

CONGENITAL DISLOCATION OF HIPS IN MALAYSIAN NEONATES

N Y Boo, T Rajaram

ABSTRACT

A prospective study was carried out in the Maternity Hospital, Kuala Lumpur over a 2-year period. During this time, 52,379 deliveries took place. 36 neonates (0.7 per 1000 births) were found to have congenital dislocation of the hips (CDH) by both the Ortolani and Barlow's manoeuvre. CDH was most common in the females (female to male ratio was 2.3:1), the first borns (50% of the affected cases) and babies who had breech delivery (10.7 per 1000 births). In 21 (58.3%) of the affected neonates, CDH occurred in both hips. According to the classification of newborn infants' hips by Finlay et al, 88.9% of the neonates had unstable hips while 8.3% had pathological hips. Family history of CDH was present in 5% of the patients. 8 (22.2%) of the neonates had other associated congenital abnormalities.

Key Words: Congenital Dislocation Of Hip Incidence

SING MED J. 1989; NO 30: 368-371

INTRODUCTION

Congenital dislocation of the hip (CDH) is defined as: "a congenital deformation of the hip joint in which the head of the femur is (or may be) partially or completely displaced from the acetabulum" (1). Many studies have shown that early detection during the neonatal period coupled with simple splintage for those with unstable hips, has drastically reduced the late, serious sequelae of this condition when unrecognized or untreated (2-9).

There is great variation in the incidence of CDH reported in different countries. In Caucasian neonates this ranged from 1.0 to 19.0 per thousand births (6-14). Very high incidence were reported in the Lapps (15) and certain American Indians (16). Studies on the blacks (6, 17-19) and Australian aborigines (7, 20) showed that this condition was extremely rare.

The objectives of our study were to determine: the neonatal incidence of congenital dislocation of hips in a group of Malaysian neonates, their racial and sex distribution, birth order, birthweight, mode of delivery, the side of dislocation, family history, and types of associated congenital abnormalities.

MATERIALS AND METHODS

This was a prospective study which was carried out over a 2-year period, between January 1986 and December 1987, in the Maternity Hospital, Kuala Lumpur.

Department of Paediatrics
Faculty of Medicine
National University of Malaysia
Kuala Lumpur, Malaysia

N Y Boo, MRCP,
Lecturer

Department of Orthopaedics
Faculty of Medicine
National University of Malaysia
Kuala Lumpur
Malaysia

T Rajaram, FRCS (Ed),
Lecturer

Examination of the hips of neonates within 24 hours of birth before the babies were discharged home had been part of the routine neonatal screening procedure in this hospital. The high risk neonates (babies who were delivered by breech, lower segment Caesarean section, vacuum extraction and forceps delivery) were screened primarily by the Paediatric doctors while neonates born by spontaneous vaginal delivery were screened by the junior Obstetric doctors.

During the study period, all neonates who were suspected to have abnormal hips (such as click, clunk, or inability to abduct hips fully) during screening examination were referred to the neonatologist (NYB) for reexamination and confirmation of diagnosis before discharge. The hips were examined by the Ortolani reduction examination technique (21) and the dislocation provocation manoeuvre of Barlow (2). If the hip of the femur was felt to move with a palpable and/or audible "clunk" during the examination, then dislocation was present. For those neonates whose hips could not be fully abducted, X rays of the hips were carried out to help diagnosis. We used the classification of newborn infant's hip proposed by Finlay et al (5) in our study. "Clicking" hips were, therefore, considered normal.

All babies who were found to have unstable (dislocatable) hips or pathological (dislocated and could not be fully abducted) hips were diagnosed to have congenital dislocation of the hips and were, therefore, included in the study. They were referred to the Orthopaedic surgeons for treatment before going home.

The following information was obtained from the mothers whose babies were diagnosed to have congenital dislocation of the hips, after the babies were seen by us: her age, gravida, family history of congenital dislocation of the hips, history of consanguinity and maternal history of drug ingestion. The Obstetric and birth records of the babies were reviewed. A full clinical examination was carried out on these neonates.

The denominator data in this study were obtained from the hospital's perinatal census.

The Chi-square test was used for statistical test of significance.

RESULTS

52,379 deliveries took place in the hospital during the

study period and 51,541 were livebirths. 36 neonates were detected to have congenital dislocation of the hips. Thus the incidence of congenital dislocation of the hips among our Malaysian neonates in this hospital was 0.7 per 1000 births.

Table 1 shows the basic data of the neonates with congenital dislocation of the hips. The female to male ratio of the affected babies was 2.3:1. Majority of the neonates were term babies with birthweight 2500 grams or more. Among the main racial groups, there was no significant difference in the incidence of CDH (Table 2). Babies who were born by breech delivery had the highest incidence followed closely by babies delivered by vacuum extraction (Table 3).

Table 1
BASIC DATA OF THE 36 NEONATES WITH CONGENITAL DISLOCATION OF THE HIPS

| | Number | (%) |
|---------------------|--------|--------|
| Sex | | |
| Male | 11 | (30.6) |
| Female | 25 | (69.4) |
| Birthweight (grams) | | |
| <2500 | 5 | (13.9) |
| 2500 and above | 31 | (86.1) |
| Gestation (weeks) | | |
| <37 | 1 | (2.8) |
| 37 and above | 35 | (97.2) |

Table 2
INCIDENCE OF CONGENITAL DISLOCATION OF THE HIPS ACCORDING TO RACIAL DISTRIBUTION IN MATERNITY HOSPITAL, KUALA LUMPUR (JANUARY 1986 - DECEMBER 1987)

| Race | Total no. of births | Number of babies with CDH | Incidence of CDH per 1000 births |
|---------|---------------------|---------------------------|----------------------------------|
| Malay | 29,695 | 21 | 0.7 |
| Chinese | 12,115 | 4 | 0.4 |
| Indian | 8,109 | 10 | 1.2 |
| Others | 2,460 | 1 | 0.4 |
| Total | 52,379 | 36 | 0.7 |

$\chi^2 = 3.789$ d.f. = 3 0.5 > p > 0.1

72.2% of the mothers who gave birth to babies with congenital dislocation of the hips were of age between 18 and 30 years and 50% of these mothers were primigravida (Table 4).

None of the affected babies had parental history of consanguinity nor maternal history of drug ingestion. 2 (5%) of the neonates had family history of congenital dislocation of the hips.

Majority (88.9%) of the affected babies had unstable hips (Table 5). Bilateral congenital dislocation of hips occurred in 58.3% of the neonates while unilateral left hip involvement occurred in 36%. All the four neonates with pathological hips had bilateral hip involvement.

Associated congenital abnormalities were present in 8 (22.2%) of the babies (5 with unstable hips and 3 with pathological hips). The congenital abnormalities present in the 5 neonates with unstable hips were: 1 neonate had

Table 3
INCIDENCE OF CONGENITAL DISLOCATION OF THE HIPS ACCORDING TO MODES OF DELIVERY IN THE MATERNITY HOSPITAL, KUALA LUMPUR (JANUARY 1986 - DECEMBER 1987)

| Modes of delivery | total no. of births | No. of babies with CDH | Incidence of CDH per 1000 births |
|---|---------------------|------------------------|----------------------------------|
| I. Vaginal route | | | |
| Spontaneous vertex delivery | 43,982 | 11 | 0.3 |
| Breech delivery (assisted or spontaneous) | 1,401 | 15 | 10.7 |
| Vacuum extraction | 947 | 8 | 8.4 |
| Forceps delivery | 1,534 | 0 | 0.0 |
| II. Abdominal route | | | |
| Lower segment Caesarean section | 4,515 | 2 | 0.4 |
| Total | 52,379 | 36 | 0.7 |

$\chi^2 = 302$ d.f. = 4 $p <<< 0.001$

Table 4
AGE AND GRAVIDA OF MOTHERS WHOSE BABIES HAD CONGENITAL DISLOCATION OF THE HIPS

| | No. of Mothers | (%) |
|--------------|----------------|--------|
| Age in years | | |
| <18 | 6 | (16.7) |
| 18-30 | 26 | (72.2) |
| >30 | 4 | (11.1) |
| Gravida | | |
| 1 | 18 | (50.0) |
| 2 | 8 | (22.2) |
| 3 | 4 | (11.1) |
| 4 | 0 | (0.0) |
| 5 | 2 | (5.6) |
| 6 | 4 | (11.1) |

Table 5
LATERALITY OF CONGENITAL DISLOCATION OF HIPS IN THE 36 MALAYSIAN NEONATES.

| Laterality of CDH | Number of babies (%) |
|--|----------------------|
| A) Unstable hips* | |
| Bilateral | 17 (47.2) |
| Left side only | 13 (36.1) |
| Right side only | 2 (5.6) |
| B) Pathological hips* | |
| i. Not associated with other congenital abnormalities | |
| Bilateral | 1 (2.8) |
| ii. Teratological dislocation associated with arthrogryposis or other congenital abnormalities | |
| Bilateral | 2 (5.6) |
| iii. Dislocation associated with meningomyelocele | |
| Bilateral | 1 (5.6) |
| Total | 36 (99.9) |

* classification of dislocated hips was according to that proposed by Finlay et al (5).

congenital talipes equino varus. 2 had facial palsy. 1 had genu recurvatum and 1 had congenital spinal tumor (diagnosed by computerised axial tomogram). The associated congenital abnormalities present in the neonates with pathological hips were: 1 baby had arthrogryposis multiplex, another had associated congenital talipes equino varus and bilateral wrist drop while the third baby had lumbosacral meningocele.

DISCUSSION

Data from the Malaysian Statistics Department showed that during the 2-year study period, 99,620 livebirths took place in Kuala Lumpur. 60,536 (60.8%) of these livebirths were products of Kuala Lumpur residents while the mothers of 39.2% of the babies were non-residents and came to Kuala Lumpur to deliver their babies. The Maternity Hospital, Kuala Lumpur, handled 51,541 (51.7%) of the livebirths which took place in this city. It is thus obvious that the data of our study represent a large number of the neonates born in this part of Malaysia.

Our findings showed that the incidence of congenital dislocation of the hips in Malaysian neonates was lower than the Caucasians. However, because of the large number of deliveries and the limited number of experienced Paediatric doctors in our hospital, we are aware of the possibility of underestimating the incidence during this study. Dunn et al (9) had pointed out that the great variation in incidence reported in literature was influenced by the size of the population studied, the ethnic origin of the population (6, 7), age of the infants when examined (14), the thoroughness and skill of the examiner (4), as well as by the local interpretation of physical signs. It is interesting to note that in our present study, there was no significant difference in incidence among the racial groups.

We did not routinely use X-ray of the hips to help us in the diagnosis of this condition during our study because it had been found to be not useful in the newborns due to the radiological invisibility of the femoral head and neck during this period of life (5, 21). Paterson

et al had, in fact, found X-ray findings misleading during the first two months of life (7). Many investigators felt that diagnosis of the unstable hips was basically a clinical one and X-ray of the hips would not add to further information in this group of babies (5, 7, 21).

Our study showed that Malaysian neonates with CDH had many similar features manifested by babies reported elsewhere. Thus, like the data obtained in other countries, we found this condition was more common in the females (5-7, 9-14, 17, 22), the first borns (6, 9, 11, 14, 22), term babies (7, 9, 11, 14), birthweight at 2500 gram or above (9, 11, 14) and babies with breech presentation (5-7, 9-14, 22). However, unlike others' reports where the left hip was most commonly affected (5-13, 17, 18), bilateral dislocation of the hips were the most common in our neonates. Unlike other populations, we also found a fairly high incidence among neonates delivered by vacuum extraction among our Malaysian neonates.

The importance of our study was that this is not a rare condition in this region. Neonatal screening examination of the hips should, therefore, be carried out diligently to detect congenital dislocation of the hips early to facilitate the simple yet effective treatment. Particular attention should be given to our high risk neonates. These include: females, babies delivered with breech presentation or by vacuum extraction, and those with family history of CHD. When uncertainty arises regarding diagnosis, perhaps the ultrasound should be utilised. This is because recent reports have shown that ultrasound has been found to be useful in the detection of abnormal hip joints (23).

ACKNOWLEDGEMENT:

We would like to thank the Director General of Health, Tan Sri Datuk (Dr) Abdul Khalid bin Sahan and the Hospital Director of General Hospital, Kuala Lumpur Datuk (Dr) C G A Fonseka, for giving us the permission to use the data from the Maternity Hospital, Kuala Lumpur.

REFERENCES:

1. Special report: Screening for the detection of congenital dislocation of the hip. *Arch Dis Child* 1986; 61:921-6.
2. Barlow TG. Early diagnosis and treatment of congenital dislocation of the hip. *J Bone Joint Surg* 1962; 44B:292-301.
3. Von Rosen S. Diagnosis and treatment of congenital dislocation of the hip in newborn. *J Bone Joint Surg* 1962; 44B:284-91.
4. Lehmann ECH, Street DG. Neonatal screening in Vancouver for congenital dislocation of the hip. *Can Med Assoc J* 1981; 124:1003-12.
5. Finlay HVL, Maudsley RH, Busfield PI. Dislocatable hip and dislocated hip in the newborn infant. *Br Med J* 1967; 4:377-81.
6. Artz TD, Levene DB, Lim WN, Salvati EA, Wilson PD. Neonatal diagnosis, treatment and related factors of congenital dislocation of the hip. *Clin Orthop* 1975; 110:112-36.
7. Paterson DC. The early diagnosis and treatment of congenital dislocation of the hip. *Clin Orthop* 1976; 119:28-38.
8. Dunn PM. The influence of the intrauterine environment in the causation of congenital postural deformities, with special reference to congenital dislocation of the hip. (Thesis). Cambridge University 1969.
9. Dunn PM, Evans RE, Thearle MJ, Griffiths HED, Witherow PJ. Congenital dislocation of the hip: early and late diagnosis and management compared. *Arch Dis Child* 1985; 60:407-14.
10. Bjerkreim I, Arseth PH. Congenital dislocation of the hip in Norway. *Acta Paediatr Scand* 1978; 67:329-32.
11. Heikkila E. Congenital dislocation of the hip in Finland: an epidemiologic analysis of 1035 cases. *Acta Orthop Scand* 1984; 55 (2):125-9.
12. Chaitow J, Lillystone D. Congenital dislocation of the hip: Incidence and treatment of a local population. *Med J Aust* 1984; 140:534-5.
13. Rao S, Thurston AJ. Congenital dislocation of hip in the newborn: a postnatal survey. *NZ Med J* 1986; 99 (81):752-4.
14. Asher MA. Screening for congenital dislocation of the hip, scoliosis and other abnormalities affecting the musculoskeletal system. *Paed Clin North Am* 1986; 33:1335-53.
15. Mellbin T. The children of Swedish normad Lapps. A study of their health, growth and development. *Acta Paediatr Scand* (suppl) 1962; 131:62-6.
16. Kraus B, Schwartzman J. Congenital dislocation of the hip in Fort Apache Indians. *J Bone Joint Surg* 1957; 39A:448-9.
17. Burke SW, Theodore JM, Roberts JM, Johnstone C. Congenital dislocation of the hip in the American Black. *Clin Orthop* 1985; 192:120-3.

18. Edelstein J. Congenital dislocation of the hip in the Bantu. *J Bone Joint Surg* 1966; 48B:397.
19. Skirving AP, Scadden WJ. The African neonatal hip and its immunity from congenital dislocation. *J Bone Joint Surg* 1979; 61B:339-41.
20. Bower C, Stanley FJ, Kricker A. Congenital dislocation of the hip in Western Australia. *Clin Orthop* 1987; 224:37-44.
21. Ortolani M. The classic: congenital hip dysplasia in the light of early and very early diagnosis. *Clin Orthop* 1976; 119:6-10.
22. Cyvin KB. Congenital dislocation of the hip joint. Clinical studies with special reference to the pathogenesis. *Acta Paediatr Scand (suppl)* 1977; 263:1-67.
23. Berman L, Catterall A, Meire HB. Ultrasound of the hip: a review of the applications of a new technique. *Br J Radiol* 1986; 59 (697):13-7.