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RESEARCH ARTICLE

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THE PREVALENCE OF RISK FACTORS FOR DEVELOPMENTAL DYSPLASIA OF THE HIP (DDH) IN CHILDREN

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ABSTRACT

Background: Developmental dysplasia of the hip (DDH) refers to a variety of structural hip defects, ranging from minor acetabular dysplasia to more severe types including subluxation of femoral head dislocation. The global prevalence of DDH varies greatly, with estimates ranging from 0.5% to 1.5%. Furthermore, data suggests that being a first-born child, female gender, a positive family history, breech presentation, oligohydramnios, and cesarean births are all potential risk factors for DDH, albeit their incidence varies.

Objective: To determine the prevalence of risk factors for developmental dysplasia of the hip in children

Study design: A cross-sectional study

Place and Duration: this study was conducted in Liaquat National Hospital and Medical College Karachi from January 2023 to January 2024

Methodology: Parents of all children with DDH who satisfied the inclusion criteria were interviewed to determine risk factors for the disorder. The mothers provided a full history. Each

child was thoroughly examined, and hip radiographs were obtained to confirm the DDH diagnosis. Face-to-face interviews with mothers were used to collect data. The data was analyzed using SPSS version 22.

Results: There were a total of 150 children included in this study. The average age calculated was 7.5 years. The age range of 3 to 5 years had the highest number of children. There were a total of 83 (55.33%) males and 67 (44.67%) females in this study. Overall 74% of the mode of delivery was C-section.

Conclusion: Oligohydramnios, breech presentation, and premature birth emerged as the most common risk factors for developmental dysplasia of hip in children.

Keywords: developmental dysplasia of hip, children, breech presentation, oligohydramnios

INTRODUCTION

Developmental dysplasia of the hip (DDH) refers to a variety of structural hip defects, ranging from minor acetabular dysplasia to more severe types including subluxation of femoral head dislocation [1,2]. The global prevalence of DDH varies greatly, with estimates ranging from 0.5% to 1.5% [3]. Mechanical and genetic factors contribute to this heterogeneity [4]. The increased occurrence in female children and those who have a family history of DDH suggests a genetic link [5]. Mechanical variables are underlined by the increased risk reported in children born breech, those born to older mothers, post-term infants, and those with oligohydramnios or other intrauterine restrictions [6]. Furthermore, data suggests that being a first-born child, female gender, a positive family history, breech presentation, oligohydramnios, and cesarean births are all potential risk factors for DDH, albeit their incidence varies [7]. Furthermore, multidisciplinary techniques that include physical therapists, pediatricians, orthopedic surgeons, and genetic counselors provide complete care for affected children [8]. Preventative approaches, such as advocating for hip-healthy swaddling methods and supporting optimal newborn placement during sleep and carrying, are critical components of public health strategies to reduce the risk of DDH [9, 10].

Our study aimed to determine the prevalence of risk factors for developmental dysplasia of the hip (DDH) in children presenting to the outpatient department (OPD).

METHODOLOGY

Parents of all children with DDH who satisfied the inclusion criteria were interviewed to determine risk factors for the disorder. The study comprised DDH-positive children aged 18 months to 12 years who visited OPD. The hospital's Ethical Committee approved the procedure, and all parents of children with DDH provided informed written consent.

Exclusion criteria: The study eliminated children with other syndromic illnesses or associated neuromuscular, teratologic hips, and mothers who did not recall or document their prenatal history adequately.

The mothers provided a full history. Each child was thoroughly examined, and hip radiographs were obtained to confirm the DDH. Face-to-face interviews with mothers were used to collect data, which included family history as well as thorough prenatal, natal, and postnatal histories. The relevant supporting materials were also evaluated.

The data was analyzed using SPSS version 22. For continuous variables like age, the mean and standard deviation were determined. Categorical information, including the child's gender, were presented as frequencies and percentages. To establish the statistical significance of crucial variables, the Chi-square test and Fisher's exact test were utilized. A p-value of <0.05 was considered significant.

RESULTS

There were a total of 150 children included in this study. The average age calculated was 7.5 years. The age range of 3 to 5 years had the highest number of children. There were a total of 83 (55.33%) males and 67 (44.67%) females in this study. Table number 1 shows the age distribution of children in this research.

Table No. 1: age distribution of children in this research (n=150)

Age Groups	n	%
18 months to 2 years	29	19.33
3 to 5 years	47	31.33
6 to 8 years	41	27.34
9 to 12 years	33	22.00

Table number 2 shows the mode of delivery among the patients.

Table No. 2: mode of delivery among the patients (n=150)

Mode of delivery	n	%
C-section	111	74
Normal vaginal	39	26

Table number 3 shows the risk factors for DDH according to genders.

Table No. 3: risk factors for DDH according to genders.

Risk Factors	Male (n=83)		Female (n=67)	
	n	%	n	%
Preterm birth	14	16.8	7	10.4
Post term birth	20	24.1	0	0.0
Full term birth	1	1.2	22	32.8
Positive family history	14	16.8	2	2.9
History of Breech presentation	13	15.6	18	26.8
History of oligohydramnios	21	25.5	18	27.1

DISCUSSION

The term Developmental Dysplasia of the Hip (DDH) refers to a variety of defects ranging from instability to total dislocation, including proximal femoral and acetabular dysplasia [11, 12]. In Sweden, every infant is routinely checked for DDH by a professional physician [13]. Children with aberrant results and risk factors such as breech presentation, oligohydramnios, female sex, being a first child, and having a positive family history of DDH are sent to pediatric orthopedic surgeons for proper assessment [14]. Prior to the adoption of ultrasonography screening in the UK, DDH was diagnosed in 1 to 2 out of every 1000 cases [15]. With the advent of targeted ultrasound screening

for high-risk newborns, the incidence has increased from 5 to 30 instances per 1000 [16]. This increase reflects ultrasound's ability to detect more dysplastic hips.

Babies with a positive family history of DDH and breech presentation are now routinely tested using ultrasonography, while female sex, first-born status, and oligohydramnios are all considered major risk factors [17]. Breech presentation, female gender, positive family history, and first-born status are all well-established risk factors for DDH, according to the literature [18, 19, 20]. Our findings are consistent with those previously identified risk variables. We found that DDH was more common in full-term female children and post-term male children with a positive family history ($P<0.05$).

Our study had some limitations, such as a small number of participants and the inability to quantify the odds ratio, thus we propose additional research to corroborate our findings.

CONCLUSION

Oligohydramnios, breech presentation, and premature birth emerged as the most common risk factors, accounting for more than half of the DDH patients in our series.

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Conflict in the interest

The authors had no conflict related to the interest in the execution of this study.

Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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