

TEACHING FILES (GRAND ROUNDS)

STAPHYLOCOCCUS AUREUS INFECTION AND INTERNAL JUGULAR VEIN THROMBOPHLEBITIS

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Case Report

A 10 month old male child was referred in view of fever, anasarca and respiratory distress. He was treated with ceftriaxone by referring hospital for 3 days. On presentation to us, he had pallor, was lethargic with heart rate of 140/minute, respiratory rate of 50/minute, had poor peripheral pulses with hypotension. He also had blackish lesion over right great toe and left facial nerve palsy. He was given intravenous fluid boluses and was shifted to intensive care unit for management of septic shock. He was ventilated for respiratory failure and required inotropic support also. Initial investigations showed thrombocytopenia and high CRP of 192 mg/l. Other blood investigations were unremarkable. He was initially started on ceftriaxone, cloxacillin and clindamycin as blood culture grew *methicillin sensitive staphylococcus aureus*. But fever persisted and he had two episodes of generalised tonic clonic convulsions on day 6 of antibiotics. Cerebrospinal fluid (CSF) analysis showed proteins of 144 mg/dl, 9000 cells/cmm with 98% of polymorphs. CSF culture did not grow any organism. Echocardiography showed no vegetations. HIV Elisa was negative. MRI brain was suggestive of subdural effusion in left fronto-parietal region with lacunar infarcts noted in cerebrum. There was right internal jugular vein (IJV) thrombosis extending to involve right distal sigmoid sinus and right cavernous sinus. Low molecular weight heparin was started. He became afebrile after 10 days of antibiotics. Repeat blood culture did not grow any organism. Repeat CSF after 21 days of antibiotics was normal. Antibiotics and heparin were stopped after 21 days and patient was discharged. His facial palsy and toe lesions had improved. He was subsequently lost to follow up.

What is the diagnosis and why is there thrombosis of the IJV?

Discussion

Lemierre's disease, also known as postanginal septicaemia or human necrobacillosis, refers to thrombophlebitis of the internal jugular vein (IJV). (1) Lemierre's syndrome occurs most often when anaerobic bacteria like *Fusobacterium necrophorum* causing throat infection progresses to the formation of a peritonsillar abscess. Rarely Lemierre's syndrome is also caused by other organism, which include *bacteroides fragilis*, *bacteroides melaninogenicus*, *Peptostreptococcus*

species, *streptococcus microaerophile*, *eikenella corrodens* and *staphylococcus aureus*. (2,3) Lemierre's disease often develops as a complication of a bacterial sore throat infection in young, otherwise healthy adults. The thrombophlebitis is a serious condition and may lead to further systemic complications such as septic emboli. (1) When pharyngitis occurs, the physical proximity of the vessels in the lateral pharyngeal space permits extension from the peritonsillar space to the internal jugular vein (IJV). Here they form an infected clot (thrombosis), from which bacteria are seeded throughout the body by the bloodstream and cause clinical manifestations at various sites. This usually occurs in less than a week from the development of pharyngitis. Metastatic infections following the IJV thrombophlebitis occur in 63-100% of patients. The lungs are by far the most common site of metastatic infection in Lemierre's syndrome, followed by the major joints. Other sites for metastatic infections are the liver, muscle, pericardium, brain and skin. (4) Our patient had metastatic manifestations in form of brain involvement.

Diagnosis of Lemierre's syndrome requires identification of IJV thrombosis. (4,5) This is usually an incidental finding on imaging which is generally done to find a source and extension of infection in neck. CT, MRI or Doppler ultrasonography of neck are the imaging modalities commonly used for diagnosis. Screening for metastatic infection is usually required as per the symptoms. Thrombosis from IJV may extend inferiorly upto subclavian vein and superiorly upto cavernous, sigmoid or transverse sinuses.

Mainstay of treatment of Lemierre's disease is prolonged antibiotic therapy and surgical drainage of non-resolving abscesses. Initial choice of antibiotics should be broad spectrum due to polymicrobial nature of the disease and subsequently changed according to the sensitivity of microorganisms from tissue and blood cultures. The duration of therapy is usually 2 to 6 weeks. (5) The use of anticoagulation is controversial and no controlled studies exist. Some recommend use of anticoagulants only if thrombosis extends upto cerebral sinuses or if there is no improvement in symptoms with antibiotics alone. (6,7)

Compliance with Ethical Standards

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Conflict of Interest: None

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