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Assessment of hearing in persons with learning disabilities: the Phoenix NHS Trust, January 1997 to September 1998

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Abstract

People with learning disabilities are at increased risk of impaired hearing. The aims of this study were to assess the prevalence of hearing impairment and ear disease in people attending the specialist Otolaryngology/Hearing Therapy clinic at the Phoenix NHS Trust, Bristol. The present and future process of such a service was explored.

Data were obtained from the referral form and notes made by the consultant otolaryngologist.

In 20 months, there were 226 consultations, 188 of which were new referrals. The majority of patients had verbal communication to some extent. Suspected infection/inflammation and unobtainable/abnormal tympanograms, each accounted for 43 per cent of reasons for referral. Twenty per cent of patients were normal otologically. Eighteen per cent were provided with hearing aids and nine per cent required surgery. Ten patients underwent brainstem evoked response testing, half of whom had aidable hearing.

Our results are comparable to published data of similar units. It is recommended that combined otolaryngology/specialist hearing therapy services are continued and further developed.

Key words: Learning Disorders; Hearing Impaired Persons

Introduction

People with learning disabilities are more likely than the general population to have impaired hearing.[1] This may affect up to 40 per cent of these people.[2] Any additional disability may compound the individual's problems in hearing, for example, impaired vision prevents visual clues being utilized. They may not have developed good auditory skills since learning to identify and understand sounds may be difficult, even for those who hear them clearly, due to lack of stimulation, environmental and institutional factors, auditory processing disorders and inappropriate diagnosis of disability.

Clinical assessment of hearing provides information on hearing thresholds across different frequencies. Standard sounds in excellent acoustic conditions are generally used for the mainstream population. Difficulty arises in assessing those with learning disabilities since clinical assessment may not be representative of the individual's hearing in their normal surroundings. Murdoch[3] advised that assessment should ideally take place over time and in familiar conditions with responses confirmed by someone well known to the individual. This avoids the problems when individuals show a marked delay in response to a stimulus resulting in difficulty identifying which stimulus is being responded to. The hearing therapy service work closely with the learning disabled and their carers and use a full battery of adapated audiometric testing skills to meet the needs of individuals.

All people with learning disabilities should be tested shortly after birth, then receive educational audiology input during schooling through screening mechanisms until leaving childrens' services. It appears that a large proportion of those with learning disabilities have an undiagnosed hearing loss when they enter adult services. Routine testing on transfer to adult services may be necessary and in those with Down's syndrome, again in middle age to detect early presbyacusis.[4] The latter may benefit from hearing aids.

The aims of this study were to assess the prevalence of hearing impairment and ear disease in persons with learning disabilities attending the specialist Otolaryngology/Hearing Therapy clinic at Phoenix NHS Trust, Bristol. This would enable assessment of the role of such a service as well as demonstrating possible improvements in detecting hearing loss and ear disease. The results of the study are compared to published data of similar units and may be used as a basis for defining standards for use in future audits.

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TABLE I
DISABILITIES OF THOSE ATTENDING THE PHOENIX NHS TRUST

45	(20%)	Downs' syndrome
4	(2%)	Cerebral palsy
1	(0.4%)	Each for anoxic brain damage; hydrocephalus/ spinabifida; rubella; congenital syphilis and fragile X chromosome
174	(76%)	Non-specified learning difficulties

Methods

The Phoenix NHS Trust in Brentry consists of a team of two specialist hearing therapists, an ENT consultant and support from the audiology department at North Bristol NHS Trust. Clinics are held bi-monthly.

Data was obtained from the referral form (Appendix) and from notes made by the attending Consultant Otolaryngologist. The results of brainstem evoked response testing (BSER) were provided by the audiology department at North Bristol.

Results

From January 1997 to September 1998 there were 226 consultations, 188 of which were new patient referrals. The age range was 19 to 92 years old with a median age of 50 years.

Table I shows the nature of the disabilities in those receiving services from the Phoenix NHS trust. The majority had learning disabilities of unknown aetiology, with 20 per cent having Down's syndrome.

The methods of communication used are demonstrated in Table II. The majority had verbal communication to some extent ranging from simple vocalization to speech.

Reasons for referral are shown in Table III. It can be seen that suspected infection/inflammation and also absence of a tympanogram or if found, was abnormal, each accounted for 43 per cent of the referrals.

Table IV shows the diagnosis made. Twenty per cent were found to be normal otologically although an abnormal tympanogram prompted hearing therapy referral to the ENT consultant. Thirty per cent had wax occluding the external meatus.

Table V demonstrates that 46 per cent could be discharged from the combined clinic (but continued to be followed-up/rehabilitated as necessary by the hearing therapists). Twenty-one per cent required further ENT follow-up. Eighteen per cent were provided with hearing aids and nine per cent required surgery.

TABLE II
METHODS OF COMMUNICATION USED BY THOSE ATTENDING THE CLINIC

151	(66%)	Verbal/speech (vocalizations)
17	(7.5%)	Gestural
18	(8%)	Speech + Makaton
14	(6%)	Speech + gestural
6	(3%)	Makaton (signing/symbols)
25	(9.5%)	Other combinations/non-specified

TABLE III
REASONS FOR REFERRAL

98	(43%)	Infection/inflammation
19	(8.3%)	Perforation
2	(0.8%)	Each for cholesteatoma, wax removal and unilateral hearing loss
122	(43%)	Abnormal/unable to obtain a tympanogram
36	(16%)	Follow-ups
29	(12%)	Miscellaneous

The results of the BSERs performed are shown in Table VI. Forty per cent demonstrated a profound loss of hearing but thirty per cent could benefit from using a hearing aid. One person tested was identified as having useful hearing unaided.

Discussion

Yeates[4] studied a population with the same age range although their median age was 45 years. That study concluded that of 300 tested, 39.6 per cent had hearing loss sufficient to require amplification.

The reason for the initial referral is to be studied. Research to determine the proportion of referrals made by carers may identify that it was a change in behaviour such as withdrawal, screaming, aggressive behaviour etc. which triggered the referral. An example of this may be a high frequency impairment in a middle-aged individual with Down's syndrome presenting as reduced co-operation. If hearing impairment is due to a conductive loss, for example glue, behaviour may fluctuate if the problem is intermittent.

Heaton-Ward *et al.*[5] showed that it is often difficult to establish the aetiology of learning disabilities and of any hearing loss. The proportion of the nature of learning disabilities in our study was similar to those in published studies. Yeates[4] found a 23 per cent incidence of Down's syndrome in her study comparable to our 20 per cent.

A large proportion of individuals attending the Phoenix NHS. Trust specialist Otolaryngology clinic have some degree of verbal/speech communication suggesting some hearing to be present.

The patterns of diagnosis for persons examined was again similar to previous studies. Yeates[4] also showed 20 per cent were normal otologically. Thirty per cent had wax present.

Although almost half of those attending were able to be discharged from the clinic, 21 per cent required further ENT follow-up. Many were provided with hearing aids and nine per cent required surgery. The hearing therapists at Phoenix Trust performed the audiograms and tympanograms and provided hear-

TABLE IV
DIAGNOSIS MADE IN THOSE ATTENDING THE CLINIC

46	(20%)	Normal*
68	(30%)	Wax
18	(8%)	Glue ear
12	(5%)	Otitis externae
4	(1.8%)	? Cholesteatoma
22	(10%)	Tympanosclerosis
>40	(18%)	Hearing loss

*abnormal tympanogram had resulted in referral.

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TABLE V
OUTCOME OF CONSULTATION

104	(46%)	Discharged
47	(21%)	Followed-up by ENT
40	(18%)	Hearing aid supplied
29	(13%)	Further audiology assessment
13	(6%)	Ears syringed
65	(30%)	Wax removed to some degree
21	(9%)	Required surgery

ing aids. Otoacoustic emissions (OAEs) are now also performed. This technique uses computing technology and signal averaging techniques to detect in the external auditory meatus outer hair cell vibrations. Evoked OAEs are quick, relatively easy to test and do not require an anaesthetic. Only if the results of OAEs are uninterpretable are patients referred to the audiology department for BSERs (± general anaesthesia). BSERs measure the electrical changes in the lower part of the auditory pathway. The subject must remain still for 35–40 minutes and so general anaesthesia is invariably required for this group of patients. This presents challenges for anaesthetists since airway difficulties and heart defects are common. Only 10 of our patients had a BSER performed but 30 per cent were found to have a hearing loss likely to be improved with a hearing aid. Yeates in 1995[4] found 40 per cent tested with BSERs were suitable for amplification.

Eighteen per cent of those attending the clinic were referred for a hearing aid with a further 13 per cent referred for further audiological assessment. This is much higher when compared to the general population. The Audit Commission National Report (2000)[6] published the percentage of the population (per 10 year age band) with hearing loss and the potential and actual use of hearing aids. The number of people attending the Phoenix Trust per 10 year age band was calculated. Based on these figures the overall percentage of those attending the Phoenix clinic expected to benefit from wearing a hearing aid would have been 13 per cent.

All people with impaired hearing having difficulty in differentiating a relevant sound from irrelevant noise. Hearing aids amplify all sounds. The use of hearing aids may be precluded by other disabilities although these tend to be psychological/mental and not physical in our client group. A programme of desensitization may be required when hearing aids are initially worn. This has to be weighed up for each individual since some people will not wear the hearing aid unless there is significant and immediate benefit. Wearing hearing aids in background noise may be unstimulating and unrewarding for people with learning disabilities and is rarely carried out in hearing therapy. The benefits of hearing therapy/ENT intervention has been seen in some clients who were previously much less communicative and non-verbal becoming more vocal with much easier communication.

TABLE VI
BRAINSTEM EVOKED RESPONSE RESULTS

Hearing status	Number of patients
Dead ear	1
Profound loss	4
Moderate/severe loss	3
Useful hearing unaided	1
Non-diagnostic	1

Conclusions

Our local population appears to be similar in terms of demographics, diagnosis and communication to other series in the UK. The ENT consultant was able to make a diagnosis in clients referred by the hearing therapists with, for example, abnormal tymanograms. A high proportion of patients had significant ear pathology (fifty per cent had disease other than wax). Of those receiving BSER, most had highly significant hearing losses, half of which were aidable.

It is recommended that people with learning disabilities should continue to be provided with a combined Specialist Learning Disability Otolaryngology/Hearing Therapy Service. OAE should be used more extensively in screening patients for deafness, with BSERs used as third line. OAEs are to be performed with Phoenix NHS. Trust clients later this year by the hearing therapists. A more explicit relationship between NHS Hospital Trusts and specialist service providers is required.

Further work needs to be done to identify the early steps of the referral process and research performed to establish needs and more formal and meaningful outcomes from this intervention.

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Miss W. Smith takes responsibility for the integrity of the content of the paper.
Competing interests: None declared

Appendix

ENT REFERRAL FORM

NAME:.....D.O.B:.....

ADDRESS:.....

MAIN CARER:.....TEL:.....

G.P:.....ADDRESS:.....

TEL:.....

REFERRAL FOR HEARING THERAPY

Referrer:.....

Reason for referral:.....

Reason for referral: Please tick where applicable.

Hearing Aid	( )	( )	Wax removed
B.S.E.R.	( )	( )	Perforations
Infection/inflammation	( )	( )	Unilateral loss
Abnormal/tympanometry	( )	( )	Other

Please give details:.....

Method of communication:.....

Medical condition (eg. Downs):.....

Referrer's name:
(Print).....Date:.....

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