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Incidence and Management of Acute Otitis Externa in a UK Centre Before and During the COVID-19 Pandemic

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ABSTRACT

Objective: Patients with otitis externa (OE) are commonly referred to acute ENT services after failed treatment in community. This case series analyses the prevalence and management of OE in a UK ENT rapid access clinic (RAC) prior to and following the national lockdown imposed in March 2020.

Materials and Methods: Retrospective case review of all patients referred with OE to the RAC between January 2019 and March 2021 with comparison of the cohorts before and after 1st March 2020. Data anaylsed included demographics, treatment methods, rates of admission, microbiological swab and CT results and rates of necrotising otitis externa (NOE).

Results: There were 239 new referrals over the total study period. The rate of referral dropped from 12.1/month to 5.8/month following the March 2020 lockdown. There were no significant differences in rates of severe infection or NOE before and after the lockdown. The most common organisms grown were Pseudomonas aeruginosa, Candida, and Staphylococcus aureus.

Conclusions: There was a considerable reduction in acute referrals for OE to this centre in the year following the March 2020 lockdown. There was no significant change in disease severity or management trends.

Keywords: Otitis Externa, Referral and Consultation, COVID-19

INTRODUCTION

Otitis externa (OE) is the inflammation of the external ear canal. It is a common condition encountered in primary care and ENT settings. Symptoms and signs include otalgia, otorrhea, itchiness in the presence of canal oedema, erythema, debris and tragal tenderness (1, 2). OE has a multifactorial aetiology and disruption of the ear canal's natural barrier of cerumen is thought to be a possible causation. Cerumen inhibits infection by creating an acidic environment which can be disrupted by excessive cleaning or water exposure (3). Pseudomonas aeruginosa and Staphylococcus aureus are the most common pathogens involved in OE, but fungal involvement is also common in chronic otitis externa especially following extended topical antibacterial treatment. Ear swabs for culture and sensitivity can help determine the causative pathogens and determine any antimicrobial resistances (1, 4). Topical treatment is the mainstay of otitis externa treatment as oral antibiotics are not as effective against the common pathogens of otitis externa. Despite this, up to 40% of patients receive oral antibiotics (2). Patients with otitis externa in the UK usually present first to their primary care practitioner and secondary care referral is only sought when initial treatments have failed or if there is suspicion of more severe or spreading infection. OE has the potential to progress into necrotising otitis externa (NOE) with higher incidence in immunosuppressed, diabetic and elderly patients (5). NOE carries significant morbidity and can be potentially life threatening (1, 6). Symptoms and signs including unremitting pain, pyrexia, meningism, exposed bone or granulation tissue within ear canal should prompt investigation of NOE.

From March 2020, the UK saw major changes to society with lockdown and social distancing restrictions imposed due to

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the COVID-19 pandemic. Primary care practitioners adopted remote consultation methods (7) to mitigate risk of contagion and so patients with ear symptoms may not have been examined. This case series analysis was designed to analyse and compare the incidence of acute referrals of OE to the ENT service and compare the severity and management of the disease, including rates of NOE, before and after the national lockdown imposed due to the COVID-19 pandemic in the UK.

MATERIAL AND METHODS

A retrospective analysis of otitis externa referrals to our Rapid Access Clinic was undertaken for cases between 1st January 2019 and 1st March 2021. The pre lockdown cohort were defined as the cases seen at the RAC in the 14 month period prior to 1st March 2020. The post lockdown cohort were the cases seen at the RAC in the 12 month period from 1st March 2020. Only first-time referrals were included. Follow-up appointments were not counted. Data analysed included: gender, age, any treatments started in primary care prior to clinic attendance, need for microsuction, microbiology culture and sensitivity reports, treatment (topical drops, oral antibiotic and whether a pope wick was used), computed tomography (CT) temporal bone results and whether there were any complications encountered during follow-up. Formal ethical approval was not required for this retrospective study. The study was registered with the local quality improvement and assurance team.

RESULTS

There were a total of 239 new referrals of OE to the ENT RAC during the study period. The characteristics of the study population are shown in Table 1. There was a higher rate of referral in the pre-lockdown cohort compared to the post-lockdown cohort (169 new cases= 12.1 referrals per month, versus 70 new cases= 5.8 referrals per month).

Table 1: Characteristics of study population

Gender	
Male	43% (n=102)
Female	57% (n=137)
Age	
Mean	48.7 years
Range	3 months to 93 years
Laterality	
Right	39% (n=93)
Left	37% (n=89)
Bilateral	23% (n=56)
Previous ear surgery	
Yes	13% (n=32)
No	87% (n=207)
Topical treatment in primary care	
Yes	47% (n=112)
No	53.1% (n=127)
Oral antibiotic or antifungal given in primary care	33% (n=79)

Microsuction of the ear canal was required in the majority of the cases both before (82%) and after (74%) lockdown. Topical antibiotic drops (with or without a steroid in the formulation) were started in 43% (n=103) of cases and topical antifungals in 9% (n=21) of cases. Topical dressings such as a Pope wick were used in 21% of cases in the pre-lockdown cohort and 14% in the post-lockdown cohort. Oral antibiotics were used in 18% of cases in the pre-lockdown cohort and 16% in the post-lockdown cohort.

Admission for intravenous antibiotics or pain management was required in 6.5% of cases pre-lockdown and 7% of cases post-lockdown. CT temporal bone scans were requested in 8% of cases, with the majority requested prior to lockdown (10% vs 3%), however, 41% of CT scans requested in the pre-lockdown cohort were for suspicion of cholesteatoma rather than otitis externa. One patient in the pre-lockdown cohort had radiological evidence of otitis externa.

A swab of the ear canal for culture and sensitivity was taken from 64% of patients prior to lockdown and 58% after. Breakdown of microbiological results are shown in Table 2 (some swabs revealed more than one organism, or different organisms in either ear for patients with bilateral OE). There was no significant difference in rates of organisms in the pre- and post-lockdown cohorts.

Table 2: Breakdown of ear swab microbiology cultures

Organism	Percentage (n=153)
Pseudomonas aeruginosa	30% (n=46)
Staphylococcus sp.	20% (n=31)
Streptococcuc sp.	7% (n=11)
Candida sp.	24% (n=36)
Aspergillus	9% (n=14)
No pathogenic organism identified	16% (n=24)

DISCUSSION

March 2020 brought national lockdown due to the COVID-19 pandemic in the UK. The data from this case series reveals a significant reduction in referrals for otitis externa from 12.1 acute referrals per month to 5.8 at the height of the COVID-19 pandemic. There are relatively few studies examining the effect of the COVID-19 pandemic on common referrals to ENT. One study reports a similar drop in the rate of referrals, but study numbers are smaller and the timeframe of analysis is less than two months (8).

Interestingly, based on this analysis there was no obvious increase in the rate of admission, requirement for pope wick, oral antibiotics or of NOE over the lockdown period. One may have expected a higher rate of more severe infections

or complications due to decreased access to primary care and altered health seeking behaviour (9, 10). Reasons for the apparent reduced incidence could include self-resolution of symptoms, improved e-health resources or management of OE in primary care during the lockdown, or reduction of water-based activities and hobbies such as swimming. The authors acknowledge that some cases of NOE may be missed in this analysis as patients could be admitted to the ENT department via an alternative route such as the Emergency Department. The majority, however, are admitted via the rapid access clinic and this was the data used in both parts of the analysis. The authors speculate that the slight reduction in microsuction requirement following lockdown (74% from 82%) could be due to hesitancy from some ENT doctors to use this technique when guidance on aerosol generating procedures was unclear, rather than a decreased requirement for the intervention (11). It is possible that Pope wicks were utilised less in the post-lockdown cohort in order to reduce the need for patients to return to the clinic for wick removal given the guidance on social distancing. One may also have expected a higher rate of oral antibiotic use in the post-lockdown cohort because of the expected later presentation of disease and the hypothetical tendency to over-treat in order to reduce the need for clinic re-attendance, however this was not seen.

Otitis externa is largely managed by primary care and patients seen by tertiary care would usually have received treatment from primary care prior to referral. NICE guidelines recommend topical antibiotic drops and suggest that oral antibiotics be given only rarely, in severe cases, as 65% to 90% of cases will resolve with antibiotic drops (1). While topical corticosteroids are often prescribed alongside topical antibiotics, a Cochrane meta-analysis did not find a significant difference in outcomes when comparing different topical antibiotics with or without corticosteroids (6). The most common topical agent used in our practice was ciprofloxacin with dexamethasone drops. This is generally considered effective against Pseudomonas aeruginosa, which was confirmed to be the most common pathogen found in ear swabs in this case series. Other studies also quote Pseudomonas aeruginosa as a most likely causative organism along with Staphylococcus aureus (1, 8). Only 47% of patients had received topical antibiotics or antifungals prior to referral but a considerable proportion, 33%, had been started on oral antibiotics. Oral antibiotics have not shown to be beneficial when compared to topical antibiotics. Inappropriate use of systemic antibiotics may cause antibiotic resistance, hence should only be used in appropriate circumstances such as immunosuppression or suspected malignant otitis externa where intravenous antibiotics should also be considered (1, 12). In situations such as recurrent or chronic otitis externa, treatment failure or suspected necrotising otitis externa, ear swabs are useful in determining the optimal antimicrobial therapy (1). However, cultures and sensitivities from swabs may include contaminant rather than pathogenic organisms and sensitivities may not factor in higher concentrations achieved from topical versus systemic antibiotics (13).

CONCLUSION

This case series demonstrates a >50% reduction in acute referrals of OE in the 12 months following the national lockdown imposed in March 2020. There was no difference in apparent severity of disease or incidence of complications such as NOE following the lockdown. More research should be done to study the effects of lockdown restrictions, health seeking behaviour and the role of primary care in managing OE successfully.

Ethics Committee Approval: Formal ethical approval was not required for this retrospective study.

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