Letter to the Editor

Anatomical relationships of the Air-Q supraglottic airway during elective MRI scan of brain and neck

Sir,

Recent resuscitation guidelines have been altered to prioritize chest compression over airway management and have strongly advocated the placement of a supraglottic airway (SGA) instead of an endotracheal tube (ETT) in cardiac arrest. The recent article by Segal et al. has suggested that supraglottic devices impede cerebral blood flow by obstruction of the carotid arteries. We present a series of magnetic resonance images demonstrating the anatomic placement of an Air-Q SGA during routine anaesthesia.

A middle aged male presented for MRI of brain and spine related to cervical radiculopathy. Due to claustrophobia the study was performed under general anaesthetic with the placement of an Air-Q SGA with the cuff filled with gadolinium. Consent was obtained for the use of the images for management and teaching purposes. The Aurora Institutional Review Board considered this study exempt from IRB oversight.

Fig. 1 illustrates our findings. The vertical extent of the cuff of the SGA ranged from the inferior endplate of the second cervical vertebra to the level of the C5/7 intervertebral disc. The maximal horizontal width of the Air-Q was 6 cm at the level of the C4 vertebra. On review of all the available images, there appears to be no focal loss in calibre in the dimensions or in the shape of the common carotid artery and its major terminal branches.

The images also reveal asymmetry in placement of the cuff with the right cuff placed just lateral to the laryngeal inlet and medial to the attachment of the pharyngeal constrictors to the greater cornu of the hyoid. The left side of the SGA cuff lies lateral to the greater cornu of the hyoid and the pharyngeal constrictors have been distended laterally. Of note the carotid sheath lies posterolateral to the cuff at all times.

While we have shown that the Air-Q SGA does not cause significant anatomic distortion of the neck vasculature, it is important to note that this is no guarantee of adequate flow within the carotid arteries. Our patient was in a stable, anaesthetized condition and presumably pressure within the carotids was normal and unlikely to be compressed by the pressure generated by an SGA. This is very different from the work of Segal et al., which was a cardiac arrest model where pressure in the carotid was dependant on CPR.

In our case it is clear that the carotids lie posterior and lateral to the cuff of the SGA. Given the positioning of the SGA it seems that the pressure of the cuff is directed anteriorly and laterally and is likely to have little direct pressure on the carotid sheath. This is in keeping with a previous cadaveric study, which showed anterior displacement of the laryngeal skeleton with inflation of the cuff of a SGA.

The report by Segal et al., if applicable to humans, has significant implications for resuscitation guidelines. More work is needed to determine the effect of the SGAs in human subjects, both in healthy and critically ill subjects.
Conflict of interest statement

The authors declare that they have no conflicts of interest.

References


Andrew Neill*
Emergency Department, St Vincent’s University Hospital, Elm Park, Dublin 4, Dublin, Ireland

James DuCanto
Department of Anesthesiology, Aurora St. Luke’s Medical Center, Milwaukee, WI, USA

Sean Arnoli
Department of Radiology, Aurora St. Luke’s Medical Center, Milwaukee, WI, USA

*Corresponding author.
E-mail address: andyneill81@gmail.com (A. Neill)

16 August 2012

No responsibility is assumed by Elsevier, its licensors or associates for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein. Because of rapid advances in the medical sciences, in particular, independent verification of diagnoses and drug dosages should be made.