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An unusual prevalence of complications of chronic suppurative otitis media in young adults

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Abstract

The complications of chronic suppurative otitis media as seen in 117 patients are presented. Fifty per cent of the patients had cholesteatoma, and 28 per cent revealed complications. Two-thirds of these complications, especially the serious intracranial ones, were encountered in young females. This female predominance was attributed to late presentation because of social reasons, or to undue susceptibility to the destructive effect of cholesteatoma.

Radical and modified radical operations were recommended to render the ears safe, as most of the patients came from distant rural areas and were judged to have poor compliance to report for regular checks.

Introduction

The destructive nature of cholesteatoma and chronic suppurative otitis media (CSOM) has been well documented in the literature (Dawes, 1979; Shambaugh and Glasscock, 1980; Bagger-Sjoback and Phelps, 1985). Spread of infection beyond the anatomical limits of the middle ear to the labyrinth, the lateral sinus with resultant thrombosis and the meninges with subsequent spread to the brain need not be emphasized. Moreover, the aggressive behaviour of cholesteatoma in children has been reported by many authors including Baron (1969) and Shenoy and Kakar (1987).

The object of the present study is to throw more light on some of the complications of CSOM. The prevalence of these complications in young adults, especially females, will be noted and discussed.

Patients and material

The material of this study consists of 117 patients with CSOM (atticoantral and tubotympanic) who underwent mastoidectomy or ear exploration at King Fahad Hospital, Al Madina Al Munawarah, Kingdom of Saudi Arabia, during the two year period 1988–89. The age of the patients varied from five to more than 40 years; however, the majority were young adults in their second and third decades, (Table I, Fig. 1). The ratio of males to females was nearly 2:1.

TABLE I
SEX AND AGE DISTRIBUTION OF MASTOIDECTOMIES AND EAR EXPLORATIONS

Age in years	<10	11–20	21–30	31–41	>41
Females (43 pts.)	4	18	16	4	1
Males (74 pts.)	1	26	31	11	5
Total (117 pts.)	5	44	47	15	6

Pathological findings and operative procedures

Cholesteatoma with or without granulations was found in 55 per cent of the patients, half of them being under 20 years of age; while granulations and polypi were found in 45 per cent, (Table II). The operative procedures varied with the pathological findings (Table III). Fifty-one patients (43 per cent) had radical mastoidectomies. Sixteen patients (14 per cent) had intact canal wall extended cortical mastoidectomy and atticotomy, as described by Paparella and Jung (1983). Cortical mas-

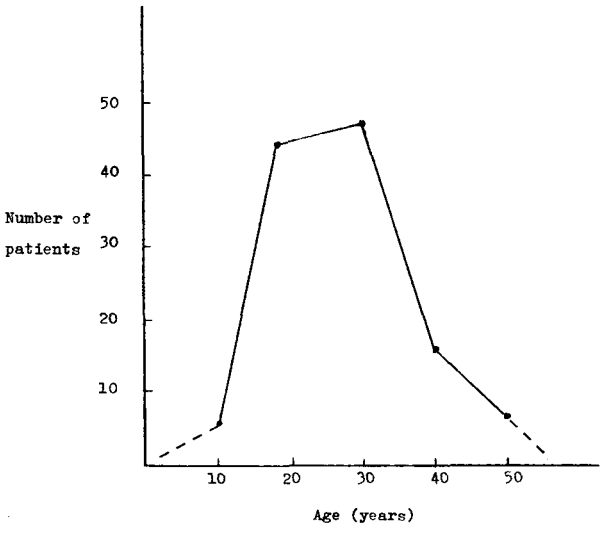

FIG. 1

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TABLE II
SURGICAL PATHOLOGY AND OPERATIVE FINDINGS

Operative findings	Number of patients	Percent of of total
Cholesteatoma	41 (22 pts age <20 years)	35%
Granulations and polypi	53	45%
Cholesteatoma and granulations	23	20%

toidectomy and reconstructive tympanoplasty were performed on 30 patients (25 per cent). The remaining 18 per cent comprised atticoantrostomy and modified radical mastoidectomy. It should be noted that radical and modified radical operations accounted for 50 per cent of the procedures.

Observed complications

Thirty-three patients (28 per cent of the total) revealed complications of CSOM (Tables IV and V). The female: male ratio was 2:1. It should be emphasized that the very serious complications of facial palsy, lateral sinus thrombosis and brain abscesses were diagnosed pre-operatively in young females (Table IV). One of the two patients with brain abscesses was a girl of 14 years who had a unilateral cerebellar abscess pushing the brain stem off the mid-line. She died on the third post-operative day, probably because of obstructive hydrocephalus and brain stem coning. The second patient was a female of 40 years who had a temporal lobe abscess which was successfully drained through the tegmen tympani during radical mastoidectomy. These two brain abscesses accounted for 6 per cent of the complications.

One of the patients whose sigmoid sinus had become exposed, was a girl of 10 years who was suspected pre-operatively to have a lateral sinus thrombosis; this was confirmed intra-operatively by needling. No ligation was performed and the patient recovered well on intensive antibiotic therapy.

Discussion

Although the number of operative procedures performed in males was nearly twice as that in females, the prevalence of complications encountered was the reverse. These ranged from minimal exposure of the sigmoid sinus seen at operation to serious brain abscess suspected when the patient first presented. The incidence of intracranial suppuration in this study is high compared to an annual figure of 1.5 per cent reported by Nunez and Browning (1990) in Glasgow. Moreover, one of our two patients with brain abscesses died, giving a mortality rate of 50 per cent, similar to that reported by Jacobson (1979) for posterior fossa abscesses. Brain abscesses, lateral sinus thrombosis and facial palsies predominated in females (Table IV). These young patients were invariably deaf. For social reasons the deafness was overlooked until the patient presented late with a facial palsy or with non-specific symptoms of headache, drowsiness, vomiting and confusion associated with otorrhoea. These symptoms are dubious indicators of an intracranial complication. Samuel and Fernandes (1987) reported 37 out of 45 cases (82 per cent) of lateral sinus thrombosis in young Blacks under the age of 15 years, while O'Connell (1990) reported 2 cases out of 3 in children under 10 years, presenting with constitutional symptoms and otorrhoea. In agreement with these authors a high index of suspicion is necessary for early diagnosis of otogenic intracranial complications, especially in young patients of lower socio-economic group presenting with these non-specific symptoms and a discharging ear. Moreover, most of our patients come from remote rural areas, where middle ear infections and respiratory and allergic manifestations prevail (Ashoor, 1983). The results of recurrent effusions and deafness are probably ignored until retraction pockets and cholesteatoma with infection supervene. It may be difficult to substantiate a suggestion that infected middle ear clefts of these young patients are probably more susceptible to osteolytic destruction. However, such a notion cannot be completely refuted knowing that, because of poor exposure to sunlight, children in this region are more prone to rickets (Elidrissy, 1990). It is also interesting that, for the same reasons, Sedrani *et al.* (1989) demonstrated significantly low plasma levels of vitamin D (25-OHD) in Saudi females, living in rural areas, compared with those in males. Moreover, Harris (1962) and Abramson and Gross (1971) found high concentration of collagenase and other bone breakdown enzymes in cholesteatoma matrix. It may be surmised that patients with low levels of vitamin D, and abnormal bone metabolism, are probably more susceptible to the destructive effects of these osteolytic enzymes.

Radical and modified radical mastoidectomies were performed on 50 per cent of our patients; either those with complications or those with cholesteatoma and granulations in well pneumatized systems. Our hospital is a major otological centre in Saudi Arabia and serves a wide catchment of population who are referred from remote areas and have poor compliance for regular follow-up. Thorough eradication of disease to render their ears safe remains, as expected, our primary objective. Although the creation of such easily accessible cavities, that can be followed up by specialists at their local hospitals, is done at some expense of hearing, but it is a small price to pay for safety. An intact canal wall procedure as

TABLE III
PERFORMED OPERATIVE PROCEDURES CORRELATED WITH PATHOLOGY

Operative procedure	Females	Males	Remarks
Radical mastoidectomy	24	27	Mainly for extensive cholesteatoma
Modified radical mastoidectomy	3	3	Limited cholesteatoma with granulations
Extended cortical mastoidectomy and atticotomy	4	12	Mainly for granulations and polypoid mucosa
Atticoantrostomy	3	11	For disease confined to attic and antrum
Mastoid operation and tympanoplasty type 1 or 2	9	21	Mastoidectomy may be cortical or extended cortical with atticoantrostomy

TABLE IV
COMPLICATIONS OF UNSAFE CSOM

Complication	Female	Male	Total	Remarks
Facial palsy	3	–	3	All patients were females
Brain abscess	2	–	2	Both were females, one with temporal lobe abscess and the other with cerebeller abscess
Exposed sigmoid sinus	4	–	4	All patients were females; one with lateral sinus thrombosis
Exposed facial nerve	2	2	4	
Exposed dura	4	3	7	
Subperiosteal mastoid abscess	–	1	1	
Multiple exposures of dura, sigmoid sinus, facial nerve and LSCC	7	5	12	
Total	22	11	33	

Note: Female predominance in the first three complications.

performed by Sanna *et al.* (1987) cannot , however, be recommended for such patients where the magnitude of risk far outweighs the little sacrifice in hearing. It is not intended to discuss in details the advantages and disadvantages of intact canal wall and radical operations and the sacrifices required from a patient to render his ear safe by these procedures. However, in any plan of treatment the sacrifice required from a patient relates to the size of his handicap (Kerr, 1987). Accordingly, it would be expected that the handicap of a chronically discharging ear with a complication is safely rectified by a thorough clearance operation which may result in some loss of hearing. Restoration of the latter by reconstructive procedures can always be attempted later on a safe dry ear as recommended by Palva *et al.* (1975).

The one-stage procedure of intact canal mastoidectomy and reconstructive tympanoplasty was, however, performed on 25 per cent of our patients, who were living in the close vicinity and who were found to have small granulations. Following thorough clearance of the latter, ossiculoplasty and temporalis fascia grafting were performed. A two year follow-up on these patients revealed satisfactory gain in hearing.

Conclusion

The operative findings in 117 patients with CSOM are discussed. Two-thirds of the complications were found in young females. It is concluded that this is probably the result of late presentation due to social or other factors. Also the susceptibility of the ears of these patients to the destructive effects of cholesteatoma may be attributable to abnormal bone metabolism due to low levels of plasma vitamin D.

The majority of our patients come from remote rural areas. Radical and modified radical procedures are recommended to ensure safety. Easily accessible cavities can be followed up at their local hospitals.

TABLE V
PERCENTAGE OF COMPLICATIONS

Sex	Number	Percent	Remarks
Females	22/33	66%	Invariably deaf (social stigma?)
Males	11/33	33%	Invariably deaf
Number of complications grand total	33/117	28%	

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