A Perioperative strategy for the placement of a thoracic epidural in a pediatric patient on high dose enoxaprin.

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Introduction: Thoracic epidurals are the gold standard for the management of postoperative pain in a patient having a thoracotomy. The placement of neuraxial anesthesia in a patient on chronic anticoagulants requires a clearly defined perioperative plan that balances the risk of a thrombotic event with the obvious and potentially devastating risk of a spinal hematoma. It is critical that the surgeon, hematologist and anesthesiologist agree on a plan and that the patient and/or parents fully understand these risks and accept the proposed plan.

Case Report: A 15 year-old male with metastatic osteosarcoma presented for bilateral thoracotomies for metastatic lung tumor excision. The osteosarcoma was diagnosed in August 2005. Following chemotherapy, he had a left above knee amputation in November 2005. His subsequent course was complicated by a right atrial thrombus, renal insufficiency and severe osteoporosis leading to multiple vertebral body compression fractures resulting in a chronic pain syndrome. Relevant preoperative medications included a fentanyl PCA (averaging 10mcg/kg/h), enoxaparin 1.5mg/kg BID (his anti-factor Xa level =0.58 IU/ml; target treatment levels- 0.3-0.6 IU/ml). A preoperative echocardiogram showed the thrombus to be stable. The mother was adamant that some form of regional anesthetic technique be used for postoperative pain management because her son had significant unacceptable pain after prior staged thoracotomies. No regional analgesia was used previously because of the concerns of a spinal hematoma. Review of his medical record showed the use of four simultaneous infusions- fentanyl, hydromorphone, ketamine and naloxone in an attempt to control his pain after prior thoracotmy.
The enoxaparin was stopped 72 hours prior to surgery, unfractionated heparin (UH) 5000 units sq q8 hours was started 12 hours later and then held on the day of surgery. On arrival to the hospital, labs were checked (Platelet count 345; PT 10.5; PTT 27.5; INR 1.1).The epidural was placed in the OR at theT5-6 interspace with the patient sedated and in the sitting position. The epidural space was located on the second attempt. No blood was aspirated. The catheter was advanced 5cm into the epidural space, taped midline and loaded with 2% lidocaine to confirm proper position and function. The patient was extubated in the OR and recovered in the PICU. Both mother and PICU staff were counseled about early signs of an epidural hematoma. Regular neurological checks were done (q4 hours for the first 48 hours then q6 hours until 24 hours after the catheter was removed). The PICU staff was advised to call neurosurgery and get an urgent MRI if an epidural hematoma was suspected. Twenty four hours following surgery heparin 5000u sc q8 was restarted. The epidural was removed day 7 after checking platelet count and 6 hours after the last dose of UH. 2 hours later the preoperative enoxaparin bid dosing was restarted. The patient and family were satisfied with the overall course, and they thought this hospitalization was a great improvement as compared to the previous experience.

Discussion: The risk of spinal hematoma following the placement of neuraxial anesthesia is 1:220 000 for spinal needles and 1:150 000 for epidural needles. This risk is increased with the use of anticoagulants and NSAIDS; presence of renal and liver disease; insertion of an epidural catheter, difficult placement of the epidural and aspiration of blood on needle placement. We chose to stop the enoxaparin 72 hours prior to surgery (ASRA guidelines suggest at least 24 hours) and start sq heparin as we were concerned about his long term use of the LMWH and his chronic renal insufficiency (enoxaparin is renally excreted). In addition the atrial thrombus appeared stable on echocardiogram. We also suspected his severe osteoporosis could make placement of the epidural difficult so we had an anesthesiologist experienced with both midline and paramedian epidural approaches insert the epidural. To decrease the risk of a spinal hematoma, the use of paravertebral blocks was considered. However the use of single shot injections would have required multiple needle sticks and would not have provided long term postoperative analgesia and we are not proficient in the placement and

management of bilateral paravertebral catheters. In summary, with careful preoperative planning, a well-informed patient/family, and vigilant postoperative monitoring, a carefully selected patient with multiple relative contraindications to the placement of an epidural catheter, can have the benefit of a regional technique when indicated.

References:

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