The influence of patients' hopes of receiving a prescription on doctors' perceptions and the decision to prescribe: a questionnaire survey

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Abstract

Objectives: To measure patients' expectations of receiving prescriptions and general practitioners' perceptions of these expectations and to determine the factors most closely associated with the decision to prescribe.

Design: Questionnaires were completed by patients waiting to see their general practitioners, and by their doctors immediately after the consultations.

Setting: Four non-fundholding group practices in southeast London.

Subjects: 544 unselected patients consulting 15 general practitioners.

Main outcome measures: Doctors' perceptions of patients' expectations; doctors' decisions to prescribe.

Results: 67% (354/526) of patients hoped for a prescription; doctors perceived that 56% (305/542) of patients wanted prescriptions; and doctors wrote prescriptions in 59% (321/543) of consultations. Despite the close agreement between patients' hopes and doctors' perceptions, 25% (89/353) of patients hoped for a prescription but did not receive one. In 22% (68/313) of consultations in which prescriptions were written, they were not strictly indicated on purely medical grounds, and in only 66% (202/306) of consultations in which prescriptions were written were they both indicated and hoped for. Doctors' perceptions of patients' expectations were the strongest predictor of the decision to prescribe, but the final regression model also included patients' hopes and ethnic group, and the doctor's feeling of being pressurised.

Conclusions: In an area of low prescribing and high expectations the decision to prescribe was closely related to actual and perceived expectations, but the latter was the more significant influence.

Introduction

Drugs prescribed by general practitioners account for about one tenth of NHS expenditure and half the total cost of family health services.¹ General practitioners' prescribing behaviour has been the focus of recent attention from policymakers anxious to reduce costs, educators wanting to improve the quality of prescribing, and pharmacists wishing to develop their

professional role. Little attention has been given to the role of patients, although patients' expectations are sometimes held responsible for inappropriate prescribing.¹ It is estimated that about 5% of prescriptions are not redeemed² and that large quantities of prescribed drugs are not consumed.

Although doctors perceive a high level of demand, the evidence that patients' expectations influence prescribing decisions is equivocal.³ Most previous studies have not measured doctors' perceptions of patients' expectations but have shown that the proportion of prescriptions written often exceeds patients' expectations.⁴⁻⁹ This suggests that doctors overestimate patients' expectations for prescriptions.¹⁰

We aimed to measure both patients' expectations for prescriptions and general practitioners' perceptions of these expectations, and to determine the factors most closely associated with the decision to prescribe, in naturally occurring general practice consultations.

Methods

The study was carried out in four practices in the area covered by the Lambeth, Southwark, and Lewisham Family Health Service Authority in southeast London between September and December 1994. This authority had lower than average prescribing levels compared with the rest of England.¹¹ The practices were chosen on the basis of their prescribing analysis and cost (PACT) data, to include two high prescribing and two low prescribing practices (relative to the other practices covered by the same family health service authority). All the practices were non-fundholding group practices, two of them receiving high levels and two of them low levels of deprivation payments.

We chose surgery sessions to represent different days of the week and times of day. At the beginning of each chosen session, the researcher gave a questionnaire to the doctor. This asked for the patient's name or computer number, the diagnosis or presenting problem, the doctor's perception of whether the patient wanted a prescription, whether the doctor felt pressurised to write a prescription, whether a prescription was written (and if so, the details of the drug(s)), and whether the prescription was "strictly indicated on purely medical grounds." The 15 participating doctors completed a questionnaire for each patient immediately after the consultation.

Table 1 Patients' hopes for prescriptions compared with doctors' perceptions and decision to prescribe. Values are numbers (percentages) of patients, unless stated otherwise

Patients' response	Doctors' perceptions of patients' expectations*			Decision to prescribe†	
	Doctor thought patient wanted prescription	Doctor did not know if patient wanted prescription	Doctor thought patient did not want prescription	Doctor wrote prescription	Doctor did not write prescription
Patient hoped for prescription (n=352‡)	259 (74)	38 (11)	55 (16)	264 (75)	89 (25)
Patient did not hope for prescription (n=172)	39 (23)	19 (11)	114 (66)	50 (29)	122 (71)

Data were missing for some variables.

* $\chi^2=144.57$, df=2, $P<0.001$.

† $\chi^2=100.56$, df=1, $P<0.001$. ‡n=353 for responses on decision to prescribe.

The researcher also approached each adult patient in the waiting room and asked them to complete a questionnaire while waiting to see the doctor. An oral explanation of the study was accompanied by a written explanation for the patient to keep. The questionnaire asked for the patient's name or computer number, the symptom or presenting problem, prior drug treatment for this or other conditions, expectations of receiving a prescription that day, exemption status for prescription charges, and demographic characteristics. Expectations of a prescription were assessed with two questions to identify both ideal expectation and actual expectation.⁷ The first asked if the patient was hoping that the doctor would give them a prescription that day, and the second asked if the patient expected that the doctor would actually give them a prescription. Questionnaires were not given to the patients who had already completed one, to those who could not speak English, to those who saw the doctor immediately, or to those who refused. Completed questionnaires were returned to the researcher in sealed envelopes.

At the end of surgery the researcher matched the patients' and doctors' questionnaires, and the responses were then coded. Symptoms and diagnoses were coded according to the *International Classification of Primary Care*.¹² A 10% sample of matched questionnaires was checked for accuracy of coding. Information about the doctors' qualifications was added to the database from the medical register.

The response rate was calculated by dividing the number of matched pairs of questionnaires by the total number of consultations in the chosen surgery sessions, having excluded those who did not attend, those who had already completed a questionnaire, and, in one practice, those who were known by the practice staff not to speak English. This is likely to be an underestimate as it was not possible to confirm apparent non-attenders in one practice, and some non-English speakers may not have been identified. Characteristics of responding patients were compared with the age and sex of non-respondents and with the demographic characteristics of the resident population of the inner London boroughs of Lambeth, Southwark, and Lewisham from the 1991 census.

Analysis

Analysis of variance and χ^2 tests were used as appropriate to identify the correlates of the two outcome measures: doctors' perceptions of their patients' expectations and the decision to prescribe. A significance level of 5% was used as the criterion for identifying correlates. Once these correlates were identified, they were used as independent variables in the

Table 2 Logistic regression analysis* of variables associated with clinical indication of prescription (n=311)

Variable	Odds ratio (95% CI)	P value
Afternoon surgery	0.21 (0.04 to 1.01)	0.052
Doctor feeling pressurised	5.05 (2.54 to 10.06)	<0.001
Female doctor	2.10 (0.82 to 5.39)	0.121

*Based on multilevel analyses.

forward stepwise logistic regressions of the outcome variables. The variables of the fitted models were estimated again with the multilevel modelling package MLN^{13 14} to separate the variation due to factors relating to patients from the variation due to factors relating to doctors.¹⁵

Results

The response rate was 64.8% (544 completed pairs of questionnaires from 839 consultations). Comparison with non-respondents showed that men and patients aged over 44 years were less likely to respond than women and younger people. In addition, comparison with census data showed that the patients in the study were less likely to be single or economically active. Housing tenure, ethnic group, and social class were similar in the study group and census population.

The 15 participating doctors were all the doctors in the study practices. Eight were women, four had qualified outside the United Kingdom, and five had qualified before 1980. Nine of them had further qualifications in addition to the first bachelor of medicine (or its equivalent).

Patients' hopes and expectations were closely related (67% (354/526) of patients hoped for a prescription; 65% (328/504) expected one). Despite this close agreement, 4% (20/495) of patients expressed to receive a prescription when they had not expressed hope for one, and 6% (29/495) expected not receive one even though they hoped for one. In the rest of the results section we refer only to patients' hopes for a prescription (not actual expectations). Patients exempt from prescription charges were significantly more likely to hope for a prescription than those who paid for their prescriptions (73% (203/277) v 61% (146/241), $P<0.01$). Doctors perceived that 56% (305/542) of patients wanted prescriptions, and their perceptions were strongly associated with patients' hopes (table 1). Doctors wrote prescriptions in 59.1% (321/543) of consultations. Despite the close agreement between patients' expectations and doctors' prescribing decisions, a quarter of those hoping for a prescription did not receive one, and a similar

Table 3 Doctors' perceptions of patients' expectations for prescriptions in relation to other variables. Values are numbers (percentages) of patients or cases

Variable	Total No	Patients perceived as wanting prescription	Cases where doctor was not sure	Patients perceived as not wanting prescription	P value
Patient's age (years):					
≤24	89	51 (57)	14 (16)	24 (27)	0.028
25-34	180	102 (56)	14 (8)	64 (36)	
35-44	105	50 (48)	10 (9)	45 (43)	
45-54	53	35 (66)	7 (13)	11 (21)	
55-64	46	26 (57)	1 (2)	19 (41)	
≥65	63	39 (62)	9 (14)	15 (24)	
Further educational or vocational qualification:					
Yes	226	118 (52)	18 (8)	90 (40)	0.004
No	287	173 (60)	37 (13)	77 (27)	
Patient's appointment status:					
Non-appointment surgery	109	56 (51)	19 (17)	34 (31)	0.024
Appointment	333	190 (57)	25 (8)	118 (35)	
Patient seen as "extra"	100	59 (59)	14 (14)	27 (27)	
Reason for encounter:					
Symptoms, complaints	237	123 (52)	31 (13)	83 (35)	<0.001
Diagnostic, screening, prevention	18	4 (22)	2 (11)	12 (67)	
Treatment, procedures, medication	19	13 (68)	0	6 (32)	
Test results, administrative	14	2 (14)	0	12 (86)	
Diagnoses, diseases	241	156 (65)	23 (10)	62 (26)	
Other	13	7 (54)	2 (15)	4 (31)	
Self medication for current symptom:					
Yes	277	184 (66)	26 (9)	67 (24)	<0.001
No	248	111 (45)	32 (13)	105 (42)	
Prescription exemption status:					
Totally exempt	284	174 (61)	31 (11)	79 (28)	0.024
Others	250	127 (51)	26 (10)	97 (39)	
Doctor's qualification:					
Minimum qualification	153	101 (66)	14 (9)	38 (25)	0.004
One further qualification	295	144 (49)	38 (13)	113 (38)	
Two or more further qualifications	94	60 (64)	6 (6)	28 (30)	
Whether doctor qualified abroad:					
Yes	101	72 (71)	12 (12)	17 (17)	0.001
No	441	233 (53)	46 (10)	162 (37)	

Data were missing for some variables.

Table 4 Logistic regression analysis* of variables associated with doctors' perceptions of patients' expectations of receiving prescription (n=414)

Variable	Odds ratio (95% CI)	P value
Patient's hope for prescription	10.78 (6.34 to 18.33)	<0.001
Patient's appointment status:		
Appointment	1.00	
Non-appointment surgery	0.49 (0.27 to 0.91)	0.024
Patient seen as "extra"	0.63 (0.34 to 1.15)	0.130
Self medication for current symptom	1.92 (1.20 to 3.08)	0.007
Reason for encounter:		
Symptoms, complaints	1.00	
Diagnostic screening, prevention	0.85 (0.16 to 4.48)	0.841
Treatment, procedures, medication	2.50 (0.62 to 10.02)	0.196
Test results, administrative	0.10 (0.01 to 0.88)	0.038
Diagnoses, disease	1.63 (0.99 to 2.69)	0.054
Other	1.42 (0.34 to 5.96)	0.632
Doctor qualified abroad	2.07 (1.06 to 4.04)	0.034

*Based on multilevel analyses.

proportion of those not hoping for a prescription did receive one (table 1). Patients received a repeat prescription in 42% (103/245) of consultations in which a prescription was written.

Patients in the high prescribing practices were more likely both to hope for a prescription (72.2% (174/241) *v* 63% (180/285), $P < 0.05$) and to receive one (67% (168/249) *v* 52% (153/294), $P < 0.001$) than those in low prescribing practices.

Doctors considered that prescriptions were not strictly indicated in 22% (68/313) of consultations in which they were written. This was not associated with patients' hopes. Of the 68 non-indicated prescriptions, however, 61 were perceived as wanted, and in only 7 cases were the doctors uncertain of the patient's hopes. This association was not significant because of small cell sizes (only 15 prescriptions were written during consultations in which doctors perceived that patients did not want a prescription). Table 2 shows the logistic regression of the variable referring to clinical indication. Non-indicated prescriptions were more likely to be written during consultations in which the doctor felt pressurised, the doctor was female, or during morning surgeries, but only the first of these variables was significant. Overall, 3% (8/306) of prescriptions written were neither hoped for nor indicated, and 31% (96/306) of prescriptions written were either not hoped for or not indicated. Thus only two thirds of the total were both indicated and hoped for.

Table 3 shows the significant relations between doctors' perceptions of whether patients wanted prescriptions and other variables measured in the study. Patients whose consultation was an "extra" to the main appointment list were more likely to be perceived as wanting prescriptions, as were those who had already used self medication, those exempt from prescription charges, and those without further education. Doctors' perceptions also varied according to the patient's age and reason for encounter. Doctors' perceptions varied according to their own qualifications: patients consulting doctors with minimum qualifications or doctors who had qualified abroad were the most likely to be perceived as wanting prescriptions.

These variables were entered into a logistic regression analysis (table 4). Of all these variables, patients' hopes for a prescription were most closely associated with doctors' perceptions. Differences associated with the patient's age, further education, prescription exemption status, and doctor's level of qualification were accounted for by the remaining variables.

The variables associated with the decision to prescribe are shown in table 5. Doctors' perceptions and their decisions to prescribe were congruent in the case of several variables. For example, patients exempt from prescription charges were perceived as being more likely to want prescriptions and also were more likely to receive prescriptions than those who paid for their prescriptions. In other cases there was a lack of congruence; for example, doctors with two or more qualifications underprescribed in relation to their perceptions of patients' hopes, whereas doctors with fewer qualifications overprescribed in relation to their own perceptions.

Table 6 shows the logistic regression of the decision to prescribe. Doctors' perceptions of patients' hopes for a prescription exerted the strongest influence. However, patients' hopes of receiving a prescription were independently associated with the decision to prescribe, as was the patients' ethnic group. Doctors who felt pressurised to write a prescription were less

likely to write one than those who did not feel pressurised, once doctors' perceptions had been taken into account. This was because the doctors who perceived a patient as wanting a prescription were less likely to prescribe if they also felt pressurised than those who did not feel pressurised. Differences associated with the patient's age, further education, reason for encounter, self medication, prescription exemption status, and the doctor's place and level of qualification were explained by the variables remaining in the equation.

Discussion

As this study was carried out in an inner city area characterised by high levels of deprivation and low levels of prescribing,¹⁶ the results may not be generalisable to other areas. The results are closely similar, however, to those of an Australian study that used comparable methods.¹⁷

This study is one of the first to measure directly the influence of both patients' hopes and doctors' perceptions on prescribing decisions. It provides quantitative estimates of the role of both these factors and shows that doctors' perceptions are the stronger influence. Thus any intervention aimed at changing prescribing behaviour should be directed at doctors' perceptions as much as at patients' hopes. Causality remains unclear. Patients' hopes were significantly higher in the high prescribing practices than in the low prescribing practices, suggesting that they were influenced, at least in part, by the doctors' previous prescribing habits.

Patients' hopes for prescriptions exceeded both doctors' perceptions of these hopes and their levels of prescribing. The level of expectations in this study was higher than in any of the previous studies using similar methods, with previous estimates ranging from 51%⁹ to 60%.¹⁸ The level of prescribing was comparable to that in the more recent studies.^{8,9} Patients in this part of London might have particularly high expectations. It is also possible that patients' expectations have risen as a result of recent initiatives such as the patient's charter, although little evidence yet supports this supposition.

A third of the prescriptions written in this study were either not indicated or not hoped for, with 3% being neither indicated nor hoped for. This suggests that scope exists for reducing prescribing without depriving patients of drugs that they either need or want. The writing of non-indicated prescriptions was primarily associated with the doctor's sense of feeling pressurised. Doctors feeling pressurised were less likely to write a prescription in consultations in which they perceived that the patient wanted one, and if they did write a prescription, it was less likely to be indicated than in consultations in which the doctor did not feel pressurised. It would require a larger sample or a qualitative study to disentangle fully the effects of doctors' perceptions of patients' hopes, their sense of feeling pressurised, and the writing of non-indicated prescriptions.

Despite the close relation between patients' hopes and doctors' prescribing decisions, the hopes of over a quarter of the sample were not met. Even in this area of high expectations, 13% of patients who doctors perceived as wanting a prescription were not hoping for one. If a prescription is not considered to be clinically necessary but is given simply because the doctor thinks the patient wants one, although the

Table 5 Decision to prescribe in relation to other variables. Values are numbers (percentages) of consultations

Variable	Total No	Consultations in which prescription was written	Consultations in which prescription was not written	P value
Whether patient hoped for a prescription:				
Yes	353	264 (75)	89 (25)	<0.001
No	172	50 (29)	122 (71)	
Patient's age (years):				
≤24	89	57 (64)	32 (36)	0.009
25-34	182	100 (55)	82 (45)	
35-44	104	49 (47)	55 (53)	
45-54	53	34 (64)	19 (36)	
55-64	46	29 (63)	17 (37)	
≥65	63	47 (75)	16 (25)	
Further educational or vocational qualification:				
Yes	227	123 (54)	104 (46)	0.042
No	287	181 (63)	106 (37)	
Patient's ethnic group:				
White	366	223 (61)	143 (39)	0.011
Black Caribbean	45	27 (60)	18 (40)	
Black African	52	33 (64)	19 (37)	
Black other	22	5 (23)	17 (77)	
Other	34	19 (56)	15 (44)	
Reason for encounter:				
Symptoms and complaints	237	127 (54)	110 (47)	<0.001
Diagnostic, screening, prevention	19	7 (37)	12 (63)	
Treatment, procedures, medication	19	13 (68)	6 (32)	
Test results and administrative	14	2 (14)	12 (86)	
Diagnoses and diseases	241	166 (69)	75 (31)	
Other	13	6 (46)	7 (54)	
Self medication for current symptom:				
Yes	278	189 (68)	89 (32)	<0.001
No	248	122 (49)	126 (51)	
Prescription exemption status:				
Totally exempt	285	189 (66)	96 (34)	0.001
Others	250	129 (52)	121 (49)	
Doctor's perception:				
Patient wants a prescription	304	270 (89)	34 (11)	<0.001
Doctor not sure	58	35 (60)	23 (40)	
Patient doesn't want a prescription	179	15 (8)	164 (92)	
Doctor felt pressurised to write a prescription:				
Yes	66	53 (80)	13 (20)	<0.001
No	474	266 (56)	208 (44)	
Doctor's level of qualification:				
Minimum qualification	153	106 (69)	47 (31)	0.011
One further qualification	295	163 (55)	132 (45)	
Two or more further qualifications	95	52 (55)	43 (45)	
Whether doctor qualified abroad:				
Yes	101	78 (77)	23 (23)	<0.001
No	442	243 (55)	199 (45)	

Data were missing for some variables.

Table 6 Logistic regression analysis* of variables associated with doctors' decision to prescribe (n=414)

Variable	Odds ratio (95% CI)	P value
Patient hopes for prescription	2.34 (1.10 to 5.01)	0.028
Patient's ethnic group:		
White	1.00	
Black Caribbean	2.10 (0.51 to 8.58)	0.303
Black African	0.75 (0.23 to 2.48)	0.632
Black other	0.13 (0.03 to 0.53)	0.004
Other	0.45 (0.12 to 1.66)	0.230
Doctor thought that patient wanted a prescription	7.04 (4.75 to 10.44)	<0.001
Doctor felt pressurised to write a prescription	0.21 (0.07 to 0.64)	0.006

*Based on multilevel analyses.

Key messages

- Evidence that patients' expectations influence general practitioners' prescribing is equivocal; in this study patients' hopes of receiving a prescription exceeded both doctors' perceptions and the level of prescribing
- Over a quarter of patients who hoped for a prescription did not receive one
- In a fifth of consultations in which a prescription was written, the prescription was not strictly indicated on purely medical grounds
- Doctors' perceptions were the strongest determinant of the decision to prescribe
- Doctors who felt pressurised were less likely to write a prescription if they perceived that the patient wanted one, and if they did write a prescription, it was less likely to be indicated than when the doctor did not feel pressurised

patient does not, the prescription is, by all parameters, unnecessary. Thus scope seems to exist for further exploration of patients' expectations within consultations. Bradley's work showed that doctors' assessments of patients' expectations were based on an intriguing variety of cues.¹⁹ More accurate estimates of patients' expectations could perhaps be ascertained if doctors asked patients directly if they were hoping for a prescription. This may lead to a discussion of why the patient thinks a prescription is appropriate. Patients' expectations may be based on past experience of doctors' prescribing²⁰ or their perceptions of what is medically legitimate.²¹ A recent study has shown that 31% of patients consulting with sore throats used prescriptions for antibiotics when given the option of not using them.²⁰ This compared with 99% usage in patients who were simply given a prescription for antibiotics. The finding in this study that the doctors who were more highly qualified had lower perceptions of patients' hopes and lower prescribing rates suggests that patient centred care (a focus of much postgraduate training for general practitioners) is not necessarily synonymous with higher prescribing.

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Use of general practitioner computerised records to create a population based twin sample: pilot study based on Parkinson's disease

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Studies of twins are useful in investigating the role of genetics in disease. We describe a population based method of twin ascertainment in Parkinson's disease using doctors' records.

Subjects, methods, and results

All doctors in four East Anglian counties were asked to search their database for patients receiving drugs for Parkinson's disease. They were asked to confirm the diagnosis of Parkinson's disease so that we could exclude patients taking these drugs for other

conditions. We contacted each patient by letter through their doctor to confirm the diagnosis and to inquire whether they were one of twins—zygosity was based initially on patients' self reports.

Overall, 149 general practice surgeries took part (44% of those contacted; estimated study population 1.53 million). Seventy per cent (1527) of patients replied to the first letter, increasing to 87% (1898) after one reminder—2182 patients in total. There was no significant difference in the mean age of respondents and non-respondents (75.8 SD (19.4) years *v* 77.4 (19.4) years; *t* = 1.87, *P* > 0.1). Forty eight respondents

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(27 men, 21 women) reported that they were one of twins (54 would be expected given a ratio of singleton to twin births in the United Kingdom of 1:40). There were no concordant pairs and no one was ascertained twice. Eight patients were one of monozygotic twins (7 male pairs), and 20 were one of dizygotic twins (10 were like sexed; 5 male and 5 female pairs); in 20 cases zygosity was unknown because the twin had been still-born (6) or data were lacking (14). Assuming Parkinson's disease occurs in men and women in the ratio of 1.3:1,¹ this matches the overall sex distribution of 27 male and 21 female twins. Men were slightly underrepresented among the dizygotic twins (20 pairs instead of 22.5), but the ratio was still within the 95% confidence interval of 1.3:1. The apparent excess of monozygotic male pairs was also non-significant ($P=0.074$). The expected proportion of monozygotic twin pairs calculated by Weinberg's rule² was 0.29 (8/28), as was the observed proportion.

Comment

Despite the low response rate of general practitioners we have shown that twins can be identified from prescribing indices. Given that the prevalence of Parkinson's disease is 164 per 100 000 population,³ we failed to detect about 12% of cases (25/25). This may reflect regional differences or affected patients may have been missed because they were not receiving treatment; some receiving treatment may not have had Parkinson's disease but essential tremor and parkinsonian syndromes, for example, and our figure will be an overestimate.

If the expected twin to singleton ratio is applied only to respondents (1861) there was no shortfall (47 twins would be expected). Twins seem not to have responded preferentially, and being a twin is unlikely to

be a factor in the aetiology of Parkinson's disease. Patient response was 87% and not biased with age—the mean age of 75.8 years compares favourably with that of 75.3 years in Aberdeen.³

The reply rate of doctors was modest (44%). As only 83% of surgeries were computerised at the time of study this equates to a 53% response rate. There may have been some bias from doctors if, for example, they had better records or interesting or atypical patients, but the data are closely within the expected range so any bias from this source should be small. Our study was biased in favour of group surgeries as 99% were computerised compared with 66% of singlehanded practices. In 1997, 92% of surgeries should be computerised,⁴ so sampling will be more efficient. The monozygotic to dizygotic ratio in our sample is approximate because it relies on self reporting, although this has a surprisingly low error rate (5%).⁵

The diagnosis of Parkinson's disease in this study is presumptive. In subsequent studies all twins would need to be interviewed. Where a twin registry and record linkage are not available our method might be easier than other population based approaches.

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Any questions

Treating resistant otitis externa

What is the treatment for "resistant" otitis externa due to Pseudomonas aeruginosa? My patient has received topical treatment with gentamicin, polymyxin B, ciprofloxacin, 5% acetic acid, 4% aluminium acetate, cefazidime, meropenem, and intravenous treatment with ceftazidime, and ciprofloxacin. She has partially responded to these but subsequently relapsed, with bilateral green discharge and eczematous skin just around the external ear canal. The ear drums have remained intact and the rest of the ear, nose, and throat examination is normal. The organism is continuously culturable from both ears and has remained fully susceptible to antibiotics with the exception of ciprofloxacin. The patient is in her 20s and in good health; simple immunological tests have been normal.

This is a difficult problem. One must suspect underlying skin disease, such as eczema or psoriasis with secondary infection. There may be sensitisation to neomycin or an allied preparation. A dermatological opinion and patch testing may be helpful. Malignant otitis externa is more likely in elderly or debilitated patients with unstable diabetes mellitus, but is known in younger patients, though usually with immune deficiency. There may be perichondritis with overlying skin change and often cases such as this are perpetuated by persistent autoirritation and it may represent a type of dermatitis artefacta.

Management is initially based on careful and thorough aural

toilet carried out under microscopic control. A period without topical antibiotics should be tried, using repeated glycerine and ichthammol wicks. Occasionally wicks with bismuth iodoform paraffin paste may be helpful, provided there is not iodine sensitivity. Usually topical treatment is more effective than systemic medication, and sometimes plain steroid ointments, such as 1% Betnovate, is required to control underlying skin disease. The patient may have to be admitted to hospital with the ears covered to be certain there is not autoirritation. Systemic medication is usually less helpful unless there is perichondritis or malignant otitis externa. In the latter situations after appropriate culture and sensitivities one might consider the following: carboxypenicillin such as carbenicillin or ticarcillin; ureidopenicillins, such as aslocillin and piperacillin; β lactamase antibiotics such as aztreonam or imipenem. The potential for ototoxicity makes aminoglycosides, such as akilacin, gentamycin, and tobramycin less satisfactory.

Such antibiotic medication should be controlled in hospital, where careful observation can be made 24 hours a day and topical treatment under microscopic control carried out.

Finally it should be noted that such cases tend to relapse.

A Richard Maw, consultant otolaryngologist, Bristol