

Clinical Records

Gustatory sweating of the external auditory canal

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Abstract

Gustatory sweating of the external auditory canal is extremely rare. A clinical case, that is only the second in the English literature, is presented. The potential pathogenesis and its treatment options are discussed.

Key words: Ear canal; Sweating, gustatory

Introduction

Several gustatory sweating syndromes exist in the literature. The most famous of which, is perhaps Frey's syndrome. This was first described in 1923, by the eponymous Polish neurologist, in a 25-year-old soldier who had suffered gunshot wounds to the face (Frey, 1923). Other similar syndromes do however exist; for example chorda tympani syndrome which is characterized by gustatory sweating and occurs secondary to trauma in the submental region (Wilson, 1936). A much more unusual case of gustatory sweating involving the external auditory canal, is presented. This is only the second such report in the English literature and in a similar fashion to the first, it appeared spontaneously.

Case report

A 67-year-old female presented to this department with a four-month history of unilateral left-sided otorrhoea. She was previously systemically well, specifically no history of diabetes, and no previous otological problems. Her hearing remained normal throughout and this was confirmed by pure tone audiogram. There was no tinnitus, vertigo or otalgia at any point. The patient herself noted and volunteered that the clear otorrhoea was precipitated by eating and stopped when a meal had been completed. There was no history of infection, trauma or other obviously associated event; indeed this appeared to be a completely spontaneous event. Examination of the ear demonstrated an intact tympanic membrane with no overt features of disease. There was no neurological deficit, specifically no abnormality of motor or sensory function involving any of the cranial nerves. Diagnosis of a gustatory sweating syndrome was suggested by the production of sweat in the canal after chewing (Figure 1) and this was confirmed by Minor's starch-iodine test (Gordon and Fiddian, 1976). In this test, the skin of the external auditory canal was painted with a solution made up of iodine in alcohol. The area was then dusted with starch powder. The patient was asked to chew a lemon for two minutes to stimulate saliva production and its presence

in the external auditory canal reacted with the iodine to produce a blue colour (Figure 2). Initial treatment was medical using aluminium tri-chloro-hexahydrate, but this was unhelpful. After discussion with the patient a tympanic neurectomy was performed with a reasonable short-term result.

Discussion

Gustatory sweating syndromes are not particularly rare and can be either congenital or acquired in origin, and in either category can be unilateral or bilateral (Johnson and Birchall, 1995). Most have clearly defined precipitating events, the commonest of which is trauma, either blunt or penetrating. Infection, usually localized to the affected area, is the next most common association and occasionally it occurs with systemic pathology such as diabetes (Drummond *et al.*, 1987). Spontaneous gustatory sweating

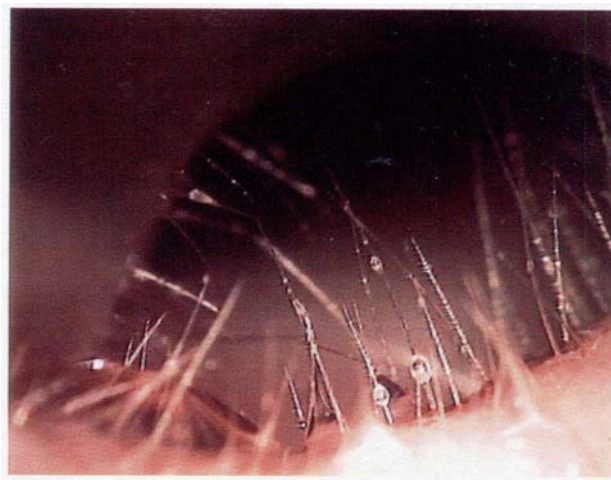


FIG. 1.

Gustatory sweating in the external auditory canal.

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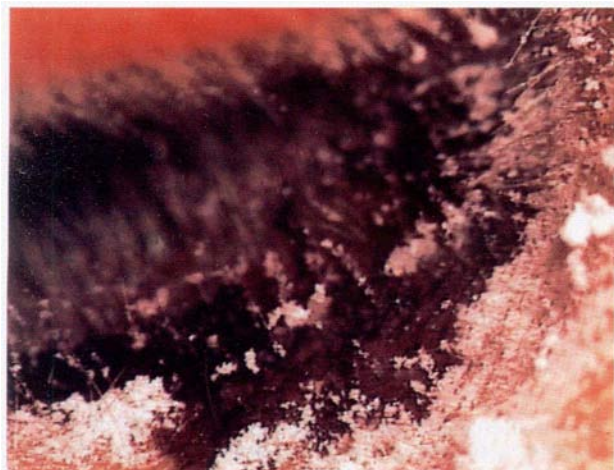


FIG. 2.

Starch iodine reaction in the external auditory canal.

syndromes have been previously reported (Redleaf and McCabe, 1993), but it is more difficult to explain this on a pathophysiological basis.

The gustatory reflex has a common afferent pathway from the numerous receptors in the oral cavity. The afferent sensory fibres relay in the nucleus of tractus solitarius where there are central connections between this nucleus and the salivatory nuclei. The secretor motor fibres of the efferent arm of the reflex commence in these salivatory nuclei. Fibres from the inferior salivatory nucleus course via the tympanic branch of the glossopharyngeal nerve, the lesser superficial petrosal nerve through the foramen ovale and synapse at the otic ganglion. The secretor motor fibres then travel with the auriculotemporal nerve to the parotid gland. The superior salivatory nucleus sends fibres initially as the nervus intermedius, which then divides and distributes the secretor motor impulses along the greater superficial petrosal nerve, its tympanic branches which form the tympanic plexus with the glossopharyngeal nerve and the chorda tympani nerve. The latter eventually joins the lingual nerve and the fibres synapse at the submandibular ganglion and hence on to the submandibular and sublingual glands.

In Frey's syndrome the aetiology is usually easy to determine, in that there is a break in the continuity of the secretor motor fibres with a subsequent re-routing of the fibres to the new destination. The cutaneous sweat glands also utilize acetylcholine as the neurotransmitter hence the

gustatory sweating syndrome is produced by the parasympathetic nerves. In this report no such episode is present to explain the pathogenesis of the syndrome. The logical anatomical site for the disruption of the fibres would be in the middle-ear cleft. Perhaps an unrecognized or forgotten infection, caused a disruption of the fibres with their consequent re-routing to the external auditory canal and production of gustatory sweating.

Interestingly, in the first reported case involving the external auditory canal, a spontaneous aetiology was also noted (Redleaf and McCabe, 1993), on that occasion the skin of the auditory canal was excised as a method of treatment and subsequent histological examination revealed hypertrophy of the sweat glands. In this case the patient declined that type of excisional procedure, however, if compared to the situation in Frey's syndrome this may be the most effective mode of treatment in the long-term. In both this case and the previous report the authors agree that the treatment protocol should be analogous to the management of Frey's syndrome.

Antiperspirants have been used as a first line therapy, but generally they have a relatively poor response. The surgical options appear to provide the best long-term treatment and these include the sectioning nerve fibres with the potential to interpose tissue (usually muscle) to prevent the re-growth of the nerve to the sweat glands.

This case report documents the second report in the English literature of gustatory sweating involving the external auditory canal.

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