Anesthetic Considerations for Pediatric Patients undergoing Video Assisted Thoracoscopic Thymectomy for Juvenile Myasthenia Graves

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Background
Juvenile myasthenia graves (MG) is a rare disorder that presents in childhood and comprises 10-15% of cases of MG. Anesthetic management of pediatric patients with myasthenia graves undergoing video assisted laparoscopic surgery (VATS) thymectomy poses several challenges including the need for one lung ventilation (OLV), and preservation of adequate post-operative respiratory function.

References

Discussion
Juvenile MG occurs when autoimmune antibodies bind to and degrade the acetylcholine receptor at the neuromuscular junction. Thymectomy is a treatment option when steroids or anticholinesterases have failed. VATS thymectomy in children has been shown to provide comparable long term clinical results and this minimally invasive approach may provide other benefits such as reduced need for post operative intubation and shorter hospital stays.

Table 1: Patient Characteristics

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Diagnosis</th>
<th>Anesthetic Approach</th>
<th>Airway Management</th>
<th>Neur muscular blockade</th>
<th>Post Op Disposition</th>
<th>Pain Scores</th>
<th>Chest tube</th>
<th>N/V</th>
<th>Post op Pain management</th>
<th>Time to Discharge</th>
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<tbody>
<tr>
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<td></td>
<td>Juvenile MG</td>
<td>VATS</td>
<td>Sevoflurane, alfentanil</td>
<td>35f DLT</td>
<td>N</td>
<td>ICU</td>
<td>0-3</td>
<td>N</td>
<td>PCA</td>
<td>POD 4</td>
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<td>Juvenile MG</td>
<td>VATS</td>
<td>Sevoflurane, Remifentanil</td>
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<tr>
<td></td>
<td>16</td>
<td>Juvenile MG</td>
<td>VATS</td>
<td>Sevoflurane, fentanyl</td>
<td>4.5 Univent</td>
<td>N</td>
<td>General floor</td>
<td>0-5</td>
<td>N</td>
<td>PRN Morphine</td>
<td>POD 1</td>
</tr>
</tbody>
</table>

To date, very little has been reported in the literature about anesthetic considerations for pediatric VATS thymectomy.

- Anesthetic techniques for transsternal VATS thymectomy included low dose volatile agent, remifentanil infusion and avoidance of neuromuscular blockade.
- Lung isolation can successfully be achieved by a variety of approaches including double lumen endotracheal tubes, univent tubes and bronchial blockers.

Anesthetic considerations for patients undergoing VATS thymectomy included the need for OLV in addition to avoiding the use of neuromuscular blocking agents, facilitating assessment of respiratory function and ability optimizing conditions for successful extubation.

Conclusion
VATS thymectomy in pediatric patients with myasthenia graves includes many anesthetic challenges. OLV can be achieved by a variety of approaches in the pediatric population thus allowing optimal surgical conditions. The avoidance of neuromuscular blockade and titration of volatile agent and opioids, along with careful assessment of respiratory function can minimize risks of post-op respiratory complications.

References