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CONGENITAL HEART DEFECTS AS A RISK FACTOR OF NECROTIZING ENTEROCOLITIS

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Abstract
The article provides information on the study of the role of congenital heart defects as a risk factor in the development of the disease in premature children with suspected necrotic enterocolitis (NEC). The study included 88 children of both sexes with suspected NEC. 30 conditionally healthy children born prematurely were taken as a control group. Of the 88 children with suspected NEC, 43 were girls and 45 were boys; in the control group, 15 children were girls and 15 were boys.
The relationship between the development of necrotizing enterocolitis and heart defects such as patent ductus arteriosus (PDA), tricuspid insufficiency, and patent foramen ovale has been studied.
The study showed that heart defects did not play a role as a risk factor in the development of the disease in premature infants with suspected NEC.
Thus, based on the results of the study, heart defects did not play a role as a risk factor in the diagnosis of the disease in premature infants with suspected NEC.
Keywords: necrotizing enterocolitis, premature infants, congenital heart defects

İNTRODUCTİON

Necrotizing enterocolitis (NEC) in newborns is an acute multifactorial disease characterized by intestinal necrosis and is one of the leading causes of morbidity and mortality in premature infants. Due to the incomplete understanding of the pathogenesis of the disease, there is a lack of effective and reliable methods for the prevention and treatment of the disease. Identification of newborns suspected of having NEC and early intervention in them may play a crucial role in reducing the incidence of the disease and improving the prognosis [1].

For this purpose, a number of risk factors leading to the disease have been identified, and newborns with congenital heart defects are included in the high-risk group [2]. Among heart defects, especially PDA (patent ductus arteriosus) is an important risk factor for NEC. Congenital heart defects (including PDA) cause inadequate

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blood flow distribution, trigger an immune response, stimulate inflammatory mediators, and cause damage and necrosis of the intestinal mucosa, ultimately leading to necrotizing enterocolitis [3]. According to recent literature data, the mortality rate of NEC in children with congenital heart defects is high, reaching 25% [4].

Considering all this, we found it important to study risk factors in our study in order to improve early diagnosis of the disease in premature infants with suspected NEC.

The above-mentioned confirms the relevance of the current study and creates a basis for conducting research in this aspect.

The aim of the study: To determine the role of congenital heart defects in the development and progression of the disease in premature infants with suspected signs of necrotizing enterocolitis.

MATERİALS AND METHODS

The study is based on the results obtained from studying the role of congenital heart defects in the development of the disease in premature infants with initial suspicion of NEC.

The study was conducted at the Scientific Research Institute of Pediatrics named after K.Y. Farajova, Republican Perinatal Center, Baku Medical Plaza, Maternity Hospital No. 5 named after Sh. Alasgarova (2020-2023). 88 prematurely born children were involved in the study. Of these, 43 were girls and 45 were boys. Mean gestational age - 31.03±2.68 weeks (mean±SD), median 31.50 weeks; (minimum 26 weeks, maximum 36 weeks); mean weight 1478.3±464.35 (mean±SD); median 1440.00; minimum 800g, maximum 2500g. Of these children, 29 (32.5%) were confirmed with NEC diagnosis, while in 59 (67.1%) the diagnosis were denied. The mean gestational age of children with confirmed NEC 31,17±3,07 weeks (Mean±SD), mean weight 1590,34±534g (Mean±SD), the children with denied diagnosis of desease the mean gestational age was 31±2,50 weeks (Mean±SD), body weight 1423,3±420g.

The diagnosis of NEC was confirmed based on clinical, laboratory and instrumental indicators. In all patients, abdominal distension, feeding intolerance, vomiting, (mainly with bile), blood in the stool, apnea, etc. were taken as the initial clinical signs of NEC.

Exclusion criteria from the study:

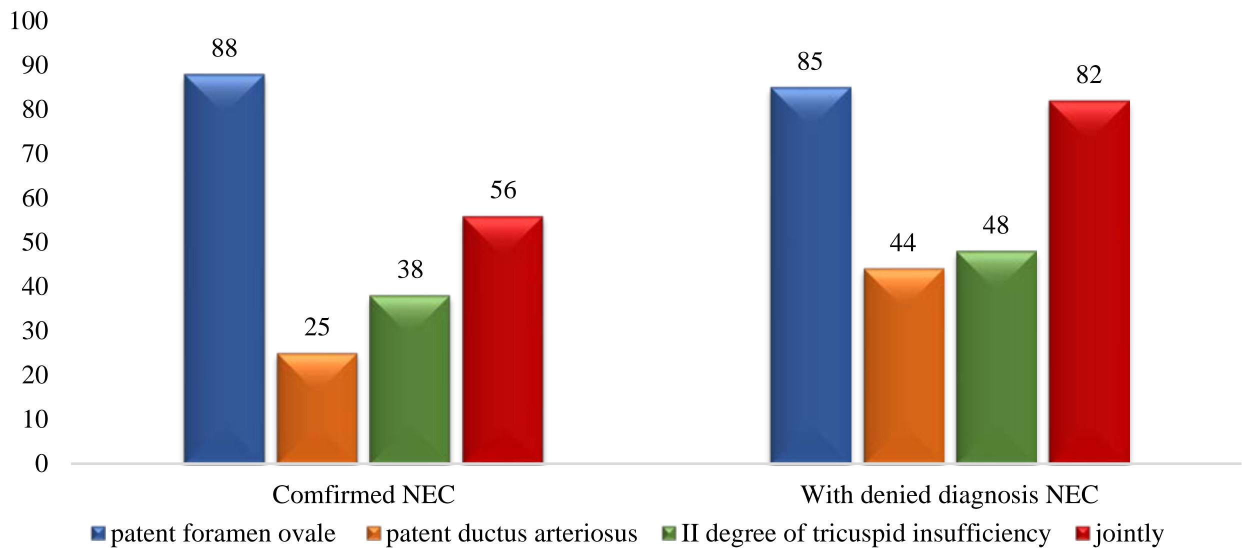
- congenital and chromosomal anomalies;
- infants without suspicion of NEC during the first 3 weeks.

The Chi-Square (X2) test was used to compare categorical variables obtained from the study, and $p<0.05$ reflected the statistical significance of the difference. Statistical processing of the indicators was carried out in the Windows SPSS20 system. The arithmetic mean (based on all the quantitative indicators we received - mean (average indicator); SD - how much the indicators differ from the mean square difference) and the minimum and maximum indicators were given.

RESULTS AND DİSCUSSİON

There are several studies that indicate that there is a direct relationship between the persistence of fetal blood circulation in the early neonatal period in premature infants, the development of necrotizing enterocolitis in cases where the foramen ovale and the patent ductus arteriosus remain open [5, 6]. In our study, no such relationship was noted between the presence of patent ductus arteriosus and the confirmation of the diagnosis of NEC. According to several literature data, no statistically significant relationship was noted between congenital heart pathologies and NEC [7].

Also, since the most common pathology found during echocardiography examination is II degree of tricuspid regurgitation, we tried to study the significance of this pathology in the confirmation of the diagnosis of NEC, and it was found that this degree of tricuspid regurgitation was also statistically insignificant in the confirmation of the diagnosis of NEC.



Graph 1. Frequency of cardiac pathologies in children with suspected necrotizing enterocolitis by subgroup (in %)

Thus, as can be seen from this study, we did not find an association between congenital heart defects and the development of necrotizing enterocolitis in our study. Congenital heart defects, by impairing mesenteric perfusion, lead to prolonged hospitalization and increased risk of death in children with NEC [8]. Therefore, their investigation as a risk factor in patients with suspected NEC is important and vital.

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ANADANGƏLMƏ ÜRƏK QÜSURLARI NEKROTİK ENTEROKOLİTİN RİSK FAKTORU KİMİ

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Xülasə
Məqalədə nekrotik enterokolitə (NEK) şübhəsi olan vaxtından əvvəl doğulmuş uşaqlarda xəstəliyin əmələ gəlməsində anadangəlmə ürək qüsurlarının risk faktoru kimi rolunun öyrənilməsi haqqında məlumat verilmişdir. Tədqiqata NEK şübhəsi olan hər iki cinsdən 88 uşaq daxil edilmişdir. Kontrol qrup kimi vaxtından əvvəl doğulmuş 30 şərti-sağlam uşaq götürülmüşdür. NEK-ə şübhəsi olan 88 uşaqdan 43-ü qız, 45-i isə oğlan olmuşdur; kontrol qrupda isə uşaqların 15-i qız, 15-i isə oğlan olmuşdur.
Nekrotik enterokolitin inkişafı ilə açıq arterial axacaq (PDA), trikuspid çatışmazlıq,oval dəliyin açıq qalması kimi ürək qüsurları arasında əlaqə öyrənilmişdir.
Tədqiqat göstərmişdir ki, NEK-ə şübhə olan vaxtından əvvəl doğulan uşaqlarda ürək qüsurlarının xəstəliyin əmələ gəlməsində risk faktoru kimi rolu qeyd olunmamışdır.
Beləliklə, aparılan tədqiqatın nəticələrinə əsasən demək olar ki, NEK-ə şübhə olan vaxtından əvvəl doğulmuş uşaqlarda ürək qüsurları xəstəliyin diaqnostikasında risk faktoru kimi əhəmiyyət daşımamışdır.
Açar sözlər: nekrotik enterokolit, vaxtından əvvəl doğulanlar, anadangəlmə ürək qüsurları

ВРОЖДЕННЫЕ ПОРОКИ СЕРДЦА КАК ФАКТОР РИСКА НЕКРОТИЧЕСКОГО ЭНТЕРОКОЛИТА

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Резюме

В статье представлена информация об исследовании роли врожденных пороков сердца как фактора риска развития заболевания у недоношенных детей с подозрением на некротический энтероколит (НЭК). В исследование были включены 88 детей обоих полов с подозрением на НЭК. В качестве контрольной группы были взяты 30 условно здоровых недоношенных детей. Из 88 детей с подозрением на НЭК 43 были девочками и 45 — мальчиками; в контрольной группе 15 детей были девочками и 15 — мальчиками.

Была изучена взаимосвязь между развитием некротизирующего энтероколита и пороками сердца, такими как открытый артериальный проток (ОАП), трикуспидальная недостаточность и открытое овальное отверстие.

Исследование показало, что пороки сердца не играют роли фактора риска развития заболевания у недоношенных детей с подозрением на некротизирующий энтероколит.

Таким образом, на основании результатов исследования можно сказать, что пороки сердца не играют роли фактора риска в диагностике заболевания у недоношенных детей с подозрением на некротизирующий энтероколит.

Ключевые слова: некротизирующий энтероколит, недоношенные дети, врожденные пороки сердца.