The Perioperative Pain Management of Pediatric Patients with Median Arcuate Ligament Syndrome

Alina Lazar M.D., Sophy C Zheng, M.D., Magdalena Anitescu, M.D., Ph.D.

Background

Median Arcuate Ligament (MAL) Syndrome is a rare vascular disorder caused by external compression of the celiac artery and plexus by the MAL, a preaortic continuation of a portion of the diaphragm. Compression results in symptoms of both ischemic and sympathetic-autonomic pain. Clinical symptoms are postprandial pain, nausea and weight loss. The management consists in open or laparoscopic release of MAL, endovascular or surgical revascularization. Manifestation during childhood and adolescence has seldom been described. There are no reports in the literature documenting the perioperative pain management of these patients. Therefore, we sought to retrospectively determine intra- and postoperative pain management in patients who underwent MAL release at one university pediatric hospital.

Methods

After obtaining IRB approval, the charts of all pediatric patients who underwent laparoscopic MAL release surgery between 6/15/09-8/8/11 were reviewed. All patients had previous extensive work-ups excluding other common diseases, and imagistic confirmation with Duplex ultrasound (DUS) and CT angiogram. All surgeries were performed by a single team of surgeons. DUS confirmation of decreased celiac artery velocities was obtained at the end of each surgical intervention. One conversion to open repair was required due to bleeding. All data are presented as mean ± standard deviations.

Twenty seven patients (24 F/3M), averaging 15±2.5 (range 8-17) years and 51±12.5 (range 21-66) kgs underwent elective laparoscopic MAL release. The preadmission pain score was 4.5±3.1 (range 0-10). Ten patients were taking prescription pain medications prior to surgery (opioids, gabapentin, pregabalin, neurontin, and clonidine).

Intraoperative pain management consisted in intravenous opioids (all patients), thoracic epidurals (3 patients), ketamine infusions (6 patients) and precedex infusion (1 patient). Postoperatively, pain control was achieved with IV Patient Controlled Analgesia (PCA) (18 patients), Patient Controlled Epidural Analgesia (2 patients) and intermittent opioids boluses (7 patients). The PCA duration was 3.2±2.3 (range 1-11) days.

The average duration of hospitalization was 6.3±5.0 (range 2-23) days. Thirteen patients (48%) reported good to excellent pain relief. Seven patients (25%) had no pain improvement and were subsequently offered celiac block and/or revascularization procedures.

Results

One of the 2 patients who had celiac blocks had resolution of pain. No follow-up data was available for 7 pts (25%). Taking prescription pain medications prior to surgery significantly correlated with use of PCA longer than 3 days (p value 0.01). Intraoperative administration of ketamine significantly correlated with POD1 pain score less than 5 (p < 0.03).

Conclusions

The pain management of patient with MALS is challenging. Preexisting chronic pain, frequently neuropathic in nature and prior consumption of analgesic medication set the stage for a hyperalgesic response to surgical injury. Multimodal pain control strategies are warranted.

References:
Anesthesiology 2005;103:813-2:272-90
J AM Coll Surg, 2013 Feb;216(2)