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THE SIGNIFICANCE OF AT RISK FACTORS, INCIDENCE AND DIAGNOSIS OF INFANT DEVELOPMENT DYSPLASIA OF THE HIP

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ABSTRACT

Dysplasia, there is an inadequate development of the acetabulum, the femoral head or both, although there is also a concentric relationship between the articular surfaces. The aim of this study is to Incidence and diagnosis of infant development dysplasia of the Hip. A prospective study of all infants aged 0-6 months referred for a combined examination of the hips 2013-2017. The proportion of DDH and unstable hip(s) stratified by different reasons of referral were calculated. Acetabular index $>30^\circ$ in radiography or Graf Type 2b or worse in ultrasonography was considered diagnostic of DDH. In the current 5-year study, 1,500 infants aged 6 months or younger (60% girls) were referred to a combined study. A total of 334 (22%) infants of were diagnosed with DDH in her on the basis of imaging findings at initial presentation. Overall, 219 (65%) infants had unilateral DDH and 115 (34%) had bilateral DDH. 299 (90%) infants were diagnosed with DDH by ultrasonography and 35 (10%) were diagnosed with DDH by radiography. DDH were likewise routinely analyzed in infants recommended because of hip click or asymmetry.

Key words: Dysplasia, Acetabular cavity, Ultrasonography, Hip click, Asymmetry.

INTRODUCTION

Developmental Dysplasia of the Hip (DDH) is a multifaceted condition of the pediatric hip that can present clinically in different ways. Which includes a wide spectrum of abnormalities of the acetabulum and the proximal femur, including isolated dysplasia, subluxation and dislocation of the femoral head.¹ In dysplasia, there is an inadequate development of the acetabulum, the femoral head or both, although there is also a concentric relationship between the articular surfaces. However, in subluxated hips, although there is contact between both articular surfaces, the femoral head is not centred on the acetabular cavity. In the case of dislocation the femoral head is completely out of the acetabulum.²

Recommendations for remedy of DDH are based totally on both the clinical hip exam and imaging. Early referral permits remedy of unstable hips with bracing or casting. Early remedy prevents lengthy-time period hip dysplasia, hip abnormalities, and arthritis with complaints like impaired walking and continual ache in hips, and knees and decreases again, requiring reconstructive surgical treatment or hip alternative.³ Screening packages for DDH usually include medical examination inside the neonatal period and throughout nicely-infant consultation, ultrasound examination (general or selective) or an aggregate of each.

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To detect hip abnormalities early, all newborns in Chennai and Pondicherry are examined postnatally by a pediatrician and by a primary care physician at respectively five weeks and five months of age. Infants with persistent breech presentation, familial history of DDH and twins and infants with suspect findings such as a hip click or hip asymmetry are referred to a combined pediatric orthopedic examination and ultrasonography (age <6 months) or radiography (age \geq 6 months)⁴.

Recent studies have described variation in the proportion of infants with DDH and unstable hip(s), among infants referred for the combined examination.^{7–10} In addition only few studies have examined which causes most commonly lead to referral, and which causes frequently are associated with DDH.^{5,6} The aim of this study is to Incidence and diagnosis of infant development dysplasia of the Hip.

MATERIAL AND METHOD

This study was based on the review of medical records of infants 0–6 months registered with the diagnosis of developmental dysplasia of the hip at the Pediatric Orthopedics Outpatients of Sree Balaji Medical College and hospital. Total 1,500 consecutive cases of DDH, recorded from January 2013 to FEB 2017 included. The infants were included prospectively and consecutively, as they met for examination. All infants were examined within 2–4 weeks after referral. Parents failing to show up for examination were contacted by telephone and by letter addressing the importance of the examination. Infants, whose parents rejected examination, were excluded.

Additionally, we obtained the results of radiological measurements (ultrasonography or radiographs). Reasons of referral were grouped into the following categories: hip click, asymmetry, familial disposition, breech position, twin birth, and other/unspecified. Asymmetry covered both asymmetrical skinfolds on thighs or glutes, leg length discrepancy and unilateral limitation of hip abduction. Familial disposition was limited to first-degree relatives (parents and siblings). Breech position was defined as delivery in breech position.

After, ultrasonographical examinations were performed by an experienced radiologist. a plain radiograph was performed instead of sonography. On ultrasonography, DDH were defined as Graf's classification type 2b or worse (α -angle \leq 59°) and/or coverage of \leq 50% of femoral head.¹² Diagnostic criteria for DDH on radiography were defined as an acetabular index (AI) \geq 30°.¹³ Visibly dislocated hips on radiograph was also considered diagnostic of DDH.

In some cases are unstable/dislocated hip(s) (Ortolani or Barlow positive) the infant is treated with a Dennis Brown (DB) abduction splint for at least 6 weeks (until stability). Infants with stable but dysplastic hip(s) are followed up with ultrasonography and clinical examination every 6 week until the age of 6 months or normalization.

From the age of 6 months the infants undergo clinical examination and radiographs once a year until radiological normalization. In case of dysplasia in the age of four years the children are offered an osteotomy

Analysis Classic V2.2.3.187. The proportions of DDH and unstable hip(s) were calculated including 95% confidence intervals (CI). For infants with only one reason of referral, the proportions of infants with DDH and unstable hip(s) were calculated stratified by reason of referral. For infants with two or three reasons of referral, the proportions were calculated for every combination of referral reasons.

RESULTS

In the current 5-year study, 1,500 infants aged 6 months or younger (60% girls) were referred to a combined study. The average age at first visit was 61 days. Most infants (52%) were referred from the GP and 62% to her OUH. A total of 334 (22%) infants were diagnosed with DDH in her on the basis of imaging findings at initial presentation. Overall, 219 (65%) infants had unilateral DDH and 115 (34%) had bilateral DDH. 299 (90%) infants were diagnosed with DDH by ultrasonography and 35 (10%) were diagnosed with DDH by radiography. A total of 98 (6.5%) infants had unstable hips and required treatment. This corresponds to an incidence of 1.2 (CI: 0.9–1.4) per 1,000 newborns/year.

Range of DDH and unstable hips stratified by reason of referral. The DDH infant count includes infants with hip instability. Overall, 1,253 (83%) infants had 1 reason for referral, 234 (16%) had 2 and 13 (<1%) had 3 reasons for referral. The most common reasons presented for each combination were hip clicks (69%), asymmetry (22%) and injury (15%).

By individual reason for referral, the highest proportion of infants with DDH was breech symptoms and family history, 0.37 (95% CI [0.30–0.44]) and 0.26 (95% CI [0.17–0.34]), respectively. In infants with DDH, they were 0.15 (95% CI [0.12–0.16]) and 0.09 (95% CI [0.05–0.11]), respectively. The proportion of infants with hip instability was highest in infants hospitalized with breech symptoms 0.13 (95% CI [0.07–0.18]) and trend of family 0.15 (95% CI [0.08–0.23]).

The hip click and asymmetry ratios were 0.03 (95% CI [0.02–0.04]) and 0.01 (95% CI [$<$ 0.01–0.03]), respectively. Among infants with dual reasons for referral, the highest rate of DDH was found in infants referred for familial predisposition and asymmetry, 0.41 (95% CI [0.14–0.79]), with an unstable hip. Infants referred with a familial predisposition to breech syndrome had the highest rate of 0.23 (95% CI [0.09–0.51]).

Infants with 3 reasons for referral were not included because the number of infants for each combination was very small. However, 2 of 13 (0.18, 95% CI [0.02–0.52]) infants were diagnosed with DDH. One was presented with hip clicks, family history, and sites of

injury and her other with hip clicks, family history, and asymmetry.

DISCUSSION

In present study found that 22% of the infants fulfilled the diagnostic criteria for DDH by either ultrasonography or radiography, which similar to Groarke PJ, McLoughlin L, et al⁷ were found in studies from Ireland and Hong Kong. The overall proportion of DDH in our study corresponds to an incidence rate of 2.1 per 1000 newborns/year, which corresponds to population-based incidence rates of DDH in Biedermann R, Riccabona J, studies.⁸ Therefore, the population-based incidence rates of DDH among all newborns in RSD are expected to be higher.

In the current study infants with unstable hip(s) was 6.5%, corresponding an incidence rate of 2.1 per 1000 newborns/year in our study which corresponding studies of Paton RW, et al the rate of instability of the hip was 2.1 per 1000 live births.⁹ It is noteworthy, that the Norwegian study examining an unselected population found a higher incidence rate than in our study.

The most common reasons presented for each combination were hip clicks (69%) in this study. Hip click was the most common single reason of referral. Of the 1,253 (83%) infants referred only with 'hip click', 16% were diagnosed with DDH, and 4% required treatment due to unstable hip(s). This study supports our findings, demonstrating that hip click referrals can represent underlying pathology, and should lead to further assessment. Groarke et al. found a positive predictive value (PPV) for DDH of 14.3% in children with hip click as reason of referral and also minor signs, like hip click, on examination within 48 h of birth, than infants considered normal, concluding that a clicky hip should never be ignored.¹⁰

Asymmetry (22%) was the second most common single reason of referral, covering both asymmetrical skin folds on thighs or glutes, leg length discrepancy, and unilateral reduced hip abduction in the study. Choudry et al.¹¹ found that unilateral limited abduction of the hip had a PPV of 40% for DDH, while bilateral limited abduction had a PPV of only 0.3%, suggesting that the presence of bilateral limited abduction in the infant may be a normal variant, while unilateral limited abduction is an important clinical sign, which should be actively sought.

The two single reasons of referral with the highest proportions of infants with DDH in our study were breech position (30%) and familial disposition (15%). Among

these infants 12% and 14% required treatment due to clinically unstable hip(s). Pollet Vet al¹² studies also support breech position and familial disposition as important risk factors for DDH.

An evaluating program for DDH in babies and a joined muscular and radiologic assessment of newborn children take a chance with variables or side effects of DDH that are energetically recommendable. The current review shows impressive extent of newborn children alluded for this joined assessment have radiological indications of DDH and a need early treatment because of precariousness of the hip(s). Future examinations ought to evaluate the instances of missed DDH to decide the impact of the screening convention.

Our concentration likewise shows that babies with not just familial demeanor or breech position ought to allude to a consolidated muscular and radiologic assessment, yet in addition babies with hip snaps or lopsidedness need this joined assessment. Since we have restricted information with respect to the late introducing of DDH, we can't finish up if the measures for alluding newborn children to a pediatric muscular unit ought to be changed to build the viability of the convention. Further examinations ought to survey the quantity of late introducing cases, likewise in the subset of patients where the hips were steady and ordinary in imaging at the consolidated assessment.

Likewise, our concentration just incorporates babies alluded for the joined assessment and not all infants in the area. Future investigations, everything being equal, could add to additional careful appraisals of the occurrence and treatment paces of DDH. Furthermore, future investigations ought to look at the requirement for surgeries later in the babies' lives or in adulthood among newborn children, who got treatment (DB-support), and babies with enduring DDH after the fourth assessment. Further examinations ought to incorporate these newborn children to track down their more extended-term results.

CONCLUSION

In conclusion, significant number of babies with stable, dysplastic hip(s) standardized suddenly before the time of year. The most elevated extent of DDH regardless of instability of the hip(s) were among newborn children alluded because of familial demeanor, breech position or a mix of both. In any case, DDH were likewise routinely analyzed in babies alluded because of hip click or asymmetry.

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