The nature of microbial involvement in the development of adenotonsillar hyperplasia

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Obstructive sleep apnoea (OSA) has become a more common indication for tonsillectomy than recurrent tonsillitis (RT). Few studies have addressed possible differences in pathogenesis between these two conditions. Children with RT and OSA are often being treated in the community with multiple courses of antibiotics before surgery. Current understanding of the role of bacteria in disorders of the tonsils is mainly based on the culture of tonsil swabs. Swab cultures reflect only a very small fraction of the bacteria present on the mucosal surface and may not represent the bacterial communities within the tonsil crypts. Culture-independent methods, based on bacterial 16S rRNA gene sequencing, have been used to increase understanding of the tonsillar microbiome. We utilised these techniques, combined with histology, to evaluate the local lymphocyte response and associations with bacterial community composition of the tonsils removed from children for either RT or OSA. We also aimed to investigate potential differences in adenotonsillar microbiota according to sampling location, both on and within the adenoids and palatine tonsils. Finally, a randomised control trial (RCT) was undertaken to evaluate whether a course of amoxicillin-clavulanate altered the tonsil microbiome in children with recurrent tonsillitis immediately before tonsillectomy. These results demonstrate significant differences in the local lymphocyte response and bacterial community composition in tonsil tissue between RT and OSA patients. We observed variations in bacterial diversity and composition based on sampling sites in the tonsils but not the adenoids. Finally, no variation in bacterial diversity of the tonsils following a course of broad-spectrum antibiotics was noted, suggesting antibiotics have minimal impact on the tonsil microbiota. Accordingly, the liberal use of antibiotics for this condition should be challenged.

Speaker Biography

James Johnston is in the final year of his PhD at The University of Auckland, Auckland, New Zealand. He is a trainee in otolaryngology-head and neck surgery with the Royal Australasian College of Surgeons.

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