Severe Refractory Arteritis Associated with Bacterial Meningitis

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Disclosures:

- None
Introduction:

- Bacterial meningitis is a relatively common presentation of central nervous system infection in children. Cerebrovascular compromise has been reported during the acute phase of meningitis although meningitis induced-vasospasm or arteritis resulting in ischemic cerebral infarctions is exceedingly uncommon.
Methods:

- We present a case of a 17-year-old male who developed severe cerebral arteritis secondary to meningitis with resulting cerebral ischemia.
We present a case of a 17-year-old male with a past medical history of previous thoracolumbar posterior instrumentation for scoliosis 5 years prior to presentation. He developed high fevers and altered mental status. Subsequent imaging and lumbar puncture demonstrated bacterial meningitis from Streptococcus anginosus, a paraspinal abscess involving previously placed hardware and hydrocephalus. A ventriculostomy was placed for hydrocephalus and intravenous antibiotics were started. Drainage of the abscess and wound washout with removal of spinal instrumentation was performed.
Results:

- He improved and the ventriculostomy was removed. However, five days after initial presentation, patient developed severe lethargy and ventricular drain was replaced.

- Repeat computerized tomography (CT) demonstrated findings suggestive of a new right internal capsular and globus pallidus ischemic infarct.

- A CT-angiogram was performed which demonstrated findings suggestive of vasospasm. A diagnostic cerebral angiogram demonstrated left internal carotid artery (ICA), left anterior cerebral artery and left middle cerebral artery stenosis. Spasmolysis was attempted with intra-arterial verapamil and nicardipine infusion into the supraclinoid ICA with minimal improvement in cerebral arterial flow.

- Repeat magnetic resonance imaging demonstrated new findings of left basal ganglia infarction in addition to right sided basal ganglia infarct.

- Patient was started on intravenous corticosteroids and pressors were initiated for blood pressure augmentation. Patient’s clinical status gradually improved subsequently over the next two weeks.
Results:

Figure 1: DSA demonstrating left ICA, ACA, and MCA stenosis

Figure 2: MRI demonstrating bilateral basal ganglia infarction
Discussion:

- Cerebrovascular complications are a rare manifestation of meningitis especially in the pediatric population.

- In adults, cerebrovascular involvement may be as high at 37% of patients with community acquired meningitis. Aggressive antibiotic therapy and intravenous steroids are known to reduce mortality in severe bacterial meningitis, but consideration must be given to patients with worsening mental status for transcranial doppler or angiographic evaluation. Findings suggestive of vasospasm on angiogram may then be treated with traditional methods of increasing perfusion such as augmented blood pressure and cerebrospinal fluid diversion. There are also case reports in the adult literature demonstrating aggressive treatment for vasospasm and resulting infarcts may lead to increased survival: such as decompressive craniectomy, suboccipital decompression, ventriculostomy, extracranial-intracranial bypass, and angiographic spasmolysis or stenting.

- The infectious etiology of vasospasm may be more difficult to treat as demonstrated by our patient’s poor response to typical anti-spasmodics. The reason for this is multimodal but likely involves direct irritation of the vasculature and reactivity of the vessel walls to inflammatory mediators. Immunosuppressants may then have a larger role in meningitic-induced vasospasm than other etiologies of vasospasm. Further studies examining vascular caliber in pediatric patients with severe bacterial meningitis will lead to improved diagnostic and therapeutic agents in terms of preventing ischemic infarcts secondary to vasospasm.
Conclusions:

- We report the case of severe vasospasm with resulting multiple ischemic infarcts secondary to bacterial meningitis. This patient illustrates an instance where worsening mental status in the context of meningitis may warrant consideration of cerebrovascular vasospasm.
References:


