

Congenital Dislocation Of The Hip In Newborns Of Mashhad City

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Citation

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Abstract

Congenital dislocation of the hip was the term formerly used for what is now called DDH (Developmental dysplasia of the hip). This study was intended to investigate the prevalence of CDH in Mashhad, Iran.

INTRODUCTION

Congenital dislocation of the hip was the term formerly used for what is now called DDH (Developmental dysplasia of the hip).

DDH is the most common neonatal hip disorder. Early diagnosis and appropriate treatment in the neonatal period produces a better functional outcome than would be achieved by diagnosis and treatment at a later stage. Detection of congenital dislocation of the hip by clinical examination was described for the first time in 1937 by Ortolani. Today Ortolani and Barlow's tests are the basis of clinical screening for DDH in newborns. After first screening, repeated hip examination in the first year of life during health examination in spite of a normal examination at birth especially when there is associated risk factor, is useful in diagnosis of late CDH. This study was intended to find out the prevalence of CDH in Mashhad, Iran.

MATERIALS AND METHODS

In a prospective study over 9 months, from march 1995 until December 1996, a total number of 6576 newborns were examined in four hospitals (Ghaem, Emam Housein , Emam Hadi, Musabne Jaafr).

Each newborn was examined during the first 48h after birth by one of the authors. The diagnosis of those infants with suspected abnormal hips was based on Ortolani's test, Barlow's test, or limitation of hip abduction. For all infants with unstable joints, data was collected regarding maternal history, delivery type, birth order, associated abnormalities or positive family history. If a clunk was felt (displacement of femoral head to inside acetabulum on Ortolani test), then

for accurate diagnosis sonography was taken and infants referred to an orthopedic surgeon. If click was felt at first examination, triple diapers were advised and the infant examined again at two and four weeks. If there was any persistent click or suspected abnormality, sonography was done and infants with positive results referred to an orthopedist.

RESULTS

During the study 6575 newborns were examined in the first 2 days of life. These were 3440 (53%) males and 3136 (47%) females. In 197 infants (3%) clunks or clicks were felt on the initial examination. From these infants with unstable hip joints there were 110 (55.9%) males and 87 (44%) females. Unstable hip was bilateral in 39% cases; the left hip was involved in 34% and the right side on 27% cases. Teratologic CDH was observed in one female infant. This infant had associated malformations, (hydrocephalous, myelomeningocoele), and was excluded from our study. A clunk was felt at first examination in 8 infants and sonography confirmed CDH in all of them. CDH was diagnosed in two other infant on follow up exam at later neonatal period.

Figure 1

Table 1: Frequency of DDH in relation to maternal age

groups	Abnormal hips		CDH		Total of newborns	
	NO	Percent	NO	Percent	NO	Percent
Maternal age						
<20	48	24.3	1	110	1216	18.5
21-25	50	25.3	4	40	2018	30.5
26-30	84	32.4	3	30	1914	29
31-35	119	9.6	1	10	986	15
>35	16	8.1	1	10	442	7
Total	197	100	10	100	6576	100

Figure 2

Table 2: Birth order and relative frequency of abnormal hips

groups Birth order	Aabnormal hip		CDH		Total of newborns	
	No	percent	No	percent	No	Percent
1	61	41	7	70	2012	30
2	47	24	1	10	1677	26
3	27	14	2	20	1233	19
4	25	13	-	-	635	10
>5	16	8	-	-	1019	15
total	197	100	10	100	6576	100

From 10 cases with CDH the both hips were involved in 6 cases, the left side in 3 infants and right side only in one infant. Among 197 infants with unstable hips, there were 19 premature, 170 term and 8 post term. 21 infants were low birth weigh (LBW). The methods of delivery in the affected infants were vaginal delivery in 160 cases and cesarean section in 37 infants. Breech presentation was seen in 11/197 infants, with no infants complicated by oligohydramnious. Relation of birth order with abnormal hips and age of mothers are shown in tables 1 and 2. There was a significant correlation between first pregnancy and CDH ($P<0/05$). The highest rate was found in those mothers between 25-30 years. Other associated finding in newborns with CDH was shown in table 3 and 4.

Figure 3

Table 3: Frequency of joint involvement

CDH	NO	percent
Left	3	30
Right	1	10
Bilateral	6	60
Total	10	100

Figure 4

Table 4: Associated factors with CDH

Factor	NO	Percent
Female	7	70
First pregnancy	7	70
Breech	4	40
Familial marriage	4	40
LBW	1	10
Premature	1	10
General joint laxity	1	10
Familial history	-	-

DISCUSSION

DDH encompasses a wide spectrum of hip problems, for instance abnormalities of the acetabulum, femoral head and neck, dislocated hip, an dislocatable hip. It may be recognized radiologically in clinically apparently normal hips (_{1,2}). The etiology of DDH is multifactorial: genetic, hormonal and mechanical factors are involved (_{11,12}).

Teratogenic dislocation occurs early in uterus and is associated with malformation of pelvis and femur. In this form, the dislocated hip cannot be reduced by ortolani maneuver. The femoral head grows disproportionately faster than surrounding cartilage, so that at birth the femoral head is less than 50% covered. Within a few weeks after birth the accetabular cartilage develops more rapidly than the femoral head, resulting in progressively increased coverage. Therefore, during the final trimester and the first few months after birth, the hip is at highest risk for DDH(₉).

The prevalence of DDH varies according to racial and geographic parameters and is greater in whites than blacks.

The incidence of hip dislocation and abnormal hip in neonates is approximately 1.3 per 1000 live birth for CDH and 12 per 1000 for later.

Rosendhle reported that 1.02 to 2% of all neonates, have clinically unstable hips at birth.

It has been estimated that only 10% of these babies will have dislocated hips in later childhood if left untreated, while another 10% will show evidence of dysplasia (₁₇). Dunn evaluated 23,000 newborns, and reported that 1.9% of all neonates have clinical unstable hip at birth(₉).

Hip instability at births based on clinical, sonographic screening in 9030 neonates, has been reported at 1.4%. In one study sonography detected more unstable hips than clinical examination⁽¹⁸⁾. Chan had showed that clinical screening for CDH has been successful in south Australia⁽⁷⁾. The programme included clinical screening at birth, before discharge and again at 6 weeks. With this program, only 2.4% cases of CDH had been detected and required surgery after 3 months. If clinical screening is not done at birth, most cases of CDH will be detected in infancy. In one retrospective study from Saudi Arabia (a seer region) where neonatal screening is poor, cases of CDH were diagnosed after 6 months⁽¹⁵⁾. Incidence of CDH in this study was 3.5/1000 live births. In our study, prevalence of true CDH was 1.5/1000 neonates, and prevalence of unstable hip was 30/1000 live births. In a study done by Abdinejad, prevalence of dislocation hip and unstable hip were 2.5 and 185 /1000 live births respectively⁽¹⁾. The important risk factors for CDH were female sex, primiparity, breech presentation, oligohydramnious^(3,6,12), positive family history and metatarsus abductus. With these risk factors up to 25% infants had unstable hips in one study⁽¹³⁾. There have been no consistent findings regarding month or season of births, maternal age or birth weight⁽⁶⁾. In our study abnormal hip by Ortolani or Barlow test was a frequent finding, but we found simple click is not a pathologic sign, since spontaneous resolution was seen on later examination. The female preponderance of unstable hips has been recognized by many observers^(3,4,6). In our study 56% of unstable hips and 70% of CDH were occurred in females. The increased incidence of DDH in breech delivery is well known. Between 11-50% of infants with DDH had a breech presentation compared with 3-4% in general population^(2,6). We found breech delivery in 5.6% of unstable hips and 40% of infants with true CDH. The increased incidence of unstable hips has been recognized in first parity by many authors^(1,2,8). Chan reported that primiparous women have more than twice the risk of DDH, compared with mothers of parity 2 or more⁽⁶⁾. We found an incidence of 41% in first parity for unstable hips and 70% for CDH. Unstable hips occurred in mothers with 5 or more deliveries. The left side is involved much more commonly than the right. DDH is bilateral in 20-24%^(2,12). In our study of 197 infants with unstable hips, 34% on the left side, 27% right side and 39% bilateral. True CDH was bilateral in 60%. This result is different from other reports. Preterm birth and low birth weight both reduced the risk of DDH⁽⁶⁾. Physical examination at birth is the important method for detection of

DDH. Simple click that is commonly misinterpreted as a sign of instability, almost disappears at subsequent visits in majority of newborns. Radiographic evaluation has been shown to be an insensitive method for detecting DDH in the neonatal period. Sonography in addition to clinical examination is useful diagnostic test for DDH and preferred before 4 months of age^(2,8,12). If the neonatal examination is normal at birth, repeated hip examination at 2 weeks, and 2,4,6,9,12 months of age is recommended⁽²⁾. There has been discussion about false positive result of sonography, but it is a reliable method if is done by an experienced person. In our study all of cases of CDH had positive sonographic finding. In the neonatal period treatment by using abduction devices is generally successful. In cases with a clicky hip or an equivocal exam, evaluation should be done with ultrasound at 2 to 6 weeks of age⁽⁸⁾. Some authors believe that swaddling may increased the risk of CDH but there was not any correlation between infant wrapping and DDH⁽¹⁾. We advised triple diaper for neonates with a simple click and normal sonography and repeated examination at 4 weeks.

CONCLUSION

Congenital dislocation of the hip (or DDH) must be regarded as an important health problem, leading to pain, loss of mobility and limb shortening. Unstable hips can be diagnosed in newborns with simple methods. Most clicks seen in early neonatal period disappears at later neonatal period, and some babies with dysplasia are normal at birth and may be diagnosed in infancy or later. In this study frequency of CDH was similar to other reports.

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