

Asystole after ear suctioning

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Case report

Mr AG presented to the emergency department complaining of pruritic ear. Upon examination, the doctor found impacted cerumen in the external auditory meatus. The patient reported that he had been otherwise fit and well, had two myocardial infarctions in the past; no signs and symptoms of heart failure. The patient was on anti-anginals and had been compliant with his medications. He further complained that whenever he tried to clean his ears with cotton wool he felt vertiginous and thus he just wiped the pinna with a wet cloth. The ENT doctor started cleaning with a suction device to clean the deep debris. The patient was compliant and keen on the procedure. After a few seconds into the vacuum suctioning, the patient was nonresponsive. The doctor put up a crash call. The ECG read asystole and the patient was immediately resuscitated as protocol. The patient required two cycles of resuscitation after which he woke up. He was forwarded to the cardiac unit for an extensive workup. Upon further investigation, the patient had had a few milder episodes similar to the ones described. He had been diagnosed

with diabetes recently, but he was able to maintain his blood glucose with diet and metformin. The patient was discharged two days later with further plans for angiography.

Discussion and anatomical analysis

The tympanic membrane is innervated by three cranial nerves, the facial nerve CN VII, glossopharyngeal nerve CN IX and vagus nerve CN X. The vagus nerve extends further to innervate external ear canal or meatus.¹ The reflex has been triggered by the auricular nerve which innervates the posterior part of the external acoustic meatus. The afferent sensations from this nerve send impulses across the vagus trunk to the superior cervical cardiac branches in the thorax responsible for cardiac deceleration. Arnold's reflex, named after the author who discovered the nerve or ear cough reflex,^{2,3} explains the cough that occurs after stimulating the meatus. A similar, yet anonymous, reflex is found between the ear and abdomen, such that an otitis externa or otitis media could mimic appendicitis. Additionally, gentle pressure on the tragus may exacerbate the symp-

Table 1. Common causes of asystole

Hypovolaemia	Tamponade
Hypoxia	Thrombosis, myocardial infarction or pulmonary embolism
Hypo or Hyperkalaemia	Toxins
Hypoglycaemia	Tension pneumothorax
Hypothermia	Trauma (indicating hypovolaemia)
ACIDOSIS- Hydrogen ions	

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toms and cause abdominal pain similar to peritoneal irritation.⁴ Our case highlights the afferent arm of the reflex (located in the external meatus) and the efferent arm of the vagus innervating the cardiac plexus; causing noticeable cardiac deceleration–asystole. It must be noted here that a diet-controlled diabetic patient could well have diabetes-induced dysautonomia which could have enhanced the above mentioned symptoms.^{5,6}

Asystole is a quite common and dreaded complication in emergency. The common mnemonic of 6Hs and 5Ts are a useful reminder (Table 1). This case was unusual in the sense that the patient already had a hyper-responsive vagus nerve but was not investigated for it.

This case highlights the fact that there is no procedure with zero risk and, albeit in some cases patients describe symptoms vaguely, one must be wary that rare cases are unusual, but they do occur.

WHAT GAP THIS FILLS

What we already know: Ear suctioning or syringing is a commonly performed procedure in primary health care to remove ear wax which is causing symptoms such as discomfort, tinnitus or hearing loss.

What this study adds: Even the most common and benign of medical interventions can have serious adverse effects or cause fatality.

References

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LETTERS TO THE EDITOR

Nurse and medical (general) practitioners

Dr Bill Douglas's letter¹ requires correction of a number of misconceptions. I hold a National Minimum Data Set for New Zealand (NZ) Nurse Practitioners (NPs) collected when the total number of NPs was 50 (now 65). Only four had original registration in the US, thus clearly refuting the assertion that many NZ NPs are US-trained and rendering irrelevant many of the comments made. There is similarity between the two countries: both regulate the role of NP and require the full Master's degree and relevant clinical training. Clear data on other aspects of NZ NPs is also available.

Production of NPs in NZ is of variable duration depending on how each nurse takes that journey and how much support is

given. Dr Douglas's suggestion of 10–12 years of personal and employer cost is inaccurate. All nurses undertake a self- and tertiary-funded three-year Bachelor's degree, before commencing paid contribution to the health sector. Within one to two years they may choose to commence the two-year Master's degree; most do this as part-time students over four to five years while building clinical hours in paid practice. Master's course fees are paid either by the Clinical Training Agency (CTA), occasionally by employers and often by nurses themselves. Some candidates apply immediately, some wait longer but all are practising as registered nurses (RNs) throughout the entire period. The full-time study equivalent is five years and clinical preparation is completed while contributing to the sector as an RN.

Letters may respond to published papers, briefly report original research or case reports, or raise matters of interest relevant to primary health care. The best letters are succinct and stimulating. Letters of no more than 400 words may be emailed to: editor@rnzcgp.org.nz. All letters are subject to editing and may be shortened.