

Unanticipated difficult airway in male hypogonadism

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Difficulty in endotracheal intubation (ETI) is not very uncommon in patients with endocrine abnormality such as dwarfism^[1,2] and acromegaly.^[3] However, a difficult airway in a case of hypogonadism with no obvious body deformity is very much unanticipated and also scarcely reported in Indian literature.^[4] Here, we present a case of an unanticipated difficult intubation in a young boy with hypogonadism posted for an elective surgery.

An 18-year-old boy of height/weight 26.5 kg/136 cm (<3rd percentile) presented with chief complaints of headache and vomiting. Further examination showed left superior quadrant hemianopia and absent secondary sexual characters. Airway examination showed Mallampatti Grade II (MPG-II). Hormonal assay showed decreased levels of gonadotrophin releasing hormone. Computed tomography (CT) and magnetic resonance imaging (MRI) showed craniopharyngioma with mass effect on third ventricle. The patient was posted for excision of the tumour. After induction of general anaesthesia, ETI was tried with an age appropriate sized (8.0 mm ID) cuffed oral endotracheal tube (ETT). However, to our surprise the ETT could not be passed below the vocal cords, further attempts to pass 7.5 and 6.5 mm ID ETT also failed and finally a 6.0 mm ETT was passed snugly (Cormack-Lehane Grade I). As there was no air leak cuff was not inflated. At the end of the surgery, neuromuscular paralysis was reversed with neostigmine, glycopyrrolate and extubated. Immediately after extubation patient developed inspiratory stridor, which was treated with 100% oxygen, jaw thrust, adrenaline nebulization and subsided within 10 min.

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We encountered intubation difficulty when age appropriate ETT^[5] was used in an otherwise easy airway (MPG-II). The patient's airway was re-evaluated in the post-operative period. The CT scan showed tracheal diameter at cricoid ring was 11 mm × 10 mm [Figure 1] and at the thyroid cartilage was 12 mm × 9 mm (anteroposterior/transverse) [Figure 2]. MRI could not give us any information as it was confined to cranium.

We tried intubating the patient with 8.0 mm (outer diameter [OD] 10.7 mm), 7.5 mm (OD 10.0 mm), 6.5 mm (OD 8.7 mm) ETT but finally, could pass a 6.0 mm ID ETT (OD 8.2 mm). In all these attempts, there was difficulty in negotiating the ETT below the vocal cords. This difficulty may be due to the small cricoid diameter compared to tracheal diameter at the level of thyroid.

Before puberty larynx of boys and girls are equally small,^[6] but with attainment of puberty larynx grows in both sexes, more in boys, causing twice increase in the length of the vocal cords. By puberty vocal cords reach their adult size and clear sexual dimorphism is evident with significantly larger linear height, weight and prominent thyroid prominence in male larynx which precedes the development of facial hair by several months.

Beckford *et al.*^[7] in their animal experiment demonstrated androgens play a major role in development of male larynx. Similarly, high-affinity androgen receptors have been demonstrated in human larynx.^[8]

Our patient has not attained puberty due to hypogonadism and his larynx resembled a 10-12 year old child's pre-pubertal larynx. Moreover, repeated attempts at tracheal intubation have resulted in sub-glottis oedema and hence we could pass only 6.0 mm ETT. The sub-glottis



Figure 1: Computed tomographic scan showing the laryngeal measurements at the level of thyroid cartilage cross section



Figure 2: Computed tomographic scan showing the laryngeal measurements at the level of cricoid cross section

oedema could also have been the possible cause for post extubation stridor. We strongly feel that, a closer and detailed look at the imaging study before anaesthetizing the patients could have averted the problems of repeat tracheal intubation and its complications.

We opine that in male hypogonadism difficult airway should be anticipated. CT and MRI sections should also involve the larynx along with the cranium for information on the airway to prevent morbidity and mortality.

Acknowledgments

We acknowledge Department of Neurosurgery, Endocrinology and Radiology, Sri Venkateswara Institute of Medical Sciences, for their valuable support in providing clinical material and suggestions during manuscript preparation.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code:	Website: www.jnaccjournal.org
	DOI: 10.4103/jnacc.jnacc_2_17

How to cite this article: Hemalatha P, Aparna B, Samantaray A, Rao MH. Unanticipated difficult airway in male hypogonadism. *J Neuroanaesthesiol Crit Care* 2017;4:181-2.