



Community Pædiatric Review

VOL 7 NO 3 SEPTEMBER 1998

An initiative of the
Centre for Community
Child Health,
Royal Children's
Hospital, Melbourne

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Early detection of hearing impairment

Hearing impairment in childhood Congenital sensorineural hearing impairment (SNHI) is a common developmental disability affecting 1 in 600 children throughout Victoria. In some high risk groups, such as low birth weight infants, the incidence of SNHI is as high as 1 in 10. Delayed diagnosis of SNHI is thought to have detrimental effects on child development, particularly on speech and language, cognitive, and social development. Conversely, there is growing evidence that early diagnosis, fitting of hearing aids, and enrolment of hearing impaired children in early intervention programs will improve developmental outcomes for these children.

Victorian Infant Hearing Screening Program (VIHSP)

Unfortunately, the mean age at diagnosis of SNHI is over 2 years of age in many countries of the western world, including Australia, in some cases despite the existence of infant hearing screening programs. In an attempt to lower the age of diagnosis in Victoria, major changes were made to the state's existing infant hearing screening program. The new program, launched in December 1992, involved a two-tiered process for infant hearing screening based on whether babies are classed as 'at risk' or 'not at risk' for hearing loss at the time of birth.

1. Identification of infants at risk of hearing impairment

Eight risk factors for SNHI are listed below. Infants with one or more of these risk factors are referred for audiological assessment as early as possible, preferably in the newborn period. Referrals are made by paediatricians, staff in maternity/obstetric wards, and maternal and child health nurses as soon as they become aware of the presence of a risk factor. Audiologists can be found in hospitals, community health centres, and in private practice. Most infants referred to the audiologist prior to the age of three months can be assessed by Auditory Brainstem Evoked Response (ABR) testing.

The risk factors for hearing impairment are as follows:

1. Family history of congenital hearing loss

2. Rubella, C.M.V. or toxoplasmosis during pregnancy or other perinatal infections
3. Birth asphyxia as defined by an APGAR score of less than 4 at five minutes of age
4. Birthweight below 1500 grams
5. Exchange transfusion or serum bilirubin level greater than 350 micromols per litre
6. Congenital abnormalities of the head and neck
7. Parental concern
8. Later risk factors e.g. bacterial meningitis, developmental delay, suspected cerebral palsy

2. Hearing screening tests for infants not at risk of hearing impairment

Approximately half of all children with a hearing impairment do not have a risk factor for hearing impairment. Therefore infants without risk factors undergo a revised process of distraction testing of hearing in maternal and child health centres at 7-9 months of age. The new modified form of distraction testing is easier and simpler to perform than previously, and has clearly defined pass/fail criteria. The test involves the presentation of two different sounds: a high frequency rattle and a low frequency voice stimulus. Two people are required to conduct the test, and training in the correct performance of the test is required. A specific 'Manchester' rattle must be used to ensure that the appropriate high frequency sound is presented. If the first distraction test screen is failed, a second is performed four to

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six weeks later. If the second test is failed, the infant is referred to an audiologist for a full assessment. The distraction test is a screening test, therefore children who do not perform as expected do not necessarily have a problem with their hearing. Instead, this test is designed to help identify those children for whom further audiological assessment is warranted.

Effectiveness of the VIHSP Analysis of the age at detection of hearing impairment in Victoria since implementation of the VIHSP has shown that much greater proportions of hearing impaired children were diagnosed at very young ages in comparison to pre-VIHSP. In addition the revised distraction test protocol is more accurate, with increased fail rates on the test among children who have a hearing impairment.

Detection of hearing impairment in children: Common traps

'Let's wait until she is old enough to be tested'

Many people are not aware that technology exists which enables sophisticated testing of babies' hearing from birth.

'You're worrying about nothing, I'm sure he can hear just fine'

Many parents of hearing impaired children report that

when they first became concerned about their child's hearing, they were falsely reassured by health professionals, relatives and friends that their child's hearing was fine, thus delaying their child's eventual diagnosis.

'See, she turned around when I called out to her'

When there is a question about whether a baby can hear well, it may be tempting to see whether the baby responds to loud sounds such as calling out to the baby, clapping hands or rattling keys. Again, many parents of hearing impaired children report that such so-called 'tests' of hearing delayed their child's diagnosis, because they assumed that their baby could hear well. In fact, testing of a baby's hearing is a complex task that requires specialised equipment. In addition, many children who have a hearing impairment can hear some sounds. Remember that the only true test of hearing status is that conducted by an audiologist.

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Reading to infants and young children

There has been a lot of media attention recently about literacy, or rather the lack of it, in Australian children. There are disturbing reports indicating that large numbers of children struggle with reading right through their school careers - the potential negative consequences of this are obvious.

A small number of non-readers have a specific learning disability which makes it very hard for them to read, even with excellent tuition. But most non-readers do have the ability to learn to read if properly taught and their individual developmental strengths and weaknesses and preferred learning styles are taken into account.

What can parents do to ensure that their children will become fluent readers? Emerging research from North America has emphasised the importance of introducing children to books and to reading from an early age - as early as six months.

Research suggests that reading to children in the first few years of life can lay the groundwork for later educational success. It is suggested that from about six months of age parents should begin reading to their child on a regular basis. At this stage the infant will not

understand the content, but will come to associate the activity with the sound of the parent's voice and close physical contact, which by itself promotes parent-infant bonding and serves to enhance emotional and social development. At this age, the

child may make eye contact with the pictures, reach out and grasp the book, may shake it and crumple the pages, and will likely bring it up to her mouth to suck and chew.

By their first birthday the child will come to look forward to these sessions, may hand the book to the parent, will help try to turn the pages, take much more interest in the pictures, and soon will point with excitement at familiar images. They will imitate sounds and the interaction with the parents around the reading activity will become more mutual.

Over the next 12 months as the child's language expands rapidly, the reading activity will become even more meaningful, with the child able to name objects in the book and respond to "what" questions - for example what sound does a doggie make? Some children may begin to carry books around the house, and may read to

their dolls, so imitating the activity that they participate in with their parents.

By their third birthday their concentration span and ability to sit still and listen will have increased, as will their understanding of the story. They will be able to begin to relate the content to their everyday life, so that selection of the books appropriate to their age becomes increasingly important. Listening to stories helps expand their understanding of the world and facilitates their play. They link books with reading and begin to understand that words on a page have meaning. Listening to a parent re-read a favourite book adds to their feeling of security, and regular reading at bedtime helps establish a routine which encourages independent sleeping. Reading to children promotes their development, especially language.

It is difficult to conceive of an activity that has as many benefits to the young child (and the parents) as reading to them on a regular basis. Quite apart from the likely long term benefits on reading and preparation for more formal learning, the process is positive for all aspects of the child's development and the parent-child relationship. Maternal and child health nurses can play an important role in encouraging parents to begin these sorts of reading activities from an early age.

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O F F T H E S H E L F

Depression after childbirth

How to recognise, treat and prevent postnatal depression

Author : Katharina Dalton with Wendy M. Holton 1996, pp 206

In this book Katharina Dalton provides information to help the reader recognise, treat and prevent a recurrence of postnatal depression. The author provides reassurance and relief to many women who feel alone and isolated. Reading about postnatal depression brings comfort to families who might otherwise feel hopeless. Health professionals are now far more alert to postnatal depression; at the same time women need to be aware of the need to seek help at the first signs.

The book includes a section for fathers explaining how they can recognise PND and how they can help their partner.

The chapters on the role of hormones during pregnancy and the puerperium and the action of progesterone help to give a much better understanding of the problem. Many people have found they can relate to the case studies and have a raised awareness of the extent of the problem faced by families.

One of the major concerns about this book is the author's strong dogmatic approach to the use of progesterone for treatment. Many in the medical profession would not support this form of treatment.

Although the book helps the reader better understand postnatal depression, I would suggest contact with the Post and Ante Natal Depression Association (PaNDa) first of all on their Helpline, telephone (05) 9882 5756 for local and interstate contacts. The Association does stock this book amongst others and also offers a wide range of other resources for loan and for sale, including a mail order service.

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Books are available from the Child Health Information Centre, a specialist bookshop, information and referral centre for health professionals, parents, teachers and adolescents.

A booklist is available for mail orders

telephone (03) 9345 6429

open 9.30-4.00 weekdays.

Scalp scaling in children

When a child presents with a scaly scalp, the differential diagnosis includes:

1. Seborrhoeic dermatitis (cradle cap)
2. Atopic dermatitis (eczema)
3. Psoriasis
4. Tinea
5. A group of rare disorders which simulate the above conditions

Seborrhoeic dermatitis (cradle cap) This presents at several weeks of age as a greasy yellow scale on a dull red base. It is usually accompanied by redness and variable scaling involving the eyebrows, forehead, centre of the face, behind the ears, neck fold, under the arms and the napkin area. When seborrhoeic dermatitis involves the folds, the characteristic scale may be absent. The condition is usually asymptomatic, causing no distress to the child and is self-limiting in weeks or months. Occasionally secondary bacterial infection complicates thick scalp scaling.

The most appropriate treatment for the scalp is a mixture of sulphur and salicylic acid in a water miscible base; 2% of each is usually well tolerated. This is applied at night and washed out in the morning. If irritation occurs, the preparation should be weakened by the addition of more base. If the weaker preparation irritates, it is likely that the patient has an atopic tendency and the condition should be left untreated or a weak topical corticosteroid can be used.

It is important to appreciate that seborrhoeic dermatitis does not occur between the ages of 9 months and puberty and if what appears to be this condition appears at "the wrong age" other diagnoses must be considered.

Atopic dermatitis (eczema) This presents as a fine white scale on a red base, with or without weeping areas of acute eczema; scratch marks and erosions are often prominent. There will be obvious atopic dermatitis lesions elsewhere.

Scalp scaling in atopic dermatitis is difficult to treat because standard shampoos and simple keratolytics (as used for seborrhoeic dermatitis) and tar containing preparations often irritate. The hair is best washed with a proprietary soap substitute and a water miscible emollient can be applied the night before washing. If there is significant active eczema a moderate strength



Seborrhoeic dermatitis.

topical steroid in cream base should be used for several days. The alcohol based lotions and gels must be avoided in children as the stinging they cause is unacceptable.

Psoriasis This presents as a thick, adherent white scale on a base which is either apparently normal or red. This may be the only manifestation of psoriasis or there may be characteristic lesions elsewhere.

Scalp psoriasis in children is treated in the same way as in adults. If it is mild, a tar shampoo used every second night may be adequate. For more severe or persistent disease a cream containing 5% each of sulphur, salicylic acid and liquor piscis carbonis (LPC, coal tar solution) in a saponifiable base is used. This is applied every night for 4 nights and is washed out in the mornings. This will usually give a degree of control which can be maintained by the regular use of a tar shampoo, but from time to time the application of the scalp cream may be required again. Psoriasis may clear spontaneously for long periods.

Tinea It is important when assessing scalp scaling in children to keep the possibility of tinea in mind. If there is any broken hair this is the likely diagnosis. The condition may be very subtle, particularly in fair haired children in whom the broken hairs are difficult to see. A skin scraping to look for tinea is essential in any case of scalp scaling that is not responding as expected to therapy.

Rare conditions Scalp scaling may be a presentation of immunodeficiency disorders and malignant histiocytic disorders. In the latter there is often some bleeding associated with the scaling. Seborrhoeic dermatitis can occur at an inappropriate age as a reaction to anti-convulsant drugs and as a feature of premature puberty.

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