The Use of Transoral Ultrasound Imaging in the Evaluation of Peritonsillar Infections

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Objectives & Design

Objective:
1. To evaluate the efficacy of intraoral ultrasound (US) in the diagnosis and management of peritonsillar infections
2. To evaluate feasibility and patient tolerance of this technique in our Emergency Department

Design: Prospective single-cohort study

Methods

24 patients were enrolled and initially evaluated in the Emergency Department for peritonsillar infection. Informed consent was obtained. Signs and symptoms were recorded, including tonsillar asymmetry, uvular deviation, trismus and fluctuance. Physicians formally trained in US techniques performed intraoral US to evaluate for abscess. Presence of abscess and dimensions were recorded. Eight patients had a CT scan performed and results were compared to US findings. Needle aspiration and formal incision and drainage were performed by the otolaryngology physician in appropriate patients. Presence of purulent material on aspiration confirmed peritonsillar abscess.

Results

Intraoral US was successfully performed on 87.5% (21/24) of patients. The US probe could not access the peritonsillar space in 12.5% (3/24) of patients due to severe trismus. The positive predictive value of intraoral US was 78.6% (11/14), and the negative predictive value was 100% (7/7). The specificity was 70% (7/10), and the sensitivity was 100% (11/11). CT was obtained in 8/24 patients and was found to be 100% sensitive and specific for presence of abscess. US demonstrated a false positive finding in 3 of these patients.

Table 1. Comparison of US findings and aspiration results.

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<tr>
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<th>Positive Aspiration</th>
<th>Negative Aspiration</th>
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<tbody>
<tr>
<td>Positive US</td>
<td>11</td>
<td>3</td>
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<tr>
<td>Negative US</td>
<td>0</td>
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Intraoral US is a sensitive imaging modality at our institution, making it a strong initial imaging choice in patients with peritonsillar infections. US can reliably rule out the presence of a peritonsillar abscess and make CT neck unnecessary in most patients. While ultrasound is generally well-tolerated, diagnosis in patients with severe trismus can be made clinically or with CT scan. Intraoral US is a useful tool in diagnosing and treating peritonsillar infections and provides a more cost-effective imaging modality than CT, while also minimizing radiation exposure for these patients.

Conclusions

Intraoral US is a sensitive imaging modality at our institution, making it a strong initial imaging choice in patients with peritonsillar infections. US can reliably rule out the presence of a peritonsillar abscess and make CT neck unnecessary in most patients. While ultrasound is generally well-tolerated, diagnosis in patients with severe trismus can be made clinically or with CT scan. Intraoral US is a useful tool in diagnosing and treating peritonsillar infections and provides a more cost-effective imaging modality than CT, while also minimizing radiation exposure for these patients.

Figure 1. Photo of transoral US probe.

Figure 2. Comparison of normal US (left) and 2.0cm x 2.3cm peritonsillar abscess (right).