Usefulness of Beta-2-Transferrin to Detect an Unforeseen Complication following Paravertebral Nerve Block

Thomas Weismueller; Mihaela Visoiu

Division of Pediatric Anesthesiology, Children’s Hospital of Pittsburgh, University of Pittsburgh Medical Center

Introduction
Continuous paravertebral blockade has been shown to provide effective pain control in the postoperative period with limited side effects (1). Here we present a case where we use beta-2 transferrin as a marker for CSF leakage into the paravertebral space.

Case presentation
Patient is a 14 year old girl with severe developmental delay and previous gastrectomy who underwent explorative laparotomy and bowel resection.

• T9 continuous bilateral paravertebral nerve blocks (PVNB) were placed using landmark technique
• 10ml 0.2% ropivacaine were injected
• Catheters were advanced bilaterally though the needle
• Aspiration through both catheters was negative immediately after placement

Postoperatively 10cc serosanguinous fluid were aspirated through the right PVNB. The aspirate was examined and sent for a beta-2 transferrin assay.

Results
We were unable to confirm CSF within the sample due to blood contamination. The Beta-2 transferrin assay was negative.

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Supernatant</th>
<th>WBC</th>
<th>RBC</th>
<th>M</th>
<th>N</th>
<th>L</th>
<th>Glucose</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloody</td>
<td>Colourless</td>
<td>307</td>
<td>37383</td>
<td>22%</td>
<td>21%</td>
<td>51%</td>
<td>73</td>
<td>696 µ</td>
</tr>
</tbody>
</table>

Table 1: Aspirate sample cytology and chemistry:
Glucose and protein are reported in milligrams/decilitre. WBC is white blood cells, in cumulative amount, RBC is red blood cells, in cumulative amount, N is neutrophils, L is lymphocytes, and M is monocytes, µ means high value.

Discussion
Among the differential diagnosis for increased aspirate after PVNC placement we considered CSF, pleural fluid and local anesthetic accumulation in the PVB space.

Due to contamination with blood, we were not able to confirm CSF within the aspirate. In addition beta-2-transferrin assay was negative, making a subarachnoid placement of the PVBC unlikely.

Thus we considered ropivacaine accumulation in the PVB space.

Unfortunately, we did not have an option to quantify ropivacaine in our sample.

To our knowledge, this complication has not been reported previously after PVN blockade.

Taken together the inability to evaluate the aspirate prompted us to remove the right PVNC immediately.

A beta-2-transferrin assay may be a helpful test to diagnose subarachnoid placement of a PVNC.

References
2. Haft et al The Iowa Orthopedic Journal 2004;24:115-8