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The changing pattern of mastoid abscess

by

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Introduction

Post-auricular subperiosteal abscess, otherwise called mastoid abscess, is a sequela of coalescent mastoiditis which itself is a complication of acute suppurative otitis media. Thanks to effective antibiotic treatment of acute otitis media, coalescent mastoiditis and acute mastoid abscess are now rarely encountered in the developed countries. In Nigeria, however, mastoid abscess is still commonly encountered as a complication of chronic otitis media without cholesteatoma. This review attempts to identify the factors responsible for the prevalence and altered presentations of the disease in Nigeria.

Material and Method

Forty-two cases of mastoid abscess seen by the author are analysed with particular attention to cause, duration of illness, clinical presentation, pathology and result of treatment. *Results:* There were 27 males and 15 females. The ages ranged from three years to 16 years. Forty-one patients were less than 10 years of age. They all had chronic discharging ears for periods of two years to 10 years. They had all applied various ear drops over the same period. One case was a recurrence after a previous simple mastoidectomy operation was performed elsewhere three years previously. One patient died of brain abscess.

Clinical presentation

All the patients presented because of painful swelling behind or above the pinna, or of discharging sinus or sinuses at the same location. In 20 cases the sinuses followed spontaneous bursting of an abscess. In 17 others, it followed incision and drainage that failed to heal. Other presenting complaints include chronic discharging ears, 'growth' in the meatus, 'growth' behind the ear, fever and headache.

The location of the swellings varied. In children under five years of age, the swelling was above the pinna and extending forward to the root of the zygoma. These swellings, although frequently fluctuant, rarely burst spontaneously. The pinna is displaced laterally and inferiorly (Fig. 1). In the older children the swelling was behind the pinna over the mastoid process (Fig. 2). Huge aural polyps of long standing were common (Fig. 3). Exuberant granulations around the discharging sinuses (Fig. 4) were usually described as 'non-healing ulcers'.

Surgical findings

The mastoid air cells were well developed but filled with thin mucus and granulation tissue. In five cases, the mastoid was sclerotic. There was a defect of the mastoid cortex in all cases. This defect was always inferior to the supra-meatal triangle. Removing the mastoid cortex usually exposed a huge mass of granulations and pus. In 23 cases the mass of granulation filled the mastoid cavity and the mastoid antrum only. In these cases, the aditus ad antrum was observed to be tightly plugged by a cheesy material. In 17 cases, the

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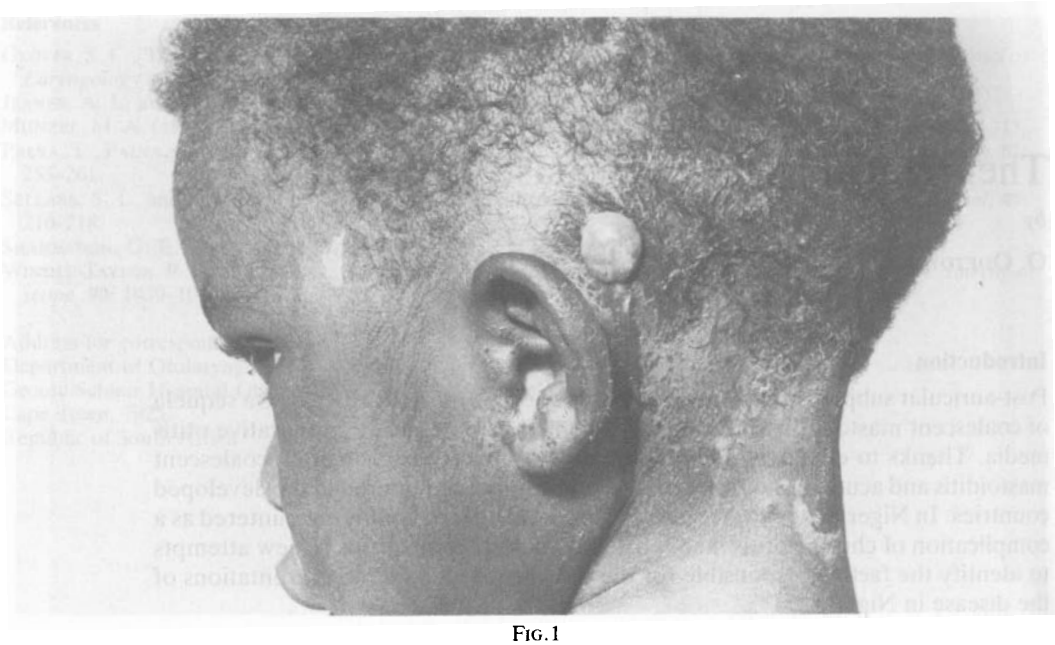


FIG. 1
In children under five years of age, swelling is above the pinna.

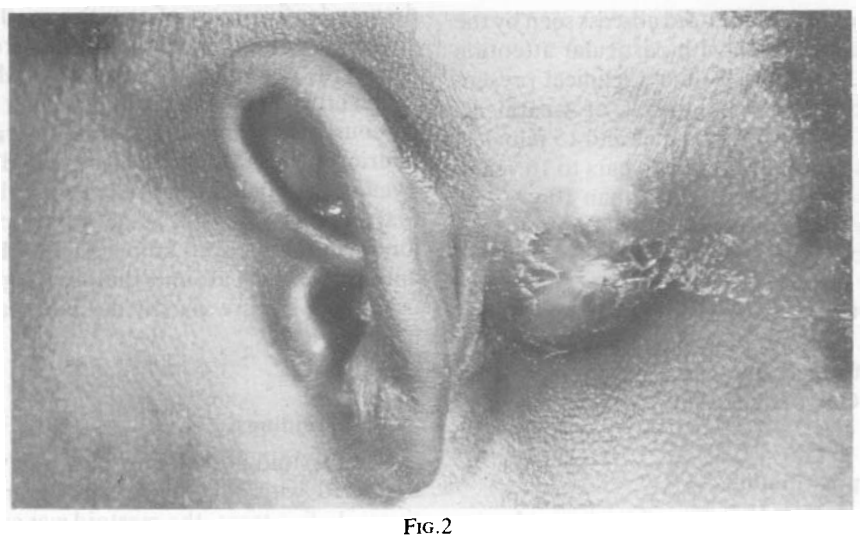


FIG. 2
In older patients the 'boil' is behind the pinna.

mass of granulation tissue continued through the aditus and the tympanum and appeared in the meatus an as aural polyp. In two cases the aditus was plugged by the cheesy material and the granulation in the mastoid process eroded the posterior meatal wall to appear in the meatus as a polyp. In all cases, there was a large perforation of the pars tensa of the tympanic membrane and necrosis of the long process of the incus. The mucous membrane of the tympanic cavity was either red, thick and velvety or oedomatous with a tendency for granulation and polyp formation. The typical flakes or lumps of keratinized desqua-

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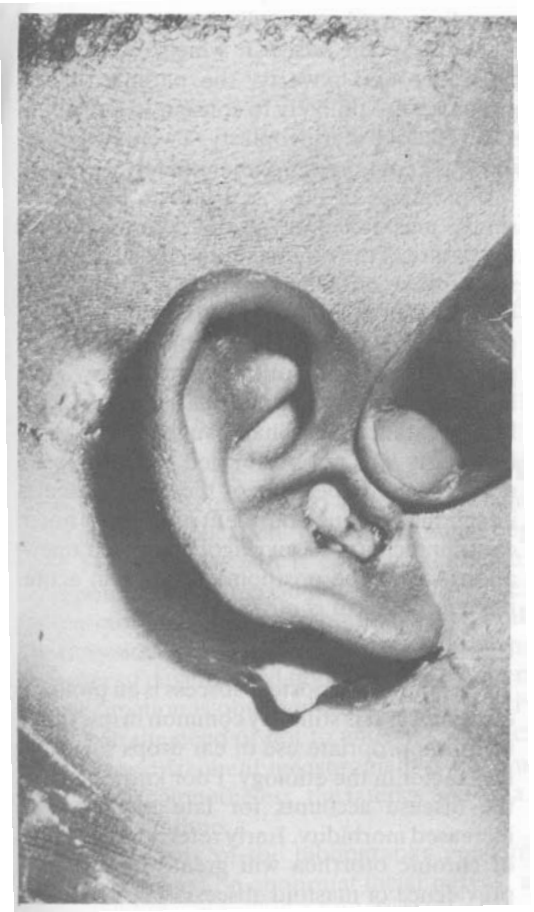


FIG.3
Multiple sinuses and aural polyp.

mated epithelium of cholesteatoma were not observed anywhere in the tympanic cavity.

Discussion

Mastoid subperiosteal abscess typically complicates acute coalescent mastoiditis. Mastoiditis usually complicates acute otitis media. It may also occur after chronic suppurative otitis media. In such a case an acute infection is superimposed on the basic chronic inflammation. Apart from general factors, mastoiditis is influenced by the anatomy of the aditus region (Richardson, 1963).

If the aditus is obstructed, an increase in pressure develops in the mastoid segment due to purulent exudation. This back pressure causes osteitis and necrosis, and with coalescence of the cells the infection tends to spread peripherally to break through the cortex. Typically, the treatment is simple mastoidectomy aimed at removing diseased bone. Full recovery of the ear is the rule. Rarely subperiosteal abscess complicates cholesteatomatous chronic otorrhea due to erosion of the mastoid cortex. This is treated by radical mastoidectomy.

In the present cases subperiosteal abscess resulted from chronic otorrhea without cholesteatoma. The chronic otorrhea, which started during a severe childhood infection like measles or scarlet fever, was treated for long periods with ear drops without any attention to aural toilet. In 25 cases the aditus was blocked by non-epithelial cheesy material and in 17 cases by granulation. The following, therefore, appears to be the pathogenesis of this complication: A focus of granulation is formed around the antrum at the time of the



FIG.4
Multiple sinuses following incisions.

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initial otitis media. This sustains the otorrhea which is erroneously treated with various ear drops. A mass of inspissated ear drops and mucus accumulates and plugs the aditus ad antrum. The granulation tissue, which is cut off in the antrum, continues to grow in size eroding the mastoid right to the cortex. Bacteriology reports were available for only 32 cases.

A variety of organisms were isolated from the pus. Pseudomonas aeruginosa, E. Coli, proteus bacilli and staph. aureus were the most frequent isolates. Anaerobic streptococcus was grown 15 times in association with other organisms.

Diagnosis is usually obvious. Mastoid X-rays were done in only nine cases. In seven cases the air cells were well developed but cloudy. In two cases the mastoid was sclerotic. There was no correlation between the X-ray appearance and the duration of the illness. In all nine cases a cavity in the mastoid process was evident on the X-ray.

The pathology of mastoid periosteal abscess is poorly understood by doctors in this area. Seventeen patients presented many weeks after the abscess had been incised and drained as definitive treatment. Twenty others with spontaneous rupture were treated for long periods as a 'boil' before being referred.

The treatment of the disease is simple mastoidectomy which is usually followed by healing of the tympanic membrane (Maran and Stell, 1979). However, in this series, no ear drum healed spontaneously after simple mastoidectomy. Nine out of 15 ears dried up after 2–4 weeks, but required second-stage grafting of the ear drum. In 27 other cases, it was expedient to do a madical mastoidectomy. These were the cases in which, because of ignorance and poverty, the parents of the patients were unlikely to consent to a second-stage elective myringoplasty. Twenty-one out of the 27 ears dried up immediately.

The failure of the ear drums to heal after simple mastoidectomy in this series is due to the nature of the original otitis media. In acute suppurative otitis media complicating severe childhood infections large portions of the tympanic membrane where the blood supply is poorest become necrotic and slough, leaving a large central perforation that usually fails to heal spontaneously (Shambaugh, 1967). Myringoplasty was not performed at the time of mastoidectomy because of the existing acute infection. Although purulent otorrhea is not a contraindication to myringoplasty such operations should be postponed during an acute infection (Smyth *et al.* 1971).

Conclusion

Mastoid subperiosteal abscess is an otologic emergency. It is still very common in our practice. Inappropriate use of ear drops seems to be a factor in the etiology. Poor knowledge of the disease accounts for late referral and increased morbidity. Early referral of all cases of chronic otorrhea will greatly reduce the prevalence of mastoid abscess. The choice of operation is influenced by a consideration of the patient's socio-economic status.

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