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View from Within: Radiology in Focus

Adenoid cystic carcinoma: a comparison between CT, MR and Gd MR imaging techniques

M. Wake F.R.C.S., P. D. Phelps, M.D., F.R.C.S., F.R.C.R. (Coventry)

Abstract
Nasopharyngeal carcinoma continues to be a difficult diagnostic problem in many patients. It is well known that amongst the many and varied manifestations of this disease, a unilateral middle ear effusion in an adult should be regarded with suspicion. Such a case in a 42-year-old patient is presented. In this case the benefit of Gadolinium enhanced magnetic resonance imaging over and above computerized tomography is demonstrated.

Introduction
The nasopharynx is lined by a combination of respiratory type and squamous epithelium interspersed by areas of transitional type epithelium. Subepithelial connective tissue contains abundant lymphoid tissue and there are scattered areas of minor salivary glands.

Carcinomas may arise from any of the above components of the nasopharyngeal epithelium. Squamous carcinomas of one or other type are commonest but adenocarcinomas or adenoid cystic carcinomas occur less commonly.

Nasopharyngeal carcinoma may arise beneath apparently normal mucosa. The variety of clinical presentations is legion. Often this leads to delayed diagnosis and advanced stage of disease prior to treatment.

Whilst metastatic disease is a common mode of first presentation, nasal or otological symptoms are almost as common. Neurological symptoms signify skull base or intracranial extension, often involving the trigeminal, abducens, glossopharyngeal or vagus nerves.

When clinically obvious tumour is not present, diagnosis relies heavily on imaging techniques. In addition, staging of disease requires radiological investigation. Plain X-rays may reveal bone erosion or peri-tumour sclerosis although these are often better demonstrated by tomography. Computerized tomography benefits from both excellent bone detail plus providing additional information about surrounding soft tissues of the nasopharynx and skull bones. Magnetic resonance imaging is now available for assessment of these tumours and in some cases will provide additional information to computerized tomography. Whilst Gadolinium enhancement may be

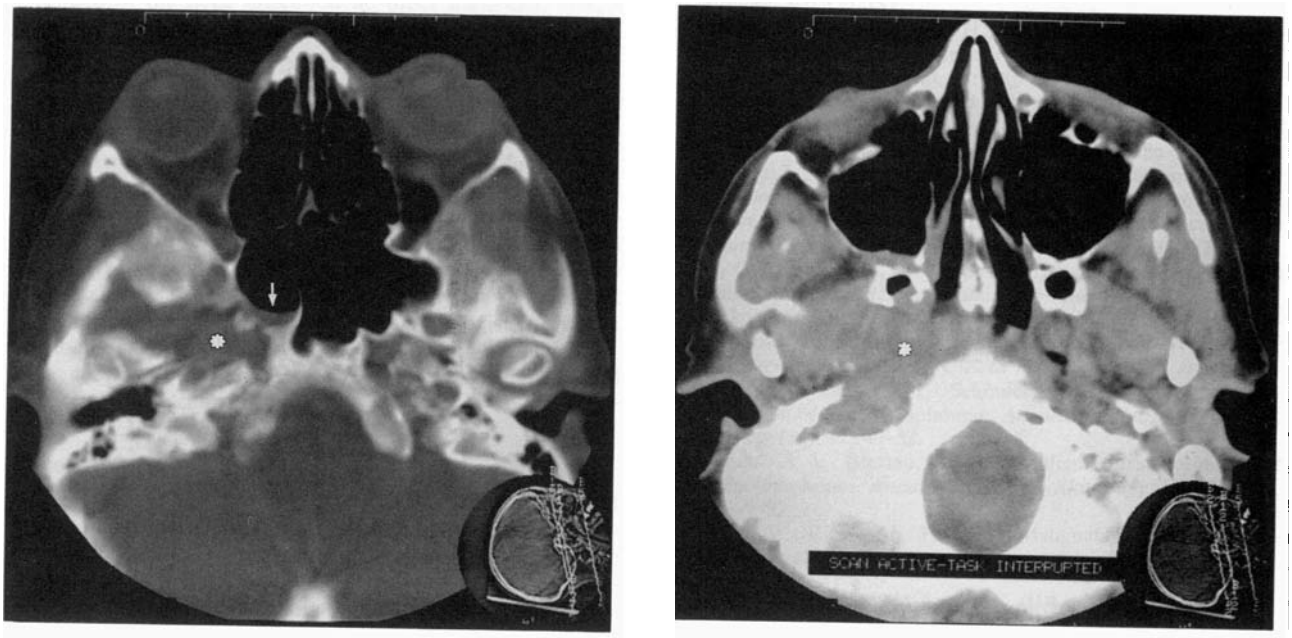


Fig. 1,2
Axial CT examination

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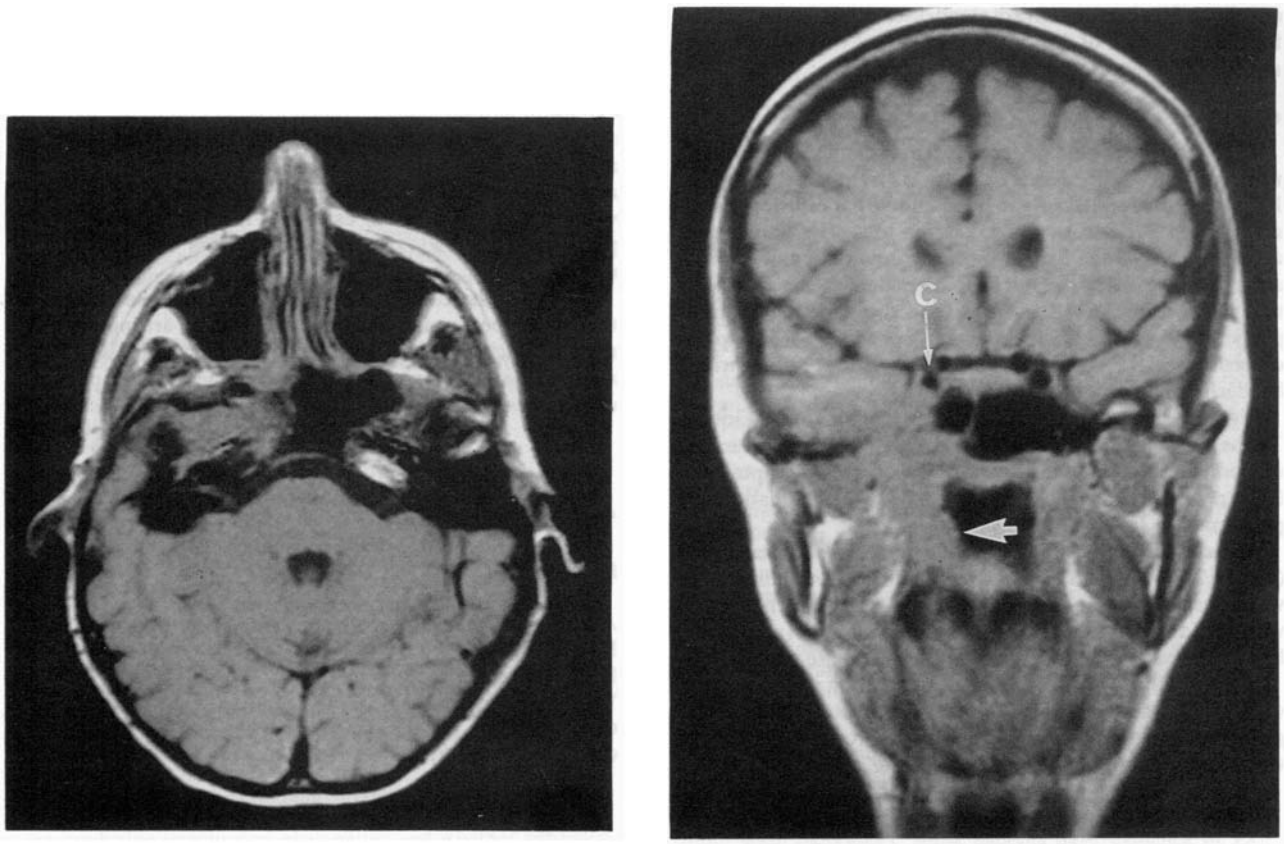


FIG. 3,4
Axial and coronal MR

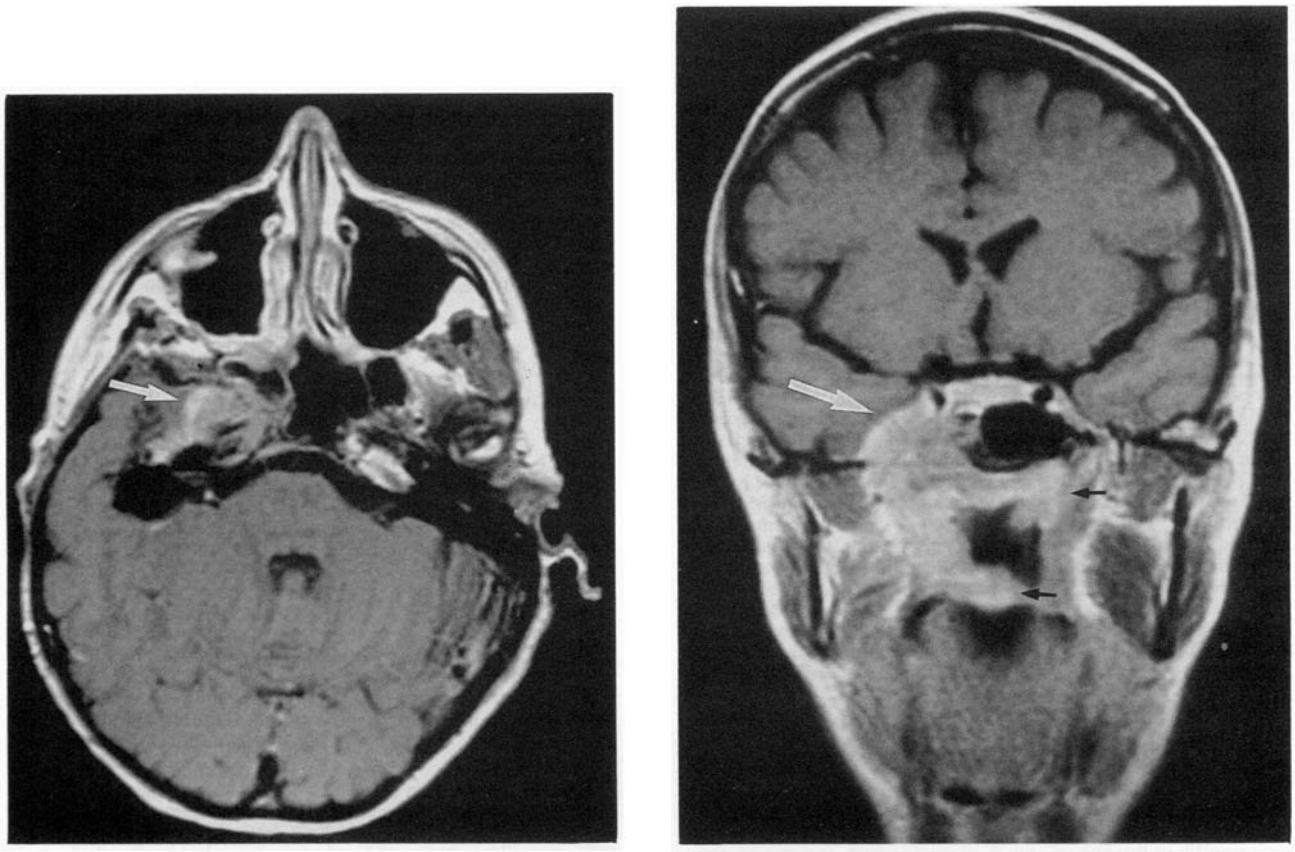


FIG. 5,6
Enhanced axial and coronal MR

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unnecessary in benign salivary gland disease it is recommended for the evaluation of difficult or unusual salivary gland malignancies. The reported case highlights this fact.

Case report

A 42-year-old female patient presented to the ENT Department, in 1985, with a short history of right-sided deafness. Examination revealed a right-sided middle ear effusion associated with a 30 dB conductive hearing loss. The patient was added to the waiting list for right myringotomy and examination of post-nasal space, but the patient defaulted and was lost to follow-up until 1988. At this time the patient now complained of right-sided facial pain over the right cheek, paraesthesia over the right side of the tongue and right parietal headaches in addition to the deafness.

Right myringotomy revealed middle ear fluid and a Goode-T-tube was inserted at operation. At this time post-nasal examination was thought to be normal. However, the symptoms of facial pain and headaches persisted and a CT examination was performed in January 1990.

An axial CT scan using 5 mm slice thickness was performed (Figs. 1,2). Whilst this revealed no definite abnormallity, there was a suspicion of bone erosion around the foramen lacerum with a fluid level present in the right sphenoid sinus (arrow) and loss of normal soft tissue planes at the skull base (asterisk).

In view of these findings, an MR examination was performed with and without Gadolinium enhancement (Dimeglumine gadopentetate, Magnevist). Axial and coronal T1 weighted views, using 5 mm slice thickness, SE 780/20 was performed.

Unenhanced views are shown in Figures 3 and 4. This revealed an infiltrative lesion extending from the right side of the soft palate extending around the right lateral wall of the nasopharynx (large arrow). There is a suspicion of intracranial extension into the middle cranial fossa lateral to the sphenoid sinus (the internal carotid artery is marked with the small arrow, c). Gadolinium enhanced scans are shown in Figures 5 and 6. These demonstrate marked enhancement of the lesion with obvious intracranial extension involving the right temporal lobe (arrow) and extension across the roof of the nasopharynx.

In view of these findings a further examination under anaesthesia was performed and revealed a mass arising from the right Eustachian tube orifice. Biopsy confirmed this to be an adenoid cystic carcinoma. Further treatment of this patient is still under consideration.

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Address for correspondence:
Mr M. Wake,
ENT Department,
Walsgrave Hospital,
Clifford Bridge Road,
Coventry CV2 2DX,

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