CLINICAL VIGNETTE

Unusual Cause of Delirium in an Older Patient after Spinal Surgery

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Case

An 85-year-old male presented for an elective lumbar spine laminectomy and discectomy for pain and neurogenic claudication secondary to lumbar stenosis. The patient was initially scheduled for a same-day outpatient surgery. However, he had significant post-operative pain and was admitted under observation overnight for pain control.

The patient also had Parkinson's disease with mild cognitive impairment, tremor and coronary artery disease. He also had benign prostatic hypertrophy, gastroesophageal reflux and remote history of subdural hematoma with evacuation approximately 30 years ago after a motor vehicle accident. His family reports that he was taking carbidopa-levodopa, clopidogrel, gabapentin, primidone, and tamsulosin regularly, and as needed alprazolam and oxycodone. He takes alprazolam at most once a week and reports rare alcohol use. His clopidogrel was held for five days prior to the surgery.

On post-operative day zero, the patient was treated for pain with 0.4mg intravenous (IV) hydromorphone and 2mg IV morphine. On post-operative day one, the patient was treated for pain with 60mg oxycodone, 300-30mg acetaminophen-codeine, 1300mg acetaminophen, 2500mg methocarbamol, 1800mg gabapentin and topical lidocaine with some improved pain control. At that time, his family noticed altered mental status with waxing and waning level of consciousness with disorientation, insomnia, agitation, irritability and visual hallucinations (e.g., grabbing at things that are not there, and stating there is an airplane in the room). The surgical site was intact without swelling, drainage or increased tenderness, but some ecchymoses were noted. He was also noted to have persistent lower extremity weakness despite multiple attempts by physical therapy to mobilize. On post-operative day two, he developed abdominal pain. Abdominal x-ray revealed an ileus and he was started on a bowel regimen with docusate, magnesium hydroxide, polyethylene glycol and bisacodyl suppositories. The ileus resolved, with loose stools on subsequent days. The opioids were reduced and he was started on naproxen, cyclobenzaprine and methylprednisolone in an effort to minimize opioids use. On post-operative day three, he had worsening agitation and pain and was found to have urinary retention, for which a urinary catheter was placed. He was started on quetiapine for delirium without improvement. A geriatric consult was then requested. The geriatrics team met the family at the bedside, distressed as the patient was "not his usual self," with increased irritability and confusion. His wife was in tears, as she feared his cognitive changes would be permanent and the family expressed fear that the patient would not be able to walk again given his weakness.

Repeat magnetic resonance imaging (MRI) of the lumbar spine showed an epidural hematoma from L3 to S1 resulting in severe spinal canal stenosis and near complete effacement of the thecal sac from L3-L5. The patient was taken back to the operating room for evacuation of the hematoma. Hematology was consulted due to concern for intraoperative bleeding that was out of proportion to what was expected. Prothrombin time (PT), International Normalized Ratio (INR), partial thromboplastin time (PTT) and platelet counts were all within normal limits. The excessive bleeding was attributed to platelet dysfunction from recent clopidogrel use that was further exacerbated by initiation of naproxen. Naproxen was discontinued and the patient did not have any further bleeding complications.

After the second surgery, the patient's pain control and mental status improved significantly and his pain medications were tapered. He was able to work with physical therapy for ambulation and was eventually discharged to acute rehab for reconditioning.

Discussion

Older adults are at higher risk of adverse surgical outcomes, including postoperative complications such as delirium and functional decline, requiring higher level of care at time of discharge. The American College of Surgeons and the American Geriatrics Society collaborated to create guidelines for the perioperative care of older patients.[1] The guidelines include topics such as reviewing a patient's goals and treatment preferences, medication review in the context of an older patient and strategies for preventing and treating post-operative complications.

One of the most important aspects of a pre-operative visit in older patients is expectation management of both the patient and family members. In particular, delirium is common in the post-operative period and can be distressing to family and caregivers if there is a sudden change in mental status. The pre-operative visit is a good opportunity to review patient and family expectations and provide advice to prevent delirium. Education about what to expect and delirium prevention

measures including frequent reorientation, familiar faces and objects in the room, and sleep hygiene, can empower patients and families during these vulnerable times of hospitalization.

While polypharmacy, cognitive impairment, advanced age, general anesthesia and multiple comorbid conditions can be enough to predispose patients to delirium, it is also important to be cognizant of other triggers. In this patient, he was unable to explain his specific symptoms to his care team due to his altered mental status, making assessment of his clinical status more difficult. However, the persistent pain despite large amounts of pain medications administered may have been a clue that there was something else causing the delirium. Postoperative bleeding complication rates after lumbar laminectomy in older patients have been reported to be about 5%, with age greater than 85 and multiple comorbidities as possible risk factors.[2] Rates of epidural hematomas in particular are reported to be about 1% after spinal surgery, and known risk factors include perioperative hypertension and pre-operative coagulopathy.[3-6] In this patient, the epidural hematoma and associated pain, mobility impairment, polypharmacy and foley catheter use, in the setting of underlying comorbidities, likely precipitated his delirium.

Furthermore, therapy with clopidogrel may have put this patient at higher risk of bleeding complications. While it is common practice to hold clopidogrel for 5-7 days prior to surgery, there are no definitive guidelines for when to stop the medication preoperatively for an elective procedure.[7] Thus, it is important that we consider other factors, such as the indication for the medication, underlying bleeding risk, and location for the surgery. In particular, even small amounts of bleeding after cardiac, intracranial, or spinal surgeries can result in clinically significant adverse effects.

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