SCREENING FOR CONGENITAL DISLOCATION OF THE HIP
BY PHYSIOTHERAPISTS
RESULTS OF A TEN-YEAR STUDY

N. J. FIDDIAN, J. C. GARDINER

From Poole General Hospital, Poole, England

We report a prospective study of the feasibility of employing specially trained physiotherapists to screen neonates for congenital dislocation of the hip. During ten years 42 241 babies were screened, using clinical tests; 255 were diagnosed and treated by a Pavlik harness. In the same period 13 children presented late with congenital dislocation of the hip which had not been detected by the screening programme.

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The first test for the recognition of a congenitally dislocated hip (CDH) was reported by Ortolani in 1937; Barlow described his test for the dislocatable hip in 1962, and both are now well established. At first it was hoped that screening programmes using these tests would reduce the number of dislocations presenting in later childhood but unfortunately published results have not always confirmed this (McKenzie 1972; Catford, Bennett and Wilkinson 1982; Lennox, McLauchlan and Murali 1993). The prospective trial described here was started in 1982 as a result of our disillusionment with the large number of late cases presenting to the orthopaedic unit in our area. There were too few senior medical staff to examine all neonates, and a team of experienced paediatric physiotherapists was therefore trained and entrusted with the screening.

PATIENTS AND METHODS

East Dorset Health District, which includes the conurbation of Poole, Bournemouth and Christchurch, has a population of about 450 000 in which there are about 4000 live births per annum, most of them in hospital units. All babies born in the hospitals in the district are examined on the first or second day after birth by a member of a team of up to six specially trained paediatric physiotherapists. A team of this size provides cover for weekends and holidays.

All those with dislocated or dislocatable hips, or with restriction of hip abduction in flexion greater than 30°, are fitted with a Pavlik harness by the physiotherapist. The harness is worn for eight weeks. The baby is then examined for the first time by a consultant orthopaedic surgeon. At this stage splintage is usually discontinued. A radiograph is taken at six or seven months of age. The screening programme has remained unchanged since its inception in 1982.

Records have been kept since the start of the trial of the numbers of patients screened and treated as well as details of any who presented late with CDH. All babies treated in a harness were followed up until the hip was radiologically normal, and it is planned to review them all at five and ten years to confirm the observed absence of avascular necrosis.

RESULTS

Between March 1982 and March 1992, 42 421 live births were recorded in the district, and approximately 97.5% were screened; 226 were diagnosed as having dislocated or dislocatable hips, an incidence of 5.3 per 1000 live births. In addition, there were 29 babies with restricted abduction. Unfortunately the number of bilateral dislocated or dislocatable hips was not recorded. A total of 255 babies was therefore splinted, 6 per 1000 live births. During this ten-year period 13 children were discovered with late CDH, not detected by the screening programme at birth, an incidence of 0.3 per 1000 live births.

In the preceding three-year period, 1979 to 1982, there were 11 251 live births in the district; all were examined by paediatricians and then, if necessary, referred to an orthopaedic surgeon. In this period, 22 children presented with late CDH, an incidence of 1.95 per 1000 live births, which is 6.5 times higher (p < 0.001) than that achieved when the responsibility for screening was switched to the physiotherapy department.

Of the 255 babies splinted for the initial eight-week period, there were ten who needed further treatment: four

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required a longer period of splintage; four were admitted to hospital for hoop traction, adductor tenotomy, frog plaster and modified Denis Browne splintage; and two required open reduction. Of the 13 children who presented with late CDH, three were diagnosed at less than four months of age, were treated in a Pavlik harness and developed normal hips. One child who was detected at six months was treated in an Alton splint and developed a normal hip. Seven children, aged 9 to 18 months at presentation, were treated by hoop traction, adductor tenotomy and frog plaster, followed by Alton splintage. Two children required open reduction; they were detected at 14 and 23 months of age.

There has been no case yet of avascular necrosis produced by the initial splintage in the Pavlik harness.

DISCUSSION

Our results compare favourably with previously published studies (Table I) and support the concept that suitably trained non-medical staff can be used to conduct a screening programme based on clinical tests.

Studies in which continuity of staffing of the screening programme has been maintained have invariably recorded better results (Bernard et al 1987; Macnicol 1990). Screening programmes in which the results have been disappointing have usually involved junior medical staff in the performance of the initial examination (Krikler and Dwyer 1992). During a six-month period in our district a junior doctor could expect to see only 12 abnormal hips even if he examined every newborn baby, insufficient to master the highly subjective skills required to perform the established tests. A falling-off of results with increasing experience has previously been described (Moore 1989; Macnicol 1990) but over the ten-year period of this trial the results have remained consistent when collated at five and seven years (Fiddian, Foley and Lee 1990). The programme has proved to be economical in its utilisation of resources and only two paediatric orthopaedic clinics per month have been necessary to allow a consultant orthopaedic surgeon to monitor the programme and to see all other paediatric referrals.

The proportion of babies splinted in this series is relatively high, but the absence of avascular necrosis suggests that this is a safe practice. The role of ultrasound scanning of neonatal hips has yet to be defined. Selective screening may reduce the number of cases treated by splinting but may not decrease the number of cases presenting late (Clarke, Clegg and Al-Chalabi 1989). Screening of all neonates may be beyond the resources of many hospitals and the role of ultrasound as an adjunct to screening by clinical methods needs to be established.

Screening programmes based upon clinical tests have not led to a complete avoidance of late presentations of CDH, but by using a team of trained physiotherapists an effective programme can be maintained which minimises the number of late presenters without increasing the morbidity from unnecessary splintage in false-positive cases and without the need for multiple examinations of the neonate or unnecessary radiography.

The authors are grateful to and acknowledge the work of Mr M. H. Lee and Mrs J. Foley, both of whom are now retired but who were responsible for creating the screening programme.

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REFERENCES


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**Table I. Results of previously published studies of screening programmes for CDH**

<table>
<thead>
<tr>
<th>Author</th>
<th>Incidence of late presentation of CDH (per 1000 live births)</th>
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<tbody>
<tr>
<td>McKenzie (1972)</td>
<td>1.12</td>
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<td>Mitchell (1972)</td>
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<td>Jones (1977)</td>
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<td>Lennox et al (1993)</td>
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<td>Fiddian and Gardiner (1994)</td>
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