The Significant Impact of Supraglottic Airway Devices on Neck Masses During Magnetic Resonance Imaging in Children: A Ten-Year Review

Vladislav Obsekov,1 Rebecca S. Isserman, MD,1,2 Jorge A. Galvez, MD, MBI,1,2 Allan F. Simpao, MD, MBI1,2

1. University of Pennsylvania; 2. Department of Anesthesiology and Critical Care Medicine, The Children’s Hospital of Philadelphia (CHOP), PA, USA

BACKGROUND

• General anesthesia (GA) with an airway device is used for radiological studies in children to limit excessive motion and improve image quality.

• Scant literature exists describing the potential for devices such as supraglottic airways (SGAs) to cause in vivo magnetic resonance imaging (MRI) artifact and misdiagnosis.

• We studied how often SGAs affected the appearance of neck masses in children who received GA for MRIs at CHOP.

METHODS

• We queried CHOP databases for patients under 18 years of age who had neck MRIs with GA:
  1. At least one MRI with an SGA, and
  2. At least one MRI with either a natural airway or endotracheal tube (ETT).

• Two reviewers reviewed MRI images and reports to assess the impact of the SGA on neck masses.

RESULTS

| Patients with a neck MRI with a SGA and at least one MRI with an ETT or natural airway | 28 |
| Patients without neck masses | 10 |
| Patients with an airway device change and neck masses that were in areas that a SGA could impact | 12 |
| Patients with a documented change in neck mass appearance | 11 |

• Of the remaining six patients, three had a mass on the dorsal neck, and three patients had masses that were distal to the SGA’s tip.

DISCUSSION

• When an SGA is used in a patient with a neck mass, the mass’ appearance is almost always impacted.

• SGAs may affect the appearance of the submandibular, retropharyngeal and prevertebral cervical regions.

  o This creates the potential for diagnostic error and treatment issues.

• Our findings support avoiding SGAs in children who are undergoing imaging studies (and possibly radiation therapy) for neck masses.

REFERENCES


Images courtesy of FrontMed and Lynn Kuehn.