Hearing assessment after meningitis and meningococcal disease

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Abstract

A method to increase audiology referral after meningitis or meningococcal disease was audited in 89 children. A standardised proforma increased referrals from 78% to 96% over a two year period. However, only 73% of children had a hearing test. The major reason for hearing not being tested changed from non-referral to non-attendance.

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Sensorineural hearing loss occurs in 10% of children surviving bacterial meningitis or meningococcal disease.^{1 2} Partial or unilateral hearing loss can cause linguistic disabilities, but may be missed by informal testing at the bedside or in outpatients. All children should therefore have a formal audiological assessment after meningitis.² Hearing loss can also occur after meningococcal septicaemia without meningitis.³ All children with meningococcal disease, not just those with meningitis, should therefore have audiological follow up.

A recent audit in our hospital found that only 75% of survivors of meningitis had a hearing assessment.⁴ The major reason for hearing not being assessed was non-referral. As a result of our audit a simpler method of referral was adopted.

We now present an audit of this new referral method. The standard set was for all children with meningococcal disease or bacterial meningitis to be referred for and have a formal audiological assessment.

Methods

From 1 April 1993 a standardised proforma for audiology referral was available on all medical wards. Before this referral had been by letter. Medical staff were asked to complete the form when discharging children with meningitis or meningococcal disease. Forms were sent to one of us (JH) at community services, and forwarded to the appropriate local audiology service.

Audiology referrals and hearing test results after meningitis and meningococcal disease. Data shown as number (%)

	April 92- March 93 (n=41)	April 93- March 94 (n=48)
Referred by hospital	30 (73)	42 (88)
Other referral	2 (5)	4 (8)
Known to audiology services	32 (78)	46 (96)
Did not attend hearing test	5 (12)	11 (23)
Hearing tested	27 (66)	35 (73)
Sensorineural loss	2 (5)	3 (6)

A list of children with a discharge diagnosis of bacterial meningitis or meningococcal disease was compiled for the year before, and the year after the introduction of the new referral method as part of a prospective study (A Riordan, unpublished data). After one year of the new referral method, audiology records were studied to see how many children had been referred and how many had had a hearing test. The referral rates were compared with those for the previous year.

Results

During the two years audited 96 children were directly admitted to our hospital with bacterial meningitis or meningococcal disease. Eighty nine children survived and were included in our audit. Referrals for audiology were only made for these children, except for one other child. This child had a possible viral meningitis, and was excluded from the audit.

The number of children admitted was similar for the two 12 month periods (table). The causative organisms were also similar (data not shown). However, the proportion of children known to the audiology services was much greater during the latter year (78% v 96%) (table). This was in part due to an increase in referrals on the new referral form, but also due to increased referrals from other sources. Despite the increased referrals for audiology, the proportion of children who had their hearing tested increased to only 73%. This was due to an increase in non-attendance for hearing test after referral. Five of the 62 (8%) children assessed were found to have sensorineural hearing loss.

Discussion

Having identified non-referral as the major reason for hearing not being assessed after meningitis,⁴ we implemented a new referral method. This audit shows the effectiveness of this simpler method of referral, with 96% of cases now being known to the audiology services. This improvement was due to an increasing referral rate from medical staff (73% to 88%) as well as from other professionals. The proportion of children who actually had a hearing assessment changed very little, however (66% to 73%), and is similar to that previously reported by ourselves⁴ and others.^{1 5} The main reason for non-assessment changed during the audit from failure to refer to failure to attend for audiology.

The increasing rate for those who did not attend is worrying. A non-attended appointment at a specialist centre wastes resources,

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and is more difficult to rectify than non-referral. Hospital staff can be made aware of the need for hearing assessment after meningitis in large groups. Parents, however, will need to be seen individually and may not appreciate the need to return for hearing assessment.

Eleven of the 16 children who defaulted audiology appointments did attend paediatric outpatients. Encouragement to attend hearing assessment then, or appointments on the same day, could help increase the number of children tested. Such a system will require close cooperation between audiology and paediatric services and continuous audit.

Increasing referral to the audiology services after meningitis and meningococcal disease up

to 96% did not substantially increase the number of children assessed. Strategies to decrease non-attendance now need to be devised and the audit repeated.

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