Mini Review
Volume 6:6, 2022

Journal of Morphology and Anatomy

ISSN: 2684-4265 Open Access

Palatine Tonsils, Adenoids and Lingual Tonsils Anatomy and Physiology

Alexandra Arambula*

Department of Otolaryngology, University of Kansas, Kansas City, KS, USA

Abstract

Tonsillectomy and adenoidectomy are two of the most common surgical procedures performed in the United States and worldwide. 1 Because of the risk of removing healthy tissue, tonsil surgery has traditionally been limited to partial excision. Celsus is credited with performing the first complete tonsillectomy in the first century AD. 3 As the procedure's popularity grew, partial excision was considered the safest and best method for excision. Superior lighting, the ability to control hemostasis, and anaesthetic techniques made complete excision possible by the nineteenth century.

Keywords: Adult human neurogenesis • SARS-CoV-2 • COVID-19 • Microglial

Introduction

Despite the fact that many other techniques have been successfully used, surveys show that complete excision via electrocautery is the preferred method for excision around the world. 4 Understanding the anatomy and physiology of these mucosa-associated lymphoid tissues is critical for understanding their diseased states and the implications for surgical removal. The lymphoepithelial tissues that comprise Waldeyer's ring, named after the German anatomist Heinrich Wilhelm Gottfried von Waldeyer-Hartz, are the palatine tonsils, adenoids, tubal tonsils, and lingual tonsils. These organisms are all part of the mucosal immune system. Their primary function is to contribute to the secondary immune system by immunologically sampling antigens and pathogens in the local environment.

The tonsil is perfused by numerous branches of the external carotid artery system that pass through the superior pharyngeal constrictor muscle. The tonsillar artery, a branch of the facial artery, supplies the inferior pole primarily. The dorsal lingual branches of the lingual artery provide additional blood supply to the inferior pole. Another branch of the facial artery, the ascending palatine artery, divides distally into two branches, one of which also supplies the palatine tonsil. Tonsillar branches of the ascending pharyngeal artery and the descending palatine artery, a branch of the internal maxillary artery, supply the superior pole of the palatine tonsil. Venous drainage occurs through the paratonsillar vein, which connects to the pharyngeal venous plexus and the common facial vein.

The lesser palatine nerve from the second division of the trigeminal nerve and tonsillar branches from the glossopharyngeal nerve carry sensory input to the palatine tonsil and tonsillar fossa. Patients with tonsillar disease or recent tonsillar procedures frequently complain of referred otalgia because the glossopharyngeal nerve also provides sensation to the middle ear via the tympanic nerve branch. Providers must be aware of important nearby neurovascular structures when performing procedures involving the palatine tonsil, such as tonsillectomy or drainage of peritonsillar abscesses. The post-styloid parapharyngeal space is crossed by the internal carotid artery. While injuries are uncommon, they can occur, especially in cases of tortuous or medialized carotid arteries [1].

***Address for Correspondence:** Alexandra Arambula, Department of Otolaryngology, University of Kansas, Kansas City, KS, USA, E-mail: arambulaalexandra@gmail.com*

Received: 02 November, 2022, Manuscript No. jma-23-87092; **Editor Assigned:** 05 November, 2022, PreQC No. P-87092; **Reviewed:** 16 November, 2022, QC No. Q-87092; **Revised:** 22 November, 2022, Manuscript No. R-87092; **Published:** 28 November, 2022, DOI: 10.37421/2684-4265.2022.6.253

Description

The pharyngeal tonsil (also known as a "adenoid") is a mass of lymphoid tissue located in the midline of the nasopharynx, between the sphenoid and occipital bones. The pharyngobasilar fascia extends from the inferior edge of the pharyngeal tonsil to the pharyngeal constrictor muscles. Grisel's syndrome, also known as non-traumatic atlanto-axial subluxation, has been observed following adenoidectomy. Laxity of the ligaments surrounding this cervical joint is thought to be caused by inflammation, which can occur as a result of aggressive adenoidectomy and/or hypertension in a patient with anatomical risk factors.

In gross and histologic appearance, the pharyngeal tonsil resembles the palatine tonsils. When compared to palatine tonsils, the free surface of the pharyngeal tonsil is characterised by mucosal folds that project anteriorly and laterally, with a much smaller number of crypts. Histologically, the pharyngeal tonsil is made up primarily of pseudostratified ciliated columnar epithelium, with lymphoid follicles arranged throughout the mucosal folds, fewer in number than the palatine tonsil. Superiorly, a capsule separates the pharyngeal tonsil from the sphenoid periosteum and bony occiput, and connective tissue septa extend from this capsule into the pharyngeal tonsil tissue, dividing it into 4e6 segments [2].

The BBB's interconnected nature of brain capillary endothelial cells, pericytes, neurons, astrocytes, and microglia strongly suggests that this is a path of SARS-CoV-2 viral entry into the brain and a contributor to neuroinflammatory events. Isolated spike proteins can cross the BBB, according to evidence from in vitro models. While all of the regions studied, including the olfactory bulb, cortex, hippocampus, and medulla oblongata, showed some degree of BBB disruption, the hippocampus was the most affected. Recent research has found that people with COVID-19 have a significantly increased risk of receiving a new diagnosis of Alzheimer's disease within 360 days of receiving their initial COVID-19 diagnosis, particularly those over the age of 85. The hippocampus is one of two areas in the brain where new neurons are formed. Adult human neurogenesis has been identified in two locations in the adult human brain: the dentate gyrus and the subventricular zone. As a result, we wanted to investigate how SARS-CoV-2 affects adult human neurogenesis. Neurogenesis is the process by which progenitor cells proliferate and differentiate, as well as newly formed neurons migrate and mature. Erickson described the first direct evidence for the presence of neurogenic processes in the adult human

brain in 1998. He discovered new neurons growing in the dentate gyrus and subventricular zone [3,4].

The immunologic function of the palatine and pharyngeal tonsils is discussed in detail elsewhere and is beyond the scope of this review. Exogenous antigens are "sampled" through an unidentified process involving M (membrane)-cells, which are also found in Peyer's patches and whose structure facilitates antigen uptake from the naso-oropharynx. Once these antigens cross the luminal tonsillar surface epithelium, they are processed by antigen-presenting cells such as dendritic cells and macrophages before being presented to T and B cells in the neighbouring extrafollicular region. If the antigen has previously been encountered, a secondary immune response is elicited through T-cell proliferation and/or secondary antibody production by B cells. If the encountered antigen is novel and successfully recognised by a helper T cell, there will be activation and proliferation [5].

Conclusion

Waldeyer's ring lymphoid tissue is positioned at the junction of the respiratory and digestive systems to serve as a primary antigen sampling point. The compact anatomy and local physiology of this tissue are critical for any surgeon operating on this anatomic area. The factors that cause adenotonsillar hypertrophy and chronic adenotonsillitis are still unknown, but they are important in understanding disease processes and surgical implications.

Acknowledgement

None.

Conflict of Interest

There are no conflicts of interest by author.

References

1. Hosseini, Monireh Sheikh and Maryam Zekri. "Review of medical image classification using the adaptive neuro-fuzzy inference system." *J Medical Signals Sens* 2 (2012): 49.
2. Braiki, Marwa, Abdesslam Benzinou, Kamal Nasreddine and Nolwenn Hymery, et al. "Automatic human dendritic cells segmentation using k-means clustering and chan-vese active contour model." *Comput Methods Programs Bio* 195 (2020): 105520.
3. Marin, S., A. J. Ramos, German Cano-Sancho and V. Sanchis, et al. "Mycotoxins: Occurrence, toxicology, and exposure assessment." *Food Chem Toxicol* 60 (2013): 218-237.
4. Hymery, N., Y. Sibiril and D. Parent-Massin. "Improvement of human dendritic cell culture for immunotoxicological investigations." *Cell Biol Toxicol* 22 (2006): 243-255.
5. Rezatofighi, Seyed Hamid and Hamid Soltanian-Zadeh. "Automatic recognition of five types of white blood cells in peripheral blood." *Comput Med Imaging Graph* 35 (2011): 333-343.

How to cite this article: Arambula, Alexandra. "Palatine Tonsils, Adenoids and Lingual Tonsils Anatomy and Physiology." Morphol Anat 6 (2022): 253