



Role of Clinical Examination as Screening Tool for Detection of Developmental Dysplasia of Hip in Infants.

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ABSTRACT **Background:** Developmental dysplasia of hip (DDH) is one entity one occasionally comes across while in a busy orthopaedic or paediatric outpatient department. The knowledge of risk factors and awareness of the condition is must for every orthopaedic surgeon and paediatrician as well lest the diagnosis will be missed. An early diagnosis can alter the prognosis of the disease and prevent late disabilities.

Objective: The study was conducted to highlight the importance of screening every newborn to minimize the late presenting Developmental Dysplasia of Hip.

Patients & Methods: In the one year duration 615 neonates were screened in Paediatric Nursery Department at a tertiary care hospital in Eastern India. by clinical examination and the findings were confirmed by a consultant orthopaedic surgeon.

Results: Out of 615 neonates, 18 were suspected to have congenital hip dislocation. An acetabular index of 30 degrees or more was considered dysplastic. 3 out of 615 neonates were confirmed as dysplastic hips.

Conclusion: This study indicates the need to establish a well-organized screening programme with experienced examiners which will be useful in making early and accurate clinical diagnosis.

KEYWORDS : Developmental Dysplasia of hip (DDH), Dislocation, Ultrasonography,

INTRODUCTION

Developmental (congenital) dysplasia of hip (DDH) generally includes subluxation (partial dislocation) of the femoral head, acetabular dysplasia, and complete dislocation of femoral head from the true acetabulum. The original term 'Congenital dislocation of the hip (CDH)' dates back to the time of Hippocrates. Since then, significant progress has been made in the evaluation and treatment of DDH. [1,2]The older term congenital dislocation of hip has been gradually replaced by developmental dysplasia of hip (DDH), which was introduced to include in the disorder, infants normal at birth but in whom the hip dysplasia or dislocation subsequently developed or vice versa.[3] The term developmental displacement of the hip, thus, indicates a dynamic disorder potentially capable of getting better or worse as the child develops depending on the multidisciplinary care provided.. Dysplasia comprises a complex disorder, which occurred during growth and development of the hip in which femoral head, acetabulum and joint capsule are vigorously involved resulting in deformations. It is essential to detect the disorder earlier because restoration of the normal relationship between the femoral head and acetabulum increases the possibility of normal development during remaining growth. In India where ultrasonography cannot be done in every new-born and the actual incidence of dysplastic hip cannot be reported. Carter and Wilkinson mentioned an overall incidence of one per 1,000 live births, with one in 600 girls and one in 4,000 boys having the disorder.[3] Increase in incidence is reported when ultrasonography is also used in addition to clinical examination.4 But with clinical screening only, the late dislocation rate is reported between 0.5 and 0.8 per 1000 live births.[5,6] but due to heavy burden on the limited available infrastructure, it is difficult to examine every newborn using ultrasonography. This results in late presentation of DDH even up to the age of 9 years allowing the treatment to get difficult and complicated. So the study was conducted to highlight the importance of screening every new-born to minimize the late presenting DDH.

MATERIAL AND METHODS

The present study is prospective, hospital based observational study which was conducted at a tertiary care hospital in Eastern Bihar within a period of one year (from 1st January 2015 to 31st December 2015) was performed by an orthopaedic resident in Paediatric Nursery Department. All neonates admitted in the Paediatric Nursery Department were included in the study. The study was approved by the institutional ethical committee and by the Paediatric Department with the consent of the parents to examine the neonates. A proforma was designed including the basic information of the neonate; family history; associated disorders; and examination findings. Total 615

neonates were screened for DDH by using Ortolani and Barlow maneuver. Through Ortolani test, the dislocated hip was relocated by flexion and abduction and a click sound was observed.[7] Through Barlow test, an unstable hip was dislocated by flexion and adduction and a clunk sound was noticed.8 Other signs, such as shorting of the femur with hips and knees flexed (Galeazzi sign), asymmetry of the thigh or gluteal folds, and discrepancy of leg lengths were also noted. Positive results were confirmed by using ultrasonography and orthopaedic consultant examination. Data analysis was completed using SPSS software.

RESULTS

As shown in Fig 1, majority of the neonates were males. Table 1 shows the categorization of study subjects on the basis of size. Positive findings for DDH were shown by 18 out of 615 neonates with only 4 of them showed alone Ortolani positive, 4 showed alone Barlow positive and remaining 10 showed both Ortolani and Barlow positive on initial examination by orthopaedic resident. Initial ultrasonography showed DDH in 3 out of 18 neonates. 2 out of 18 neonates died during first month. After 3 months follow up, the remaining 16 were examined by consultant orthopaedic and x-rays of the hip joint was carried out. 3 neonates (all male) were diagnosed as DDH, one having right sided DDH with Acetabular Index of 38° on x-rays and a angle of 49° and β angle of 77° with ultrasonography. No family history of DDH, also the neonate was first child. Second neonate had bilateral DDH with acetabular index of 35° on right side and 36° on left side with no family history. Both neonates were treated with hip spica.

Table 1
PROFILES OF PATIENTS UNDERSTUDY

PROFILE	NO.	PERCENTAGE (%)	
BODY WEIGHT (Kg)	<1	24	3.9
	1-2	246	40
	2-3	174	28.4
	3-4	153	24.8
	>4	18	2.9
GENDER DISTRIBUTION	Male	344	55.9
	Female	271	44.1
MODE OF DELIVERY	Normal delivery	363	59
	C -Section	252	41

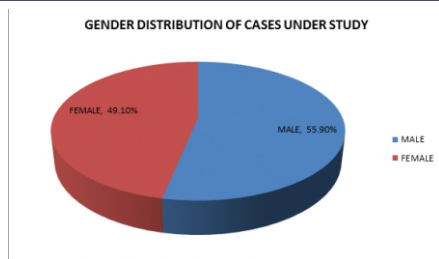


Fig 1
Gender distribution of cases

Table 2
DISTRIBUTION OF POSITIVE CLINICAL SCREENING CASES (SUSPECTED CASES) (n=18)

PROFILE		NO.	PERCENTAGE
POSITIVE CLINICAL TEST	POSITIVE ORTOLANI	4	22.2%
	POSITIVE BARLOWS	4	22.2%
	POSITIVE BOTH ORTOLANI AND BARLOW	10	55.6
POSITIVE INITIAL USG		3	16.6%
CONFIRMED DDH ON FOLLOW-UP		3	16.6

DISCUSSION

This study was conducted to highlight the importance of screening every newborn to minimize the late presenting DDH. The neonate's hip clinical examination is a part of neonatal and infantile clinical routine examination but is not always adequate in diagnosing DDH alone. As some dysplastic, unstable, subluxated, or dislocated hips particularly if examined by an inexperienced person, the diagnosis cannot be made or a normal hip may falsely be considered pathologic (false positive).[9,10] In our study more than half of the total neonates were males and also more than half of the neonates were born through normal vaginal delivery. In spite of effectiveness of ultrasonography in diagnosing DDH many studies reported that if ultrasonography done in the first days after birth may leads to false positive results due to joint capsular laxity.[11,12] Studies showed that physical examination should be delayed until after the newborn period due to high rate of spontaneous stabilization in the first four weeks of life.[13,14] Hadlow reported that 50% of unstable hips at births stabilized entirely in 5 days.[15] Barlow reported that 90% of unstable hips at birth become normal by 2 months:[16] while Abdinejad et al. noted that 97% unstable hips spontaneously resolved by 6 months.[17] It is certain that ultrasonographic examination for the screening of DDH has a high value, but the clinical examination performed by a skilled orthopedic surgeon is more satisfactory in primary screening for DDH in developing countries for early detection, due to poor health facilities. But if the newborn has a risk factor like; breech presentation, first delivery, sibling, female gender, oligohydramnios, torticollis, plagiocephaly, pescalcaneovalgus, calcaneovalgus, cesarean section, talipes equinovarus, generalized laxity, absence of flexion in knee and hip, low birth weight (< 2500 g), prematurity (before 37 weeks), restricted hip abduction, asymmetrical gluteal folds, wide perineal, and use of swaddling or is suspicious on clinical examination, it will be necessary to get assistance from ultrasonography by an experienced sonographer.[18] Current United Kingdom programme recommends ultrasound screening of high risk infants at six weeks.[19,20]

CONCLUSION

DDH is a disorder ranging from mild acetabular dysplasia to irreducible hip dislocation. For early diagnosis screening programmes vary worldwide depending upon the health facilities. In a developing country where health facilities are limited, physical examination has a high value in detecting early DDH and reducing late presentation of dysplastic hips.

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