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***Short Communication***

# Risk factors and of diagnosis methods of developmental dysplasia of the hip at Soba University Hospital, Sudan

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## Abstract

*This is observational retrospective hospital based study aiming to clarify and study pattern of clinical presentation, causes and methods of diagnosis of DDH in patients presenting in Soba university hospital. A series of thirty seven patients with forty eight hips studied retrospectively between the years (1997 up to 2009) in Soba University Hospital Khartoum State. The data was collected after completing questionnaire (check list). Verbal consent was taken from pediatric orthopedics surgery department. The average age was seven years ranging from four days to fourteen years. Eleven cases (29.7%) were between four days and sex months of age. Twenty one (56.8%) patients were females. Breech alignment was in three patients (8%). Seven cases (18.9%), were delivered by C/S and one birth (2.7%) needed assistance. On diagnosis eight patients (21.6%) were associated with congenital anomalies (talipes equinas, fixed knee flexion deformities, and cardiovascular abnormalities). Diagnosis was most frequent in small age group, eleven cases (29.7%) age between four days to sex months. The clinical tests used in diagnosis were Ortilani and Barlows. In tow cases (5.4%) Ortilani alone was used. In 68% of casese Galeazzi sign used to detect the problem on clinical ground. DDH was detected unilaterally in twenty patients (70.3%). For the unilateral DDH left side was common, seventeen patients (45.9%) were left sided. Investigations done to these patients were X-rays and U/S. Twenty eight cases (75.5%) were diagnosed with X-ray alone. Nine cases dignosed by U/S and X-rays.*

**Keywords:** Dysplasia**,** Breech, Galeazzi, Ortilani and Barlow.

## Introduction

Developmental dysplasia of the hip (DDH) is a term used to describe the abnormal relationship of actabulum and femoral head. This abnormality include frank dislocation, partial dislocation, instability and radiological findings those show inadequate formation of acetabulum. At birth findings may not be present, therefore the term developmental is more aqurate, DDH is uncommon disorder.

Early diagnosis is important because treatment in smaller age is easy and of costs low. Although screening programs are available DDH is still diagnosed late[1-3]. It is difficult to assess the true incidence of DDH as definition varies and there is no gold standard test. Incidence varies from (1.5 to 20) per 1000 birth[4].

It is three times more common in the left hip than the right, likely due to the normal left occiput anterior position in-utero, which places the left hip against the mother's spine and limits its abduction[2]. The origin and pathogenesis of DDH are multifactorial. Abnormal laxity of the ligaments and hip capsule is seen in patients with DDH[3,4]. About 60%-80% of DDH identified by physical examination, and more than 90% that are identified by ultrasound (U/S), resolve spontaneously[5-8].

## Materials and methods

**Ethical clearance:** Verbal consent was taken from pediatric orthopedics surgery department, Mr. Sammeer Shaheen, Head of Department.

**Study design:** Retrospective cross- sectional, hospital-based study was conducted in Soba University Hospital in Pediatric Orthopedic Surgery Department .The period between March 1997 and May 2009.

**Study population:** Patient aged from birth to fourteen years old with DDH whom were recorded, treated and followed up in Soba university hospital .All were diagnosed on clinical, radiological basis and U\S.

**Data analysis:** Data was statistically analyzed using (SPSS) statistical package for social sciences.

## Results and discussion

Age of presentation id an important issue in detecting, treating and outcome of treatment of DDH. Late presentation means difficult management, costs and poor outcome. The average age was seven years with a range from four days to fourteen years.

Eleven patients (29.7%) were below sex month of age, five patients (13.7%) in the group (6 to 18) months, seven patients (18.9%) in the group (18-36) months, nine patients (24.3%) in the group (3 to 8) years and five patients were above eight years old. Twenty one patients (56.8%) were female. Three patients (8.1%) were with positive family history of DDH. Breech presentation was in 3 patents (8.1%). C\S delivery was in seven patients (18.9%). Assistance was needed one delivery (2.7%). DDH alone was diagnosed twenty nine patients (78.4%), and 9 patients (21.6%) with associated anomalies. In eleven cases (29.7%) both Ortolani and Barlows tests were done, Ortolaini alone done in tow patients (5.4%) and twenty four (64.9) cases were diagnosed by Barlows test alone. X–ray alone was used in twenty eight patients (75.7%), U\S alone was used in tow cases (5.4%), and both are used in seven cases (18.9%). On diagnosis unilateral DDH was in twenty sex patients (70.3%), bilateral DDH was in eleven patient s(29.7%), unilateral Lt were I seventeen patients (45.9%) of all cases, and unilateral Rt were nine cases (24.3%) of all cases. The management of DDH is easy and effective if diagnosed early and treated properly. If time passed on a DDH without treatment, management becomes difficult and complications supervene. Screening programs are available but DDH is still diagnosed late[1,3]. DDH is four to eight times common in females.

The study agrees with literature that its common in female, twenty one patients were female (56.8%), but ratio differs. Family history is an important factor three patients out of thirty seven patient s in the study were having positive history of DDH (8.1%). Seventeen cases out of 26 cases of unilateral DDH were on the left side.

The risk factor s mentioned in literature being female product and breech presentation, also the study showed that both are important factors. Three patients (8.1%) were breech presentation pregnancies[3,4].

As mentioned above still DDH diagnosed late despite programs were put. In study because of late consultation diagnosis of most cases was late. Eleven patients (29.7%) of thirty seven diagnosed at the age below 6 months, the rest twenty sex patients (70.2%) diagnosed at the age sex months and above. fifteen patients (40.5%) were above three years when diagnosed. As mentioned in literature diagnosis based clinical tests, radiology, and U\s. Clinically in study Galeazzi test used in twenty four cases (64.7%) this reflects late presentation of cases. Ortolani used in tow patients (5.4%), and both tests Barlow and Ortilani were used in eleven cases (29.7%). X-ray was done in thirty five cases (95%), seven of these in combination with U\S. U\S alone was done in tow patients (5.4%).

The big number of X-ray used in diagnosis reflexes that most of diagnosis were late because radiographs are of limited value in the first three months of age for the femoral head is entirely cartilage[2,3]. Also radio graphs were used to diagnose the associated abnormalities they were eight cases (21.6%).

**Table-1:** The possible risk factors of DDH.

| Possible risk factor | Frequency | Percent |
|---|---|---|
| Being a female product | 21 | 56.7 |
| Family history | 3 | 8.1 |
| Breecn presentation | 3 | 8.1 |
| C/S | 7 | 18.9 |
| Foceps delivery | 1 | 2.7 |
| Other | 2 | 5.4 |
| Total | 37 | 100.0 |

**Table-2:** Distribution In limbs.

| | | | |
|---|---|---|---|
| DDH | Limbs | Frequency | Percent |
| | Unilateral | 26 | 70.3 |
| | Bilateral | 11 | 29.7 |
| | Total | 37 | 100.0 |
| Unilateral | Limbs | Frequency | Percent |
| | Left | 17 | 45.9 |
| | Right | 9 | 24.3 |
| | Total | 26 | 70.3 |

## Conclusion

We concluded that most common risk factor is being a female product. Mode of delivery has important part in risk factor especially cesarean section. In spite U/S is recommended in new born screening still X-rays are requested in most of cases .Still cases present late.

**Recommendation:** Skill full team and mid wife's are needed to detect skeletal abnormalities liked in early stages .When available UlS of hip should be routine during the first 3 weeks of age. Studies of big number of cases are needed to know more about management and outcome of DDH.

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