

## Practising Otolaryngology and Neuro-otology in Singapore

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Otology/Neuro-otology is a well-defined subspecialty of Otolaryngology (Ear, Nose & Throat) practice that deals with conditions related to the ear and its neural pathways. The conditions include deafness, vertigo and giddiness, facial palsy, tinnitus, ear infections, acoustic neuromas, and skull-base tumours. There have been several recent advances in this field, such as the early detection of hearing loss via universal newborn hearing screening programmes; the treatment of deafness using sophisticated hearing devices or implants; and improved surgical techniques and the introduction of more effective methods for treating vertigo or giddiness. Singapore has well-trained Otolaryngologists and Neuro-otologists who effectively adopt management strategies comparable to some of the top centres in the world. Otology/Neuro-otology in Singapore has, however, evolved in a way that commensurates with its own geographical, demographic, socio-economic and political features.

Locally, Otology/Neuro-otology is very much influenced by the first world way of life of our people. We are seeing fewer cases of chronic ear infections, which are so common in third world countries with poor socio-economic conditions. A superior healthcare system, such as an effective vaccination programme, and a high standard of perinatal care have together led to a lower incidence of permanent childhood deafness from maternal rubella, prematurity and neonatal meningitis, compared with less developed countries. On the other hand, industrial practices have unintended adverse medical effects such as noise-induced deafness. A stressful lifestyle in a competitive society can aggravate neuro-otological conditions such as tinnitus and giddiness. Higher incomes have made costly devices, such as digital hearing aids and ear implants, affordable.<sup>1</sup> A more educated and increasingly litigious society, may force the Otolaryngologist/Neuro-otologist to practise more defensive medicine. The government's push for the development of biomedical sciences in Singapore has facilitated research and development in this subspecialty.

The demographics in Singapore have, to some extent,

influenced the practice of Otology/Neuro-otology here. Some ear-related conditions such as pre-auricular sinus and pseudo-cyst of the pinna are more prevalent; others such as middle ear effusion in children and otosclerosis are less prevalent here. Nasopharyngeal carcinoma is also common among the Chinese in Singapore. The condition can be difficult to diagnose,<sup>2</sup> due to its varied presentations, including middle ear effusion<sup>3</sup> and some other ear-related symptoms.<sup>4</sup> It is treated primarily by radiotherapy, and the ear structures are included in the radiation fields. Therefore, it can result in sensori-neural hearing loss,<sup>5</sup> conductive deafness,<sup>6</sup> radiation-induced temporal bone tumours and other ear complications.<sup>7</sup> Racial and ethnic differences in the anatomy and physiology of ear structures exist. There are racial differences in temporal bone shape and size, resulting in variations in the anatomical course of the facial nerve,<sup>8</sup> and variations in the positions of the jugular bulb in the middle ear,<sup>9</sup> and of surgical landmarks<sup>10</sup> used in temporal bone operations. All these variations have great clinical importance. The rapidly ageing population of Singapore will also see an increase in age-induced conditions such as presbycusis and giddiness. In treating the elderly with hearing loss and/or giddiness, the Otolaryngologist/Neuro-otologist takes into consideration the availability of home support. Living in extended families and the use of domestic maids are common practices locally.

In a small country like Singapore, a hearing impaired person often lives, works or attends school close to noisy roads and highways. He or she may have greater acoustical needs than someone in a quieter environment. However, a small and highly urbanised country may have advantages. For example, national registries such as for hearing loss may be effectively established. Easy access to appropriate healthcare services facilitates early treatment, and minimises the progression of diseases. For instance, chronic ear infections presenting as intracranial complications are now rarely seen.

Singapore has a humid and hot tropical climate. Fungi thrive under such conditions and patients with otomycosis

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are commonly seen. The tendency to sweat poses a challenge to the proper functioning of electronic ear devices such as hearing aids. Certain ear conditions like multiple exostosis of the external ear canal (commonly seen in Australia and thought to be the result of frequent exposure of the ear to cold water during water sports) is uncommon here. Singapore also has to grapple with certain diseases uniquely affecting this part of the world, which may affect the practice of Otolaryngology/Neuro-otology. For example, the severe acute respiratory syndrome (SARS) outbreak in April to September 2003 affected mainly East Asia, including Singapore. Then, the compulsory wearing of N95 masks during patient care was enforced in the local hospitals. It was a great challenge for persons wearing these tight-fitting masks to provide auditory-verbal or speech therapy to patients with hearing impairment.

At about 18 years of age, male citizens of Singapore serve compulsory national service. Inevitably, there will be a few who are not motivated enough to endure the hardships of military training, and managing malingerers can be difficult. For instance, a serviceman may complain of hearing loss or giddiness, both common symptoms. It can be hard to differentiate the malingerers from those with genuine medical conditions. There is little margin for error, as the former should be punished whilst the latter must be protected.

Training in ear surgery occurs at two levels: general and subspecialty training. In Singapore, general otology is one component of a 6-year Otolaryngology resident training programme. During this period, the trainee acquires the surgical skills required for basic ear operations such as myringoplasty and mastoidectomy. Subspecialty training in Otolaryngology/Neuro-otology is required for more complex ear surgery such as acoustic neuroma excision, cochlear implantation, surgery for vertigo and skull base surgery. An increasingly affluent and litigious society, higher patient expectations, increasing hospital financial constraints, and

limited operating theatre time, may decrease hands-on training opportunities. The focus of training should now be on quality, rather than quantity. Technology should be harnessed so that e-learning and virtual training can be optimised to complement the traditional forms of learning. Opportunities for cadaver dissection should be facilitated within the programme.

In conclusion, the standard of Otolaryngology/Neuro-otology practised in Singapore is comparable to some of the top centres in the world. However, Singapore's own geographical, demographic, socio-economic and political characteristics have dictated, to some extent, the nature of this subspecialty and how it is practised here.

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