The General Practice 'Management of Otitis Externa'

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SUMMARY: Clinical confusion, treatment failure and recurrence commonly plague the Management of Otitis Externa. The aim of this study was to investigate the clinical attitudes and habits of army general practitioners and to review the recent literature. The results of a questionnaire survey showed that although all the respondents agreed that aural toilet was important, only 50% felt confident in performing aural toilet and packing. There also appeared to be much greater scope for the use of astringents and effective preventative measures in addition to aural toilet. The discussion emphasises the need for careful selection of the most appropriate topical agent, whilst highlighting the roles of practical procedures, bacteriology and prevention. A practical guide to diagnosis and management is offered with the aid of illustrations and an algorithm.

Introduction

Otitis externa (OE) is a common problem, and a general practitioner can expect to see some 16 new cases per year (1) with up to 10 per cent of the population being affected at some time in their life (2). Predisposing factors include pre-existing skin disease such as eczema, prolonged or repeated exposure to swimming water, both contaminated (3) and clear (4), and trauma to the external auditory meatus. All these are aggravated by hot climates, as illustrated by the reported frequency of OE in the Middle and Far East of 60 per thousand per annum during the Second World War (5). Previous literature has largely established the relative values and efficacy of certain key aspects of therapy. However, more recently, questions have been raised regarding awareness of these fundamentals and the effectiveness of current management policies (6, 7). The present study was undertaken to examine the attitudes and habits of a large group of Army GPs using a questionnaire based on accepted clinical keystones (6, 8, 9, 10). The discussion compares the results with current opinion and reflects on the advantages and disadvantages of the available range of topical ear preparations available for the treatment of OE.

Methods

A postal questionnaire was sent to all the general practitioners in the catchment area of the British Military Hospitals at Rinteln and Hannover; both are served by the Rinteln Ear, Nose and Throat (ENT) department.

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Replies were received from 51 out of 70 practitioners (response rate 74%) in a total of 21 medical centres. Views were sought in particular on topical ear preparations and the role of practical aural procedures.

Results

Eighteen different types of ear preparations were suggested. Nine doctors suggested only one substance, 24 indicated two and 18 had three choices. Antibiotic-steroid drops were the commonest first choice, being reported in 45 out of 51 (89%) cases. Astringents (three), quinolones (two), and a coal tar-steroid mixture (one) were the other primary selections. Astringents and antibiotic-steroid drops appeared somewhere in the overall choices of five (10%) and fifty (99%) of the doctors respectively. The commonest agent was Gentisone-HC drops, suggested by forty separate doctors (79%).

There was universal agreement that aural toilet was a key aspect of management. Despite this only twenty-six (51%) of respondents felt able to perform aural toilet. Some 33% of vocational trainees and 80% of doctors with ENT experience were confident in this procedure, while twenty-nine (57%) felt able to insert an ear wick. Of the latter fourteen (48%) used glycerine and ichthammol as a soaking agent, while steroid and antibiotic mixtures and aluminium acetate were the other preferences of twelve (41%) and three (11%) respectively. Twenty doctors (39%) felt that ear swabs and bacteriology were important in the initial management

of OE. Amoxycillin and ampicillin were the commonest oral agents suggested (by twenty-six), when antibiotics were indicated. Flucloxacillin (seventeen), erythromycin (four), cephadrine (two) and co-trimoxazole (two) were the others. Twenty-four respondents (47%) gave practical advice against recurrence, thirteen suggesting astringent and/or alcohol drops. Simple drying of the ear (five), olive oil (one), sodium bicarbonate (one), antibiotic-steroid drops (one), and ear plugs (one) also appeared.

Discussion

Pathophysiology

Disruption of the natural self-cleansing mechanism of the outer ear and its antibacterial cerumen is frequently the initiating factor (11,12). This is usually caused by a mixture of environmental and local physical factors. For example, a regular swimmer's ear may become itchy and is then irritated with a matchstick head. This leads to secondary inflammation or sensitisation (the chrome in the matchstick head) with subsequent invasion by micro-organisms. McKelvie and McKelvie found that almost 60% of one group of OE sufferers admitted poking or scratching their ears with various implements (13). Fifty-eight different types of OE have been described (8) and there have been a number of popular synonyms such as *hot weather ear*, *swimmer's ear*, *swimming pool ear*, *tropical ear*, and *Singapore ear*. Several classifications exist but perhaps the simplest is to consider two main groups: *reactive*: (including skin disorders, allergy and sensitisation to chemicals and ear drops) and *infective* (bacterial, fungal and viral) (14). Subgroups contain several specific forms such as herpetic or psoriatic OE, but the most common presentation is that of a diffuse of non specific form. There is a wide spectrum of severity, ranging from mild itchy lesions to the distressingly painful oedematous cases requiring intensive inpatient treatment. Treatment failure may be due to bacterial resistance, lack of aural toilet or use of hygroscopic agents (15), sensitisation to topical chemicals or antibiotics, failure to identify or remove causative factors (16), and secondary otomycosis. A detailed initial history and skilled use of the various therapeutic options will minimise such failures.

Practical Procedures

Aural toilet remains fundamental to the successful management of OE in the presence of any significant discharge. Most authors regard aural toilet as a keystone in the successful management of OE (7,10,17,18,19,20). There is almost unanimous agreement that mopping debris from an inflamed meatus not only speeds up resolution but facilitates clear otoscopy and the exclusion of perforation or chronic underlying middle ear disease (15,20). There are still those who remain unenthusiastic about aural toilet (21), but this is very much a minority view and based on rather negative conclusions (22,23). In our study those practitioners with postgraduate ENT

experience were much more likely to feel confident in performing aural toilet. Overall only half the respondents felt able to perform this procedure and this figure seems unacceptably low to the authors, but it may be the result of today's increasing climate of subspecialisation, more open inter-referral between partners and the pressure of time. It could be argued that general practitioners should be equally adept at using a Jobson Horne probe as they are with a vaginal speculum and the taking of a cervical smear. This is an area of clinical territory which the doctor and practice nurse could share very effectively. However, it is vital that sufficient expertise is first gained and the condition not made worse (16). The overall conclusion seems to be that when OE is accompanied by debris or discharge, then the best results are achieved by using aural toilet and ear drops; the nature of topical agent appears to be of secondary importance to the action of the cleaning (20).

Topical Therapy

Our results showed a clear preference for antibiotic-steroid drops as first line therapy. The most popular choice was Genticin HC drops. Part of the reluctance to employ astringent drops, such as aluminium acetate, more often probably stems from their old fashioned image and poor marketing. Patient expectations and deficiencies in postgraduate ENT training may be contributory factors. The good reputation of antibiotic-steroid ear drops stems from their safety, effectiveness and acceptability. However they are relatively expensive (Table 1). There is also a significant incidence of bacterial resistance (24), secondary otomycosis and iatrogenic skin problems (25). All these can create chronic or refractory OE and difficulty with subsequent management. A recent study examining chronic OE found that 68% of cases were sensitised to topical antibiotics, and this was increased when mixed preparations

Table 1
League Table of Topical Otic
Preparation Costs

Name	Antibacterial (S)	Approx. cost per5ml
Otomize	Neomycin	£3.95
Otosporin	Neomycin, Polymixin	£3.92
Audicort	Neomycin	£2.93
Sofraclex	Framycetin, gramicidin	£2.75
Framycort	Framycetin	£2.21
Gentisone HC	Gentamicin	£2.00
Cidomycin	Gentamicin	£0.84
Locorten Vioform	Clioquinol	£0.70
Betnesol — N	Neomycin	£0.68
Aluminium Acetate 8% BPC	astringents	£0.58*
Aquaeal (Australia)		£0.50
Boric Acid 4% BPC		£0.27*
Acetic Acid 5% BPC		£0.26*

(* includes cost of a 25 pence container)

were used (26). The quinolones, framycetin, gentamicin and chloramphenicol have been implicated (27) but the main culprit is neomycin, and it has been advised that it is not used in topical therapy (28). It has, however, been shown that when middle ear infection is also present all pathogens were sensitive to gentamicin (29). For this reason topical aminoglycosides, such as gentamicin, continue to be used by ENT specialists, supported by the monthly index of medical specialities (MIMS) (30). General Practitioners are sometimes reluctant to follow this trend (6), despite the absence of any correlation between topical aminoglycosides and sensorineural deafness (31). Although our findings show that the use of astringents is much less popular than antibiotics there is no scientific reason for this choice. Most research supports the use of simple astringents as first line therapy in uncomplicated diffuse OE (9,20,32). A recent comparison of aluminium acetate and gentamicin found that astringents were much cheaper (Table 1), caused negligible sensitisation or bacterial resistance, and were just as effective (24). Although aluminium acetate 8%, boric acid 4% (in alcohol) and acetic acid 5% (in alcohol) can all be made available, there are no proprietary stringent preparations available in the current MIMS. Locorten Vioform is the nearest compromise, being a topical antiseptic. In Australia, where OE is more common, at least two formulations (Earclear and Aquaeear) are available "over the counter" and are effective in prevention or early treatment (33). Both preparations contain acetic acid and isopropyl alcohol which create a combined antimicrobial and hygroscopic effect. This was demonstrated in a study of swimmer's ear, where a five minute exposure to 5% acetic acid was bactericidal to all common pathogens of the external auditory meatus (34). Workers examining the efficacy of the new optic spray, Otomize, admitted that the acetic acid component probably had a significant influence on the clinical results (21).

Bacteriology

Twenty respondents (39%) felt that ear swabs were important in the initial management of OE. These are likely to reveal a predominance of *Pseudomonas* species, Staphylococci, coliforms, *Proteus* species and anaerobes (35). However sterile culture can account for a quarter of results (13). In tropical climates *Aspergillus* and *Candida* fungi are still the commonest cultures (36). It has already been found that bacteriological studies are best deployed in a secondary manner for refractory or recurrent cases (4,9,32). Amoxycillin and ampicillin were the most favoured systemic antibiotic agents, the typical indication being severe OE with marked pain, oedema and cellulitis. However neither possesses activity against most strains of *Staphylococcus aureus*, which is the most likely pathogen in such cases (19). Flucloxacillin or erythromycin are more suitable choices.

Prevention

Prevention is a particularly important, though often

unaddressed, component of the management of OE. Effective advice was offered by 19 respondents (37%). The principles of prophylaxis include avoidance of trauma, good personal hygiene, control of skin disorders, maintenance of a dry meatus and identification of other causative factors. Hygroscopic spirit drops have been advised for swimmers (10,37). Contraindications to drops containing alcohol include grommets, a perforated ear drum and broken skin. A rolled up pre-injection swab, such as Steret, which is impregnated with 70% isopropyl alcohol is useful, though as with all astringents a transient mild burning sensation is common (20). Where earplugs are prescribed it has been shown that cotton wool and paraffin BPC is the best waterproofing agent (38). Ear packs soaked in antibiotic ointments can also prevent active infection deteriorating in committed watersports competitors (11). "Blow drying" with a standard hair dryer is another practical suggestion (39). Perhaps the final word on prevention should go to Jones who used a similar formulation to Aquaeear (5% acetic acid in 85% isopropyl alcohol) and reported eight years of unbroken success in the prevention of swimmer's ear in the southern USA (37).

Diagnosis and Management

An overall management approach is shown in the algorithm (Fig 1). The history should identify any relevant predisposing factors, which include regular swimming, poking of the ear, exposure to contaminated inland waters, skin disorders, allergy, foreign body, air travel and the wearing of occlusive hearing devices. Sensitising agents such as topical antibiotics and drops for ear wax should be excluded. During examination the stigmata of specific forms of OE must be sought (8). At some stage otoscopy should be adequate enough to exclude serious underlying middle ear disease. Pain or discomfort of varying intensity is usual and may be elicited, typically by gentle manipulation of the tragus. This sign is not present in otitis media (11). Itchy ichthyotic meatal skin reflects chronic cases; discharge is common in acute cases. The "discharging ear" *per se* is a distinct entity, however, and its various other causes must first be excluded (7). Local soft tissue swelling, deafness, tinnitus and distressing pain may all accompany the more severe cases. Once the diagnosis is made it is the severity and presence or absence of discharge which tend to direct treatment. Mild or chronic lesions tend to be "dry" and either "peripheral" or "deep". The former commonly occur in association with skin disorders and allergies. Cream and ointments appropriate to the primary cause are easiest to apply; Fucidin, Bactroban or Vioform HC are useful against any secondary bacterial infection. "Deep" meatal inflammation is best treated by ear drops. Aluminium acetate 8% or boric acid 4% in 25% spirit are good choices in uncomplicated cases, although topical steroid drops may be needed for some chronic "reactive" lesions. The tragus should be

(CSOM = Chronic Serious Otitis Media. OE = Otitis externa; SYST = Systemic)

Fig 1. Otitis Externa Algorithm

pumped to ensure even distribution of drops (40). More florid lesions with debris will benefit from aural toilet. Although suction equipment is undoubtedly less traumatic, mopping of debris with a Jobson Horne probe and cotton wool can be equally effective (17). Horsefall gives a nice summary of equipment for examining and treating ear problems, including useful addresses (41). The basic principles of aural toilet are summarised in Figure 2. Swabbing should be carried out

Fig 2. Aural Toilet

1. Gently pull the tragus backwards and upwards to straighten the canal.
2. Carefully swab the discharge in a rotary fashion for a few seconds.
3. Check progress with an auriscope and repeat as required with a fresh cotton wool pledget.

in a gentle rotary fashion for a few seconds only. Progress should be checked with an auriscope and the process repeated. Severe cases usually require strong

Fig 3. Packing of the Ear

1. Soak a length of ribbon gauze in an appropriate medium (see text).
2. Gently carry the gauze to within about half a centimetre of the ear drum using dressing or crocodile forceps.
3. Repeat the process, packing the ear with gentle pressure in a pleated fashion.

analgesia, an ear wick and sometimes systemic antibiotics. Packing of the ear is illustrated in Figure 3. With the aid of packing forceps a length of ribbon gauze soaked in the treatment medium can be gently introduced deep into the ear canal until it is packed. This action tends to splint the canal and relieve pain. The packing may be changed after one to three days but some authors leave it in place up to a week (42). Commercially available foam wicks may be preferred by practitioners who do not feel confident about the traditional ear wick (19). Glycerine and ichthammol was used frequently in our study — it is soothing and has not only astringent but also hygroscopic properties; aluminium acetate 8%, antibiotic-steroid mixtures and Betnovate-C scalp lotion have all been advocated. With refractory cases it is important to exclude a missed specific OE or some persistent aetiology. It is also possible that a secondary otomycosis or bacterial resistance may have developed. At this stage a bacterial swab is recommended and positive cultures can be treated with the correct antimicrobials. However both fungal and bacterial growths usually respond to aural toilet and astringents — Pfleiderer considers that topical antifungals are rarely indicated (9). Preventive measures are worth consideration. Acetic acid 5% in 85% isopropyl alcohol is an effective preparation for swimmers and in chronic cases. Ear plugs can also be useful.

Conclusion

Otitis Externa is a common problem, particularly in hot climates and in swimmers. Lesions with debris are best treated with a combination of aural toilet and ear drops. It appears that the well-marketed antibiotic-steroid preparations are still the preferred choice in first line therapy and that although cheap, effective and recommended, astringents are underemployed. Ear swabs can be useful in refractory cases but not at the outset of treatment. Systemic antibiotics, when indicated, should be effective against staphylococci.

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