Bow Hunter’s Syndrome (BHS) is a rare but treatable condition with only five pediatric cases identified in the literature and no reports regarding anesthetic management. 1

BHS is so called because the position assumed during archery can precipitate a stroke in these patients. 2

Pts with BHS experience dynamic vertebro-basilar artery obstruction with extension and rotation of the neck.

Symptomatology is variable and diagnosis is difficult

Median time to diagnosis is 12 months (range 1 week to 20 years)

Presentation for anesthesia before a definitive diagnosis is likely.

Awareness of BHS is needed to improve anesthetic management and outcome for these patients.

A 7 year old boy presented 10 months ago with headaches, right eye pain and double vision for one month.

The neurologist diagnosed ophthalmologic migraine.

He had an EEG and an MRI and MRA of the brain and orbits under GA, all were normal.

Four months later he developed intermittent sinus tachycardia to 200 BPM followed immediately by bradycardia to 50 BPM.

Tachycardia was associated with but disproportionate to the degree of exercise.

Extensive cardiology evaluation resulted in a differential diagnosis of sick sinus syndrome vs autonomic dysfunction.

He was also diagnosed with Brown’s Syndrome by ophthalmology.

After evaluation by endocrinology, and nephrology, he was finally seen by neuroradiology and underwent a provocative cerebral angiogram under GA which revealed the diagnosis.

The provocative cerebral angiogram showed decrease bilateral vertebra-basilar artery flow with neck rotation. (Images 1-3)

Anesthetic for the angiogram study was with mask induction, PIV, then GA with ETT. Throughout induction, care was taken to keep the neck as neutral as possible.

Afterwards, pediatric neurosurgery evaluated the pt and C1-C4 fusion was suggested and referral to Texas Children’s was made for a second opinion because of the rarity of the condition.

Unfortunately, the patient did not return for follow up.

In Bow-Hunter’s Syndrome (BHS), common symptoms include vertigo, drop attacks, visual changes, nausea, limb paresis, ataxia and vertigo.

In pediatric pts, it is caused by congenital anomalies of the cervical spine.

Suspect this condition in patients who present with these symptoms without a known cause.

Diagnosis can be made by Doppler ultrasound and confirmed with dynamic digital subtraction angiography of the posterior cerebral circulation. 2

Anesthetic considerations include:

(1) Thorough preanesthetic neuro exam including the degree of neck rotation that may precipitate symptoms

(2) Anticoagulant management – pt will likely be on anticoagulation and communication with surgery team is needed on stopping the meds in a timely manner prior to surgical procedure.

(3) Head and neck position – ensure maintenance of position that will not exacerbate symptoms.

(4) Hypoplastic vertebral artery or poor collateral circulation - must maintain blood pressure for perfusion

(5) During provocative cerebral angiogram study, one must weigh the advantages/disadvantages of local/MAC vs GA in these pts

Local/MAC: allow neuro exam throughout procedure, but pt may move

GA: loss of ability to do neuro exam, but pt will be reliably still.

Potential treatment modalities:

Conservative: C-collar and anticoagulation

Surgical: Cervical fusion

Endovascular: Stenting of the vessel by interventional radiology.

Bow-Hunter’s syndrome is a condition that might be overlooked by previous providers. It will be important for the anesthesiologist to consider this in appropriate patients, to ensure a good outcome, especially if the procedure requires rotation of the neck under general anesthesia.