

МЕДИЦИНСКИЕ НАУКИ

CONGENITAL HIP DYSPLASIA HIGHLIGHTS OF AVASCULAR NECROSIS INCIDENCE AFTER OPEN REDUCTION FOR DEVELOPMENTAL DYSPLASIA OF THE HIP IN NAJAF (IRAQ)

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DOI: 10.31618/ESU.2413-9335.2020.5.76.927

ABSTRACT

Developmental dysplasia of the hip (DDH) is a one of the most common congenital abnormalities. It presents with the wide spectrum of anatomical features due to the mild or incomplete formation of the acetabulum leading to laxity of the joint capsule, secondary deformity of the proximal femur head and irreducible hip dislocation. It present with an estimated incidence ranging from 1.4 to 35.0 per 1000 newborns with higher prevalence in Asian, Mediterranean, Caucasian, and American populations with a sex-ratio of girls to boys as 4-10:1. The risk of complications after treatment is associated with the type of reduction and also depends of previous treatment and immobilization, degree of dislocation, patient's age at surgery. This study is a cross-sectional study with DDH patients born between January 2018 and December 2019, in the city of Al Najaf, Iraq. Ethnicity, gender, fetal presentation, time of diagnosis, affected side of the hip, family history and avascular necrosis of the femoral head (AVN) complications were considered. Post-operative clinical and radiological evaluation was preformed depending on McKay's criteria and Severin's classification. A total of 49 DDH patients were identified with female:male ratio of 7,2:1. Among girls, the time of diagnosis was $2,68 \pm 1,14$ years, in the group of boys this indicator was $3,4 \pm 1,02$ years, $p=0,231$. In both gender group the bilateral process was most common (66,7% in male group and 58,9% in female group). In 30% patient the family history was positive. Normal vaginal delivery was in 69,4% cases (67,4 and 83,3% girls and boys). Breech presentation was observed exclusively in female group. In 14% cases a combination of DDH with other malformations was revealed, in most cases it was joint laxity, less common minor congenital malformations. In 30% patients the closed bilateral reduction was performed. 46 patients were undergoing open reduction. Complications of DDH were detected in 29% cases. Most common was avascular necrosis in varying degrees (35%), 14% patients had early osteoarthritis, 21% local infections. The post-operative clinical McKay's criteria showed prevalence of excellent and good results. Findings of the post-operative radiographic assessment (Severins grade method) were excellent in 21 hips, good in 14 hips. Consequently, late diagnosis of DDH leads worth outcomes, requires surgical interventions and causes increasing frequency of complications.

Keyword. Developmental dysplasia of the hip, children, open reduction, complications, avascular necrosis.

Introduction. Developmental dysplasia of the hip (DDH) is a one of the most common congenital abnormalities. It presents with the wide spectrum of anatomical abnormalities and is characterized by the mild or incomplete formation of the acetabulum leading to laxity of the joint capsule, secondary deformity of the proximal femur head and irreducible hip dislocation. It presents with an estimated incidence ranging from 1.4 to 35.0 per 1000 newborns. DDH presents high prevalence in Asian, Mediterranean, Caucasian, and American populations and females are more frequently regarded with a sex-ratio of 4-10:1. The risk of avascular necrosis of the femoral head (AVN) after treatment of developmental dysplasia of the hip is associated with the type of reduction. The incidence of avascular necrosis after open reduction the reported incidence of AVN in recent years has varied widely from 6% to 48% and is affected by many factors, such as the previous treatment and immobilization, degree of dislocation, patient's age at surgery, and treatment method. With relative to the treatment method, controversially by regarding open versus closed reduction has long existed. The research methods and materials used a cross-sectional study with DDH patients born between January 2018 and

December 2019, in the city of Najaf in Iraq. Ethnicity, gender, fetal presentation, time of diagnosis, affected side of the hip, family history and complications of AVN were studied. The goal of this study to describe the profile of patients with developmental dysplasia of the hip and to decrease incidence of AVN complications in pediatric population of Najaf, Iraq.

Materials and methods.

A cross-sectional study with DDH patients born between January 2018 and December 2019, in the city of Al Najaf, Iraq. Ethnicity, gender, fetal presentation, time of diagnosis, affected side of the hip, family history and AVN complications were considered. And post-operative clinical evaluation was preformed depending on McKay's criteria and radiological evaluation was preformed according to Severin's classification. Direct interviewing the mother or a relatives of the neonate, asking about age, gender of the neonate, gestation age, mode of delivery, presenting part, fetal presentation and positive family history of DDH were performed. Then the babies were examined by a pediatrician who looked for asymmetry of the skin folds and evaluate for leg length discrepancy by Galliezi test, tested hip stability with the Barlow and Ortolani tests using Tonnis system. All hip

abnormalities were recoded. Ultrasound also was made with dynamic coverage Index (DCI) measuring. Accordingly, the abnormal hips were those who had a Graf's type IIc, III, IV considered abnormal by ultrasound and Grade 2, 3, 4 considered abnormal by clinical examination. The method that's done on this study in case of complications of avascular necrosis this was a retrospective group study of diagnosed patients with DDH in same data between 5th of January 2018 to 30th of December 2019. We are all included DDH patients who underwent standard treatment methods: (1) reduction of the hip joint under general anesthesia hip application (2) open hip reduction (3) open hip decreased pelvic dysfunction and (4) reduced hip with pelvic bone cutting and bone shortening. In our hospital, an open reduction is made under general anesthesia in the operating room and appropriate reduction confirmed by conducting joints with pooling of <5 mm on the medial side of the thigh head. Safe zone code was identified and in tight cases, a few adductor muscle was performed. According to Tonnis classification the center of the ossific nucleus of the femoral head is related to Perkins line and a horizontal line at the level of the lateral margin of the acetabulum. The presence of post-operative AVN of the femoral head was graded by the criteria of Kalamchi and MacEwen in a grade ranged from I to IV. After data collection the variables were statistically analyzed using the Statistica 10 program.

Results and discussion.

A total of 49 DDH patients were identified. Most of the patients was female (female:male ratio was 7,2:1). Among girls, the time of diagnosis was $2,68 \pm 1,14$ years, in the group of boys this indicator was $3,4 \pm 1,02$ years, $p=0,231$. In both gender group the bilateral process was most common (66,7% in male group and 58,9% in female group). In 30% patient the family history was positive. Normal vaginal delivery was in 69,4% cases (67,4 and 83,3% girls and boys). Breech presentation was observed in 18,4% of patients, exclusively in female group. In 14% cases a combination of DDH with other malformations was revealed, in most cases it was joint laxity, less common minor congenital malformations. In 30% patients the closed bilateral reduction was performed (27,9% and 50%). 46 patients were undergoing open reduction. Complications of DDH were detected in 29% cases (28% in female group and 33% in male group): in 35% was avascular necrosis in varying degrees, 14% patients had early osteoarthritis, 21% local infections. The post-operative clinical McKay's criteria showed that 25 hips were excellent, 17 hips were good, 4 hip was fair and 3 were Poor. Findings of the post-operative radiographic assessment (Severins grade method) were excellent in 21 hips, good in 14 hips, satisfactory in 10 hip and 2 were Poor. However in 14% cases a combination of DDH with other malformations was revealed, in most cases it was joint laxity, less common minor congenital malformations. In 30% patients the closed bilateral reduction was performed (27,9% and 50%).

DDH is definitely an important condition for detection. However, there is some controversy over the

method used for examination and the appropriate time. The incidence rate for every 1,000 live births worldwide ranges from 0.06 in Africans in Africa to 76.1 in Americans. In American population was a large variation between and within ethnic groups and the location in geographic terms, the rate of clinical neonatal hip instability at birth ranges from 0.4 in Africans to 61.7 in Polish Caucasians. In Arabic population the ambiguous data were published. The incidence of clinical neonatal hip instability is 4.9 in Dammam, Saudi Arabia and 36.5 in Abha, Saudi Arabia. In Dubai, United Arab Emirates, the incidence rate is 3.17. This wide variation in DDH incidence is due to different definitions of sciatic dysplasia, different diagnostic methods (for example, physical examination, regular radiography, ultrasound), different ages of the population studied (for example, newborn, one month, 3 months of age, etc.), clinical trial examiner, as well as the different races / genders in the examined population, and the different geographical locations within the same ethnic population. In our study, we found that the frequency of DDH in this sample of Iraqi newborns was 4 in 1000. In previous studies the prevalence of DDH in female group was found. In our study, we found that the similar results, the most of the patients was female (female:male ratio was 7,2:1). Among girls, the time of diagnosis was $2,68 \pm 1,14$ years and in the group of boys this indicator was $3,4 \pm 1,02$ years. It was late diagnosis due to late examination without ultrasound screening. This method is one of the most commonly used worldwide. But some authors do not support the routine use of ultrasound imaging to screen all neonates for DDH. Castelein et al. reported that in 101 hips in their series, the results of the ultrasound were abnormal, and the results of the clinical examination were normal. None of them were treated, and six months later DDH developed in four hips. The authors concluded that ultrasound imaging may be very sensitive as it also determines clinically insignificant instability. Clark et al. recommended ultrasound imaging only in infants with positive clinical examination results. This view of the problem seems to us the most acceptable. In our study in both gender group the bilateral process was most common (66,7% in male group and 58,9% in female group). This result is consistent with data from other researchers. One third of the patients have got positive DDH family history and in 14% cases it was combination of several malformations, which is also confirmed in numerous other studies. Breech presentation was observed in 18,4% of patients, exclusively in female group and it correlate with unilateral type of DDH. In 30% patients the closed bilateral reduction was performed at the initial stage of treatment, but in most cases at the next step patients were undergoing open reduction. Complications of DDH were detected in 29% cases (28% in female group and 33% in male group): in 35% was avascular necrosis in varying degrees, 14% patients had early osteoarthritis, 21% local infections. This situation common for late diagnosis of DDH.

DDH the one of the most common congenital malformations in children. Late diagnosis of this

disease leads worth outcomes, requires surgical interventions and causes increasing frequency of complications. Therefore, early diagnosis is the most important factor related to outcome. Screening for DDH is essential in all newborns, physical examinations revealing alterations must be complemented with ultrasound imaging study to avoid the delayed diagnosis of the condition and therefore decrease incidence of the complications.

Reference

1. Mubarak, Scott, et al. "Pitfalls in the use of the Pavlik harness for treatment of congenital dysplasia, subluxation, and dislocation of the hip." *J Bone Joint Surg Am* 63.8 (1981): 1239-1248.
2. Stein-Zamir, Chen, et al. "Developmental dysplasia of the hip: risk markers, clinical screening and outcome." *Pediatrics International* 50.3 (2008): 341-345.
3. Wang, Ya-Jie, et al. "Association between open or closed reduction and avascular necrosis in developmental dysplasia of the hip: A PRISMA-compliant meta-analysis of observational studies." *Medicine* 95.29 (2016).9. Kalamchi A, MacEwen GD. Avascular necrosis following treatment of congenital dislocation of the hip. *J Bone Joint Surg Am*. 1980;62:876e888.
4. Cooperman, DANIEL R., Richard Wallensten, and S. D. Stulberg. "Post-reduction avascular necrosis in congenital dislocation of the hip." *The Journal of bone and joint surgery. American volume* 62.2 (1980): 247-258.
5. Rampal, V., et al. "Closed reduction with traction for developmental dysplasia of the hip in children aged between one and five years." *The Journal of bone and joint surgery. British volume* 90.7 (2008): 858-863.
6. Li, Lianyong, et al. "CX3CR1 polymorphisms associated with an increased risk of developmental dysplasia of the hip in human." *Journal of Orthopaedic Research* 35.2 (2017): 377-380.
7. Burhan, M.H. and Hattab, K.M., 2019. Effectiveness of Health Educational Program on Nurses' Knowledge Concerning of Developmental Hip Dysplasia at Al-Wasiti Teaching Hospital in Baghdad City. *Indian Journal of Public Health Research & Development*, 10(10), pp.1835-1840.
8. Mansoor, A.K., Kraidi, B. and Al-Naser, L.M., 2018. Simultaneous versus two stage surgical treatment of developmental dislocation of the hip with excessive femoral anteversion in children under the age of three years. *Journal of Ideas in Health*, 1(2), pp.34-41.
9. Pospischill, R., Weninger, J., Ganger, R., Altenhuber, J. and Grill, F., 2012. Does open reduction of the developmental dislocated hip increase the risk of osteonecrosis?. *Clinical Orthopaedics and Related Research*, 470(1), pp.250-260.
10. Szabo, Robert M. "Current Concepts Review-Principles of Epidemiology for the Orthopaedic Surgeon." *JBJS* 80.1 (1998): 111-20.
11. Barlow, T. G. "Early diagnosis and treatment of congenital dislocation of the hip." *The Journal of Bone and Joint Surgery. British volume* 44.2 (1962): 292-301.
12. Von Rosen, Sophus. "Diagnosis and treatment of congenital dislocation of the hip joint in the newborn." *The Journal of Bone and Joint Surgery. British volume* 44.2 (1962): 284-291.

STUDYING THE POSSIBILITY OF REDUCING TOXIC EFFECTS OF CHEMOTHERAPY USING THE NEW DERIVATIVE KOLCHAMIN K-48 ON STRAIN OF SARCOMA - 180

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SUMMARY

Studies on an experimental tumor strain of sarcoma-180 in BALB / c mice showed that the combined use of cisplatin and vincristine with a new derivative of colchamine K-48 increases their own antitumor activity, while reducing the toxic effects of the treatment. In addition, this combined use of well-known cytostatics with a new drug made it possible to eliminate the death of experimental animals caused by their toxic effects and reduce such side effects as weight loss and spleen, as well as increase the level of leukocytes.

Key words: antitumor activity, chemotherapy toxicity, colchamine derivative, hematopoietic stem cells, sarcoma- 180.