteriology, antibiotics, surgical procedures.

INTRODUCTION

Lateral sinus thrombophlebitis as a complication of otogenic infection may still pose a serious threat that warrants immediate attention and care (1). A combination of surgical intervention and antibiotics has reduced the reported mortality but it can be still be as high as 27 % (2). Large series of lateral sinus thrombophlebitis (LST) have been reported from South Africa (3,4) and Iran (5), where access to health care is limited, but LST is rarely seen in western developed countries (6-10). The dramatic drop in the incidence of LST can be attributable to the introduction of antibiotics; earlier diagnosis and prompt effective treatment (11). Complications are now more likely to arise from chronic ear disease or cholesteatoma rather than acute otitis media.

In the era of antibiotics, the presentation of LST has changed from pronounced signs and symptoms to vague and nonspecific symptoms. The decreased incidence and change in presentation requires clinicians to maintain a high index of suspicion to make the diagnosis (11). The association of LST with other intracranial complications is well recognized (4,5).

LITERATURE REVIEW

Presentation

Severe generalized fronto occipital headache, earache, nausea, vomiting, diplopia, sixth nerve palsy, loss of visual acuity, hemiparesis and picket fence fevers, were the major signs and symptoms described in cases of lateral sinus thrombosis before the advent of antibiotics (12,13). Emaciation and anaemia were once considered common findings in sinus thrombophlebitis. It was secondary to the acute process, allowing the hemolytic streptococcus to spread within the blood stream. The mortality is highest in patients with brain abscess, meningitis or multiple intracranial complications but low in those with only a single complication (14).

Bacteriology

The bacteriology of LST has also changed with the use of antibiotics. In preantibiotic era, Pneumococcus and B-haemolytic streptococcus used to be cultured in 90 percent of cases (15). Pseudomonas and proteus species were other common organisms (3). Cultures now characteristically yield a mixed flora reflecting the bacteriology of chronic ear disease: proteus species,

staphylococcus aureus, E. coli, Hemophilus influenzae and anaerobes (16-18). Use of antibiotics in this era had yielded gram negative cultures. The predominance of anaerobic organism might be due to improvement in culture techniques.

Laboratory tests

The diagnosis is made on the basis of high index of suspicion and the radiological and pathological reports and surgical findings. Laboratory tests may be supportive in the diagnosis of LST. Anaemia and leucocytosis are common features. Lumbar puncture will reveal either an elevated pressure or a conclusive Tobey- Ayer test (19). Both the blood and CSF culture may be negative due to use of previous antibiotics but it should be routinely done.

Radiology

The imaging of choice is magnetic resonance angiography (MRA). Angiography and venography are said to be the most definitive methods of demonstrating LST (20,21). MRI is more definitive in confirming thrombus. It may show both an abnormal signal and lack of flow that is likely to be due to venous sinus occlusion by thrombus (22,23). Computerized tomography scan is useful to demonstrate the pathology in the mastoid and cranial cavity and excludes intracranial complications. CT scan with contrast can demonstrate a filling defect in the thrombosed sinus, and ring enhancement or delta sign around a thrombosed sigmoid sinus (20,24,25). CT scan can be non- diagnosed because of bone related artifacts.

Medical Treatment

Broad spectrum intravenous antibiotics should be started to these patients at the earliest. But later this should be adjusted according to blood cultures. The development of antibiotics has led to a decrease of incidence of complications from 80% to 20% (21,26). Besides adequate hydration and correction of any abnormal hematological and biochemical parameters should be corrected before surgery.

Role of anticoagulants

The role of anticoagulation therapy in the treatment of LST is unclear (27). Anticoagulation has been advocated to prevent extension of the thrombus to distal sinuses (27,28). However, it is rarely used now as most infections can be controlled with antibiotics and surgery, and this

tends to prevent thrombus propagating. Anticoagulation therapy may be indicated in selected cases, if there is evidence of thrombus propagation, embolic events and neurological changes. Still there can be non-otological causes of lateral sinus thrombophlebitis (NSLT). This can be due to hypercoagulable states, scalp abscess or following a radical neck dissection (6,29). Treatment of NSLT is anticoagulation.

Surgical Treatment

A modified radical mastoidectomy has been used successfully in the treatment of cholesteatomatous ears presenting acutely with LST (12,15,17,30) with conductive hearing loss. It has the advantage of providing definitive treatment for the patient while avoiding the need for a second procedure. Surgery ensures a better prognosis. A cortical mastoidectomy is sufficient treatment for non cholesteatoma ear disease (31). It allows drainage of the initiating infection and confirms the diagnosis of LST.

Embolization

The appropriate management of thrombus in the sinus is uncertain. Most studies support incision of the sinus and evacuation of the clot (4,5,28). Embolization has been reported in several studies and its incidence ranges from 0 to 33%, with the lung being the most frequent site (23,32). The rate of embolization has markedly decreased with the introduction and improvement in antibiotics (18).

Internal jugular vein ligation

The role of internal jugular vein ligation was commonly performed to prevent septic emboli (15). Metastatic emboli actually occurred four times more commonly after ligation of the internal jugular vein (33). There was a high neck wound infection rate after the internal jugular vein ligation (27). Now-a-days, this procedure is not recommended due to the introduction of antibiotics. It is indicated in specific reasons: when the clot extends beyond the mastoid area, persisting septicaemia and pulmonary complications despite initial treatment with surgery and antibiotics, infection or thrombosis of the internal jugular vein.

CONCLUSION

Lateral sinus thrombosis is a rare but potentially devastating complication of otitis media. LST should be considered in patients with persistent fever, otalgia and

otorrhoea despite receiving antibiotics. Magnetic resonance imaging along with venography is very helpful in evaluating the patency of lateral sinus. The bacteriology is a mixed flora with a predominance of gram negative organism. Surgical intervention should be early and aggressive. Still the role of anticoagulants and embolization is unclear. LST if not diagnosed early, will carry significant morbidity and mortality thus a high index of suspicion is needed.

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