

Attitudes to CDH

Guest Editorial

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In the city of Malmö the problem of early diagnosis and treatment of congenital dislocation of the hip has been, if not completely mastered, at least under control for several decades. Our neonatal screening procedure has missed very few cases and treatment has been completely successful. An additional reason for confidence is that our health care organization and follow-up capacity make it unlikely that failures or mistakes will escape detection.

The failures reported from the United Kingdom, Norway and other areas are, therefore, difficult to comprehend, e.g. *The Lancet* (1974) editorial on this subject, entitled "Iatrogenic hip disease".

Early in the 1950's the Swedish pediatricians Palmén (1953) and later Selander in co-operation with von Rosen (1956) introduced the concepts of neonatal diagnosis and treatment of CDH in Sweden. Palmén (1961) went on to publish his experience of 10 years of early diagnosis and treatment; he showed that children treated with a brace of his own design or with the Freika pillow usually developed normal hips. Palmén also introduced the subluxation-provocation test to be added to the screening procedure, so that not only dislocated or dislocatable hips but also hips with a lesser ingredient of instability would be identified and treated.

The series of patients diagnosed and treated by Selander and von Rosen in Malmö were reviewed by Fredensborg (1976). In almost 60 000 live births, the diagnosis of dislocation or hip instability had been established in 9.3 per mille – only four cases (0.07 per mille) had been missed over the years.

At that time similar successes had been reported by Barlow (1966), Finlay et al. (1967) and Mitchell (1972). More recently, the benefits of the neonatal screening procedure and treatment – especially with the von Rosen splint – were demonstrated by Hansson (1980), Tredwell & Bell (1981) and Hansson et al. (1983).

Williamson (1972), on the other hand, thought that the diagnostic procedure carried out at the time of birth may be a failure and that early treatment may not always prevent dislocation. Bjerkreim (1974) found that a considerable proportion of the CDH children in Norway were being missed in spite of a diagnostic procedure which, however, was frequently undertaken a week or more after birth; also the results of treatment – using the Freika pillow – were unsatisfactory. Cyvin (1977) found residual radiographic changes in children after treatment with the Freika pillow; some needed additional treatment with casts or operations. This is in contrast to Fredensborg's (1976) observation that CDH children developed completely normal hips: only in two cases were there suspected radiographic changes in the course of the treatment, but these were without harmful consequences for the further development of the hips.

In a recent study, Widhe et al. (1983) found poor reproducibility of the neonatal diagnosis of CDH with a high rate of false negatives. However, the diagnostic procedure was carried out by several pediatricians, which seems to be a common mistake. We recently had a similar experience in Malmö when our rule that only one or a few pediatricians were to be involved

in the examination of the hips in the new-born was abandoned for some time. A large number of pediatricians became involved and the number of *suspected* cases increased: it more than doubled! So far the slight increase in the number of *missed* cases in the city of Malmö is not statistically significant and it is hoped that the diagnostic order will be restored to normal. Heikkilä (1984) in a study of a hip screening program in Finland found that a substantial portion of the cases were missed in the neonatal screening, probably because of the limited experience of the examiners. Diagnostic success is, in our opinion, purely a matter of organization – and specialization – among the pediatricians.

An additional difficulty is the fact that the clinical findings may change in the individual child from dislocatable or dislocated to unstable; in our experience such changes may occur within hours. The diagnosis becomes increasingly difficult with decreasing joint laxity.

One explanation of the diagnostic failure has been that there is a type of CDH which cannot be diagnosed at birth but will become evident only later on. This hypothesis has found support in a study by Wynne-Davies (1970), who suggested that there are two forms of CDH: familial joint laxity and primary acetabular dysplasia, the latter not being demonstrable in the new-born. There may well be such cases, and their existence may explain the fact that even the most ambitious programs fail at times. However, these cases – presumably very rare – do not explain the large variations in diagnostic performance between centers, even centers in the same community. Their existence is not an excuse for an inadequate routine for diagnosis of CDH in the new-born.

The difference in outcome of the diagnostic and therapeutic procedures may rather be due to the time-table used. *After the first few days, the diagnostic procedure becomes difficult and treatment more hazardous*, particularly because of the risk of avascular necrosis. Modifications which include a more rigid fixation (Felländer et al. 1970, Lancet 1974) may also be the cause of radiographic pathology, including avascular necrosis.

The von Rosen splint appears to be an excellent compromise, if used as directed, since it

prevents dislocation of the hip in the new-born, and, at the same time, permits a sufficient range of motion. Unfortunately, this brace has been copied in many unauthorized modifications which include straps etc. The Freika pillow is now considered unsatisfactory, and the Pavlik harness has mostly been used as an adjuvant to the treatment of late-diagnosed cases – experience of treatment of the new-born is incomplete (Gross et al. 1982). The von Rosen splint is simple to handle and causes no unwanted side-effects.

Finally, it should be pointed out that in Sweden also approximately one fourth of CDH cases are still being missed (Palmén & von Rosen 1975). This is more common in certain parts of the country and is, most likely, due to inadequate diagnostic routines. Child Health Care Centers therefore have the important responsibility of, as far as possible, detecting missed cases. Next to neonatal diagnosis, the earliest possible diagnosis is preferable, now that avascular necrosis can be avoided in this intermediary group.

In conclusion, we believe the following recommendations, endorsed by the Swedish Orthopedic Society, deserve wide acceptance. They are based on decades of experience in Malmö; what can be achieved in some populations should be achievable everywhere, at least in those parts of the world which have access to modern orthopedics.

- One experienced orthopedic surgeon should be responsible for the treatment of CDH, which includes the organization of the necessary out-patient facilities, the training of personnel including his own deputy, and information to parents. After identification of an infant as possibly having CDH, the orthopedic surgeon in charge of treatment should perform his examination as soon as possible, preferably the same day.
- Whenever dislocation, dislocatability or obvious instability is diagnosed, treatment with the von Rosen splint should be started without delay. The child should be placed in the splint with the hips in 90° flexion and 80° abduction; the splint permits some motion in the joint. *The splint must be applied with the hip in a reduced position.*

- The child should be brought to the clinic once a week – a *trained* nurse should remove the splint, bathe the child and put the child back in the splint with the hips in a reduced position. If there are geographical and communication difficulties, the child may be washed at home without removal of the splint.
- The orthopedic surgeon should examine the child 1 week after the diagnosis, and again at 1, 3 and 12 months. Roentgen examination is usually undertaken at the termination of the splint treatment – after 3 months – and at the age of 1 year.
- Cases in whom the neonatal diagnosis is missed should be referred to a Regional Center equipped with a Children's Orthopedic Service.

An absolute requirement for this regimen is early diagnosis – we suggest 48 hours as the upper limit. It should be the duty of every health care program to have all children examined by an experienced pediatrician who is examining many hips and who is interested in and responsible for the outcome of the program. There is massive evidence that any other procedure, such as involving numerous physicians in the screening or delaying the diagnosis and the treatment for even a few days, will jeopardize the whole program and contribute to the confusion and despair which, today, are so prominent in the CDH literature.

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