

# ANESTHESIOLOGY™ 2014

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## **Tough Choices: Regional or General Anesthesia in a Very Elderly Patient**

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### **Stem Case and Key Questions Content**

A 94 year old female (5'2" 56kg) presents for percutaneous repair of a left femoral neck fracture sustained after a fall. She is described by her family as highly independent, living alone without assistance, and able to drive herself around town. Her past medical history and medication are listed below:

### **Past Medical History**

A-V nodal disease treated with DDDR pacemaker  
Mild aortic stenosis (peak gradient 15mmHg)  
Mild mitral regurgitation  
Chronic mild diastolic heart failure Hypertension  
Moderate pulmonary hypertension (mean pressure 68mmHg)  
Stroke with residual left sided weakness  
Glaucoma

### **Medication List**

Atenolol 100mg QD  
Calcitonin nasal spray  
Diltiazem CD 240mg QD  
Furosemide 40mg QD  
Potassium chloride SR 10mEq QOD  
Travaprost 0.004% eye drops  
Hydrocodone/Acetaminophen 5:500mg BID  
Simvastatin 40mg QD

### **Laboratory Studies**

Her laboratory studies show a hematocrit of 37, Platelet count of 202, Creatinine 1.2; Potassium 4.1, INR 1.0

You introduce yourself as the attending anesthesiologist who will be providing the anesthesia for her operation. She tells you she was evaluated by the anesthesia resident call team overnight and that she prefers an epidural-based anesthetic as she is quite worried about the effects of general anesthesia on her cognitive function. She tells you she has a close friend in her age group that lives independently. Recently this friend underwent general anesthesia for minor surgical procedure and was unable to continue living alone as a result of a decline in her

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cognitive function.

*What is the risk of post-operative cognitive dysfunction in this patient population after a general anesthetic?*

*After a regional anesthetic?*

*What type of anesthetic are you planning for this patient given her preference to avoid general anesthesia?*

*What are your concerns regarding an epidural anesthetic versus a general anesthetic?*

You decide to place a lumbar epidural catheter in the pre-op holding area with the plan of using this catheter as the primary anesthetic, and continuing to use it for post-operative analgesia. Epidural catheter placement is uneventful and she is able to undergo the percutaneous femur repair under epidural anesthesia with fentanyl 50mcg iv for sedation. She arrives in the PACU in good spirits, in no pain. You access your hospital's electronic drug ordering system to order a PCEA infusion, and the computer suddenly flashes you a warning indicating the patient is on ticlodipine.

*What is ticlodipine?*

*Is it a problem in the setting of neuraxial anesthesia?*

*What should you do now?*

A colleague recommends that you remove the catheter.

*What is the risk of epidural hematoma in this patient?*

*What are the signs of a developing epidural hematoma, and how do you diagnose it?*

The patient expresses understanding of the situation, and explains that she forgot to tell the resident who interviewed her last night that she has been on ticlodipine ever since she suffered her stroke four years ago. She confirms that her last dose of ticlodipine was yesterday.

*What do you do now?*

*How long do you need to follow this patient to be sure she does not develop an epidural hematoma?*

After following the patient for three days she shows no sign of development of epidural hematoma, and is discharged to your hospital's inpatient rehabilitation unit. The next day, you are talking with one of your anesthesia colleagues and you say that had you known the patient was on ticlodipine you would have recommend a general anesthetic, even though the patient had serious concerns over post-operative cognitive dysfunction. Your colleague disagrees with you and says that she would have proceeded with an epidural-based anesthetic anyway.

*What do you think of your colleague's anesthetic plans for this patient?*

The next week, you get an opportunity to take care of a nearly identical patient:

- Hip fracture

- Pacemaker,
- mild AS/MR,
- mild diastolic dysfunction,
- pulmonary hypertension,
- prior stroke,

She is on ticlodipine, but she tells you about it

You do an elegant GA, and when the patient emerges, she becomes agitated and has an episode of cardiac ischemia. Your colleague (above) happens by, and reminds you that she would have done a regional anesthetic.

*Who's right?*

## Model Discussion Content

° The elderly patient requiring anesthesia for surgical operation presents the anesthesiologist with a number of factors to consider. The patient's comorbidities must be managed in the perioperative period, and now there are increasing data to suggest that the actual anesthetic agent can have long-lasting impact on the elderly patient's post-operative cognitive function (can contribute to postoperative cognitive dysfunction, POCD). A multi-national on-going study suggests that patients over the age of 60 year are at risk for POCD after general anesthesia.<sup>1</sup> Other investigators have looked for a difference in post-operative cognitive dysfunction between general and regional anesthetics administered to elderly patients. They found increased incidence of POCD at 1 week post-op for patients that received general anesthesia compared to regional anesthesia.

Interestingly, there was no difference in POCD between the two anesthetic techniques at 3 months post-op.<sup>2</sup> In a later study, the investigators attempted to determine the risk of post-operative cognitive dysfunction in the middle-aged patient (40-60 years). They found evidence of POCD in this age group as well at 7 days post-op.<sup>3</sup> With a wide range of studies in the literature, it is known that *early* post operative cognitive dysfunction (at 7 days post-op) is strongly associated with increasing patient age and general anesthesia. When investigators looked at *late* post operative cognitive dysfunction (at 3 months post-op) there was no significant difference between general and regional anesthetics. These findings suggest that there may be multiple factors at play in the development of POCD (surgical, co-morbidities, inflammation?). With an increasing amount of media focus on health care issues, we can expect patients to continue to become more aware of the possible effects of anesthetic choice and its long term consequences.

° The decision to recommend a particular type of anesthesia over another is a complex one. We are trained to consider patient factors (comorbidities, medications, physical attributes); anesthetic factors (risks of anesthetic to patient); and the interplay between these factors. Often there is no right answer, and multiple ways to approach providing anesthesia to the patient. It becomes a balance of risk and benefit, as well as a consideration of patient preference.

° With more and more patients being placed on anticoagulants, it is important to have guidelines to help us make decisions and determine risks. In the US, the ASRA Consensus Conference

guidelines on the use of regional anesthesia in the anticoagulated patient is often used to help guide clinicians in defining risks in this patient population.<sup>4</sup> It should be noted that this document only serves as a guideline, and not a mandate that a particular course of treatment/recommendation for anesthesia be made. When one looks at recommendations for length of time ticlodipine should be held, the ASRA guidelines clearly state “The actual risk of spinal hematoma with ticlopidine and clopidogrel and the GP IIb/IIIa antagonists is unknown. Management is based on labeling precautions and the surgical, interventional cardiology/radiology experience”. ASRA guidelines suggest holding ticlopidine for 14 days (7 days for clopidogrel) before manipulating the neuraxis with a needle. One can look to guidelines from Germany, Austria, Belgium, and the Netherlands and see that guidelines vary by country of practice.<sup>5</sup> In the Netherlands, the guidelines suggest the anesthesiologist only hold ticlopidine or clopidogrel for 3 days prior to performing a neuraxial anesthetic. The anesthesiologist using neuraxial anesthesia needs to be familiar with the various guidelines regarding placement in patient’s taking various types of anticoagulants.

° Reports in the literature of risk of epidural hematoma in the setting of neuraxial anesthesia vary widely. With a published incidence range from 1:268 to 1:220,000, it is a rare event, but all of us may see it during the duration of our careers.<sup>6</sup> Epidural hematomas typically present with radicular back pain and progressive, potentially irreversible loss of motor and sensory function below the level of the developing hematoma. In patients at risk or suspected to be developing an epidural hematoma, hourly neurologic exams are recommended. The radiologic study of choice for diagnosis is the MRI. It is sometimes necessary to have the patient scanned several times if the physical examination gives concern for a developing epidural hematoma but the initial scan was negative. Prompt diagnosis and urgent neurosurgical decompression are required to increase the likelihood of a good neurologic outcome. Institutions that have protocols in place to expedite diagnosis and surgical treatment of epidural hematoma patients seem likely to have better patient outcomes. Recently published data suggest that for a single academic institution performing approximately 4,800 epidurals per year, the added cost per case attributable to imaging in patients suspected of having a hematoma is under \$6.<sup>6</sup>

° Epidural hematoma, while a relatively rare complication, has devastating consequences if not identified and treated promptly. Epidural hematomas usually present within the first 24 hours after accessing the epidural space. However, recent case reports suggest that an epidural hematoma can develop as late as several days after the initial catheter placement or removal.<sup>7</sup> Therefore, it’s important to have a high index of suspicion for epidural hematoma in any patient presenting with progressive neurologic symptoms in the setting of recent neuraxial anesthesia.

° Alternative approaches to managing this type of patient include performing pre-operative nerve blocks with or without continuous nerve catheters to provide anesthesia to the affected nerve distributions. Nerve blocks to consider could include Femoral, Sciatic, and Obturator nerve blocks. A Lumbar plexus block could also provide adequate anesthesia to the hip joint. However, the lumbar plexus block is risky in an anticoagulated patient because of the depth of needle insertion. Lateral femoral cutaneous nerve and fascia iliaca blocks are also good options to consider when creating a regional anesthesia approach to this patient.

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