

Ultrasound Identify Important Sonoanatomy of the Upper Airway

Rahimzadeh P*

Department of Anaesthesiology and Pain Medicine, Iran University of Medical Sciences, Iran

Introduction

Ultrasound images of the infra-hyoid parameters correlate well with computed tomography scan. Hui demonstrated that the inability to visualize the hyoid bone using sublingual ultrasound predict difficult intubation with a high sensitivity and specificity. This method has a high-positive likelihood ratio of 21.6 and moderate negative likelihood ratio. Wotjzak found that the hyomental distance ratio in the morbidly obese patients can be a sensitive predictor of difficult laryngoscopy [1]. Patients with difficult intubation have shorter hyomental distance ratio of 1–1.05 as opposed to those belonging to the easy intubation group. Ezri showed that mean pre-tracheal tissue of 28 mm at the level of the vocal cords in obese patients indicate difficult laryngoscopy compared to 17.7 mm in easy ones. This technique is not reproducible by Komatsu et al. using similar methodology in different population [2]. Adhikari demonstrated in a pilot study that anterior neck thickness at the level of the hyoid bone and thyrohyoid membrane as compared to the vocal cords is a better predictor for difficult laryngoscopy. Pinto in a recent study found similar findings using anterior neck thickness at the level of the thyrohyoid membrane [3]. Preliminary findings showed promising results, but most of these studies were pilot studies and were limited by small study samples. More systematic studies and level one evidence are needed before this modality can be validated for routine screening [4]. Although many techniques have been recommended to verify endotracheal tube location, there is no single confirmatory method that is ideal in every situation [5]. Capnography is considered the standard of care for the primary verification of endotracheal tube location. Upper airway ultrasonography can also be advantageous in situations involving cardiovascular arrest, broncho-constrictions or circumstances in which capnography or end-tidal carbon dioxide measurement may be faulty. endotracheal tube position in trachea is seen as two hyperechoic lines which is described as double tract or double lumen sign. Chou utilizes a convex transducer in the suprasternal notch window, tracheal rapid ultrasound exam, for diagnosing esophageal intubation and demonstrated 98.9 % sensitivity and 94.1 % specificity for endotracheal tube utilizing this static transtracheal approach [6]. Adi showed that bedside upper airway ultrasound correlates well with waveform capnography. This research also shows very good agreement with kappa value of 0.85, between bedside upper airway ultrasound and waveform capnography, and a fast mean confirmation time of 16.4 s with a standard deviation of 7.3s [7]. Meta-analysis by Chou et al. suggested that in situations where capnography may be unreliable, ultrasonography can be a valuable adjunct in this aspect of airway assessment because ultrasonography has high diagnostic value for identifying esophageal intubation with optimal sensitivity and specificity [8]. Sitzwohl found that auscultation and chest rise during clinical assessment failed to detect up to 55 % of endobronchial intubations. A cadaver study by Uya showed that novice sonographers could accurately identify a saline inflated endotracheal tube cuff at the level of the suprasternal notch [9]. Tessaro using tracheal rapid ultrasound saline test technique suggests that tracheal ultrasonography using a saline-filled endotracheal tube cuff can accurately and rapidly distinguish between correct endotracheal versus endo-bronchial tracheal tube positions in children [10]. Wotjzak demonstrates that the replacement of air with saline in endotracheal

tube, and the use of contrast agents enable detection of cuffs in the airway. It also allows visualization of the surrounding structures and tissues as the ultrasound beam can be transmitted through the fluid filled cuffs without being reflected from air mucosal interface.

Acknowledgement

None

Conflict of Interest

None

References

1. Świeboda P, Filip R, Prystupa A, Drozd M (2013) Assessment of pain: types, mechanism and treatment. *Ann Agric Environ Med EU* 1:2-7.
2. Nadler SF, Weingand K, Kruse RJ (2004) The physiologic basis and clinical applications of cryotherapy and thermotherapy for the pain practitioner. *Pain Physician US* 7:395-399.
3. Trout KK (2004) The neuromatrix theory of pain: implications for selected non-pharmacologic methods of pain relief for labor. *J Midwifery Wom Heal US* 49:482-488.
4. Cohen SP, Mao J (2014) Neuropathic pain: mechanisms and their clinical implications. *BMJ UK* 348:1-6.
5. Mello RD, Dickenson AH (2008) Spinal cord mechanisms of pain. *BJA US* 101:8-16.
6. Bliddal H, Rosetzky A, Schlichting P, Weidner MS, Andersen LA, et al. (2000) A randomized, placebo-controlled, cross-over study of ginger extracts and ibuprofen in osteoarthritis. *Osteoarthr Cartil EU* 8:9-12.
7. Maroon JC, Bost JW, Borden MK, Lorenz KM, Ross NA, et al. (2006) Natural anti-inflammatory agents for pain relief in athletes. *Neurosurg Focus US* 21:1-13.
8. Birnesser H, Oberbaum M, Klein P, Weiser M (2004) The Homeopathic Preparation Traumeel® S Compared With NSAIDs For Symptomatic Treatment Of Epicondylitis. *J Musculoskelet Res EU* 8:119-128.
9. Ozgoli G, Goli M, Moattar F (2009) Comparison of effects of ginger, mefenamic acid, and ibuprofen on pain in women with primary dysmenorrhea. *J Altern Complement Med US* 15:129-132.
10. Raeder J, Dahl V (2009) Clinical application of glucocorticoids, antineuropathics, and other analgesic adjuvants for acute pain management. *CUP UK*: 398-731.

*Corresponding author: Rahimzadeh P, Department of Anaesthesiology and Pain Medicine, Iran University of Medical Sciences, Iran, Tel: 0982166509059, E-mail: p-rahimzadeh@tums.ac.ir

Received: 18-Jul-2023, Manuscript No. JPAR-23-111320; **Editor assigned:** 21-Jul-2023, Pre-QC No. JPAR-23-111320 (PQ); **Reviewed:** 04-Aug-2023, QC No. JPAR-23-111320; **Revised:** 10-Aug-2023, Manuscript No. JPAR-23-111320 (R); **Published:** 17-Aug-2023, DOI: 10.4172/2167-0846.1000532

Citation: Rahimzadeh P (2023) Ultrasound Identify Important Sonoanatomy of the Upper Airway. *J Pain Relief* 12: 532.

Copyright: © 2023 Rahimzadeh P. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.