Bacterial infections - the cause of preterm delivery

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Summary

Within diagnostic procedures protocols in preterm delivery, the objective of the study was to examine bacterial causes of preterm deliveries in relation to term deliveries. The study included 106 patients delivered before term (24 to 37 weeks of gestation) and 126 patients with term delivery after 37 to 42 weeks of gestation. Bacterial analysis included hospital material: cervix smear in patients before the delivery and protective and functional fetal elements.

Key words: Preterm delivery; Bacterial infection.

Introduction

Preterm delivery is one of the current perinatal problems today, considering the high rate of neonatal morbidity and mortality. Unclear pathological processes demand a spectrum of diagnostic procedures in perinatology so the number of premature deliveries can be reduced, and also the morbidity of pregnant patients decreased with premature newborn survival enabled.

Materials and Methods

The study was conducted in patients who were hospitalized at the Clinical Center Novi Sad, with preterm delivery ending (examined group) and term ending (control group - by vaginal route or cesarean section, depending on the indications). The study included 106 patients delivered before term (24 to 37 weeks of gestation) and 126 patients with term delivery after 37 to 42 weeks of gestation. Bacterial analysis included a cervical smear from patients before the delivery and protective and functional fetal elements.

Results

Bacterial infection of the cervix was more common in the premature group with 38 cases (35.8%) in relation to the term group with eight (6.4%). A statistically significant higher presence of bacteria was found in the cervix of the preterm group ($p < 0.01$). In these patients the following bacteria were isolated: Streptococcus agalactiae in four cases (3.8%), Enterococcus in 14 (13.2%), Staphylococcus sp. in eight (7.5%), Escherichia coli in eight (7.5%), Streptococcus viridans in two (1.9%) and Proteus mirabilis in two (1.9%). In the control group of patients, the following bacteria were diagnosed in the cervix: Streptococcus agalactiae in two cases (1.6%), Staphylococcus epidermis in two (1.6%), Klebsiella pneumonia in two (1.6%) and Streptococcus viridans in two (1.6%). Considering that ascendant infections of the urogenital tract can cause infection of the protective and functional elements of the fetus, there were bacterial examinations even during delivery - cotyledon, embryo involucres and embryo fluid. Statistical analysis showed a significantly higher presence of bacteria in the preterm group than in the term group ($p < 0.01$). In 26 cases (43.4%), there was an infection on the level of protective and functional elements of the fetus in the examined group in relation to the control group where it was found in 22 cases (17.5%). In the case of positive findings, antibiotic therapy was conducted based on the antibiogram.

Discussion

Today it is evident that one in every four deliveries is related to infection. This examination confirms that bacterial infection can play a significant role in the etiology and pathogenesis of premature deliveries. Moreover, it points out the significance of examining the reproductive history of patients and identifying those patients with a greater risk of premature delivery. Idiopathic premature delivery is often a consequence of ascendant bacterial infection from the vagina and cervix into the uterus, and it can cause fetal membrane and embryo fluid infection, increased cytokine, prostaglandin and metalloproteinase production, and thus secondarily induce premature contractions, embryo involucres rupture and premature delivery. In subclinical infections, antibiotic therapy can be useful in preventing premature delivery or in the case of premature rupture it can contribute to pregnancy prolongation and prevention of neonatal and puerperal infection.

Conclusion

The examinations point to the significance of routine bacterial smears, before and during pregnancy, asymptomatic bacteriuria screening and antibiotic administration, especially in patients with previous premature deliveries, infections during the current pregnancy and symptoms of threatening premature delivery.

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