Multilevel Continuous Intercostal Nerve Block Catheter: A Viable Alternative to Thoracic Epidural for Multiple Rib Fractures?

To the Editor:
It was with great interest that we read the article by Ahn et al. titled “Case Scenario: Pain-associated Respiratory Failure in Chest Trauma.” The acute pain service at our hospital, which is one of only two level-one trauma centers in Houston, Texas, is frequently consulted for management of multiple rib fracture patients with impending respiratory failure. In patients who meet criteria, a thoracic epidural can be amazing in the setting of rib fractures. Unfortunately, many patients, like the one described by the authors, do not meet criteria established by recommendations of the American Society of Regional Anesthesia and Pain Medicine. This is secondary to trauma-associated coagulopathies, preadmission anticoagulation pharmacotherapy, or deep vein thrombosis prophylaxis initiated during their hospital admission. Moreover, in trauma patients who are eligible, thoracic epidurals can be difficult to place technically because optimal positioning for the procedure can be difficult in these patients. In addition, a working thoracic epidural may cause motor weakness in patients already at higher risk for deep vein thrombosis and may cause hypotension in patients with multitrauma.

In patients with contraindications to epidural placement, our team has begun using continuous intercostal nerve blockade as described by Truitt et al. Although Ahn et al. mentioned single-shot intercostal blocks, they failed to mention catheter placement as a therapeutic alternative. In our experience, this technique is effective, easy to teach and learn, and associated with a low incidence of morbidity. For the scenario presented by Ahn, continuous intercostal nerve blocks can be placed safely in a patient who may be coagulopathic. These catheters are inserted lateral to the paraspinal muscles and tunneled perpendicular and superficial to the affected ribs in an extrathoracic location where the incidence of morbidity from a hematoma is low. In a patient taking clopidogrel as part of a regimen to treat coronary artery disease after stent placement, this technique would have allowed continuation of their antiplatelet therapy as well as alleviating the concern for neuraxial hematoma. In addition, with proper attention to issues of consent, this modality can be used in the patient who has already been intubated, where sedation and lack of patient cooperation make the risks associated with a thoracic epidural placement unacceptable.

We realize our experience is anecdotal and therefore believe that well-designed, randomized, controlled trials are needed to determine how these continuous intercostal nerve blocks compare with thoracic epidurals in the setting of rib fractures. At a minimum, we believe this modality should be considered, especially in the coagulopathic patient for whom epidural placement is not indicated.

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References

In Reply:

Drs. Slater and Lerner have reemphasized a critical point in our published case scenario. Standard coagulation tests are inadequate in assessing adequacy of platelet function for epidural catheterization. Therefore, we recommended in our algorithm presented in figure 4 of our original report to use whole blood multiple electrode impedance aggregometry (Multiplate®; Roche Diagnostics, Mannheim, Germany) or whole blood turbidimetric aggregometry (VerifyNow®; Accutronics, San Diego, CA) to support decision making in patients with antiplatelet therapy. Multiple electrode impedance aggregometry and VerifyNow® have been used to assess the efficacy of antiplatelet drugs and the dynamics of platelet function recovery after clopidogrel treatment—as well as under the scenario “risk–benefit analysis of neuraxial block.”

Multiple electrode impedance aggregometry is as sensitive as light transmission aggregometry (Born aggregometry—the definitive standard of platelet function analysis) to detect platelet dysfunction, predict stent thrombosis and bleeding rates after coronary interventions, and can be used as a guide to support treatment of hemorrhagic patients undergoing cardiac surgery.

Please note that the value of thromboelastography or thromboelastometry in our case scenario relates to detection of trauma-induced coagulopathy with reduced clot firmness and hypercoagulability due to an acute phase reaction with high plasma fibrinogen concentrations, which we know

Dr. Flores is a speaker for Merck (Whitehouse Station, New Jersey) and has received an honorarium from the Texas Society of Anesthesiologists (Austin, Texas) for speaking within the last year, but these are unrelated to the work submitted.