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ORIGINAL ARTICLE

Clinical and epidemiological profile of preterm birth and its neonatal outcomes

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Premature Birth,
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Abstract

Objectives: To describe the clinical and epidemiological profile of preterm birth in a unit of the public health network. **Methods:** A retrospective study involving the analysis of records of 94 newborns born before 37 completed weeks of gestation and those of their respective mothers. For investigation, data regarding maternal socioeconomic conditions, the presence of intercurrent gestational diseases, the occurrence of aggravating perinatal events, the birth conditions and the neonatal complications were observed. **Results:** Most of the pregnant women studied were between the ages of 15 and 35 years, had between 4 and 7 years of schooling and lived in urban areas. 95% of the pregnancies were single fetus, and the prevalence of hypertension and diabetes was 12% and 6%, respectively. Premature membrane rupture occurred in 25% of cases, maternal genitourinary tract infections in 27%, and chorioamnionitis in 5%. Most neonates weighed between 1,000 and 2,499 grams at birth. The most common complication was neonatal infection (32%), especially early sepsis, which was more common among preterm infants of lower gestational age and weight, and also in those whose mothers had some infection during pregnancy. Other relevant neonatal outcomes were respiratory changes (27%) and jaundice (26%). There were 26 deaths in the sample studied. **Conclusions:** Preventing prematurity and its consequences requires knowledge and monitoring of risk factors.

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INTRODUCTION

Despite advances in obstetrics, prematurity continues to be a major public health problem and is a predictor of mortality and relevant morbidity.[1-3] The etiology of preterm birth remains uncertain because information about the intrinsic mechanism of preterm labor triggering is limited. Epidemiological studies have evidenced the role of several prenatal, social, and maternal risk factors in preterm birth.[1,2,4,5] While the causes of preterm birth remain unclear, they are always related to its risk factors and possibly to gestation, i.e., mother's age, origin, number of pregnancies, time of amniotic membrane rupture, hypertension, diabetes, use of antenatal corticosteroids, birth weight, sex of the neonate, and Apgar score. Early sepsis, considered of maternal origin, is the most frequent infection, and its onset occurs at up to 72 h after birth. It is a frequent and serious problem, with incidence varying according to the level of care and population assessed. The authors believe that it is important to study the risk factors associated with preterm birth in the context of the reality of the local health system to identify those responsive to prevention, ensuring adoption of specific measures and reduction of the mortality rates in this age group.[9-11,13]

OBJECTIVES

General: To describe the clinical and epidemiological profiles of preterm birth in a unit of the Brazilian public health system.

Specific: To describe the primary neonatal outcomes observed in the cases of preterm births in this unit.

MATERIAL AND METHODS

In this retrospective study, a sample was statistically analyzed that comprised the records of 94 preterm newborns hospitalized in a neonatal intensive care unit (ICU) of the Brazilian public health system and those of their respective mothers from February 1 to August 31, 2015. To establish the clinical and epidemiological profiles of preterm births in this unit, the records of patients who had delivered before 37 completed weeks of gestation (vaginal or cesarean delivery) and whose newborns were admitted to the neonatal ICU were assessed. For the assessment of neonatal complications, the study included patients born before 37 completed weeks of gestation admitted to the neonatal ICU. Stillborn infants, fetuses with severe congenital malformations, those who died within 24 h after delivery, and those born at term were excluded.

RESULTS

Analysis of the socioeconomic profiles of pregnant women regarding maternal age indicated that 54% belonged to the age group of 20–34 years, 12% of 35–45 years, 30% of 15–19 years, and 4% of ≤15 years. Regarding educational status, 8% of the women had >10 years of schooling, 25% had 8–11 years of schooling, 40% had 4–7 years of schooling, and 21% had 1–3 years of schooling. As for the origin, 20% lived in a rural area (countryside), 12% in a rural area (villages), 32% in a peripheral urban area, and 48% in an urban area. Regarding prenatal follow-up, most patients attended 4–5 consultations.

Further, concerning the perinatal factors that could contribute to preterm delivery, (figure 1) it was observed that 5% of the cases had multiple gestations. Regarding maternal infections, particularly those of the genitourinary tract, a prevalence of 27% was evidenced, whereas chorioamnionitis was observed in 5% of the cases. Premature rupture of membranes (PROM) was observed in 25% of pregnancies. A total of 30% of women used antenatal corticosteroids. Further, the prevalence of hypertension and diabetes during pregnancy was 12% and 6%, respectively.

During the study period, gestational age ranged from 25 weeks to 36 weeks and 6 days. A gestational age of ≤34 weeks accounted for 67.2% of the cases of preterm birth, whereas those between 34 weeks and 1 day and 36 weeks and 6 days accounted for 32.8%. Regarding birth weight, 6% weighed <750 g, 12% weighed 750–999 g, 36% weighed 1,000–1,499 g, 43% weighed 1,500–2,499 g, and 3% weighed >2,500 g. Of all preterm infants, 54% were female and 46% were male. The following Apgar scores were observed 5 min after birth: 4%, unknown score; 52%, 9–10; 27%, 7–8; 13%, 5–6; and 4%, ≤5.

The most frequent neonatal complication (figure 2) was infection, with early sepsis being the most common as confirmed in 32% of the cases. The prevalence of respiratory alterations was also high (62 cases, 27%). Moreover, nine newborns (4%) presented peri-intraventricular hemorrhage (PIVH). Other complications included 56 cases (26%) of jaundice and 26 deaths during the study period (11%).

DISCUSSION

The present study described the clinical and epidemiological profiles of preterm birth as well as the primary neonatal consequences of this event; the results are representative of the public health reality of Maceió, which is very similar to the findings reported in the studies conducted at other locations in Brazil. Considering that many cases of preterm birth are influenced by preventable or controllable risk factors in early pregnancy, it is critical that the number of prenatal consultations is observed and reinforced. Although the mean number of such visits in the studied sample was close to that recommended by the World Health Organization, ensuring that all pregnant women attend at least six prenatal consultations remains a goal to be achieved to improve child mortality.[3,6] In a more retrospective analysis, it is notable that most pregnant women in the sample had only 4–7 years of schooling, suggesting that educational status directly impacts an individual's life and health conditions and thereby influences gestational care.

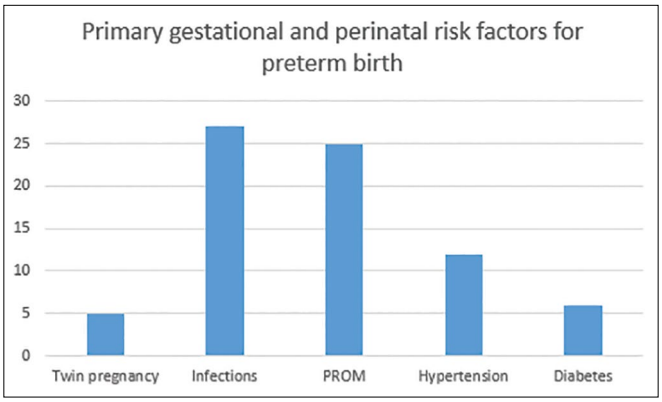

Figure 1. Main gestational and perinatal risk factors for preterm birth Percentage of incidence of risk factors.

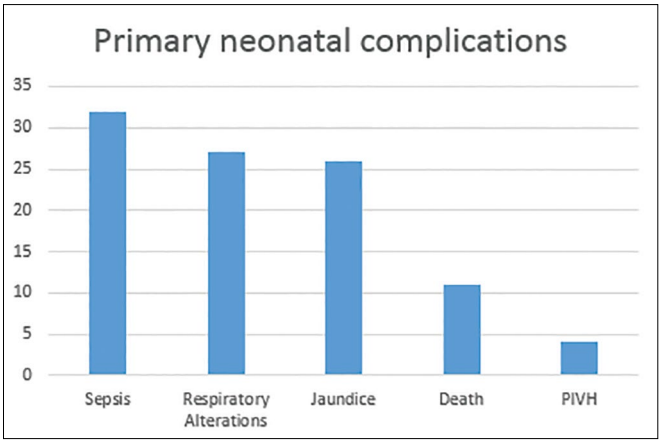

Figura 2. Primary neonatal complications. Percentage of incidence of complications.

Regarding the gestational diseases evaluated in this study, the literature indicates that the risk of preterm birth is still high despite considerable progress in the care of diabetic pregnant women. It was observed that 36% of infants born to mothers with gestational diabetes or those with pre-existing insulin-dependent diabetes were born preterm; in the general population, only 9.7% were born preterm.[15,16] The Brazilian Ministry of Health considers hypertensive disease in pregnancy to be a risk factor for preterm delivery. Its most frequent consequences in the child include prematurity, intrauterine growth restriction, and low birth weight.[14,15] Although twin pregnancies were infrequent in this study, it is known that the mere presence of another fetus increases the chance of preterm birth, hypertension, PROM, and intrauterine fetal death.[5,13] The literature indicates maternal infections, especially urinary tract infections and chorioamnionitis, as important risk factors for preterm delivery.[12,13,16,17] This study observed a higher frequency of neonatal sepsis in patients whose mothers had some infection during the gestational period, unrelated to the time it occurred. At the study site, intrapartum chemoprophylaxis has not yet been properly implemented. PROM at <37 weeks of gestational age is widely recognized as a risk factor for prematurity and other neonatal complications, such as pneumonia, sepsis, respiratory distress syndrome, and intraventricular hemorrhage. In the literature, its prevalence ranges from 30% to 40%. In prenatal care programs, vaginal and anal cultures for streptococcus screening are still not routinely performed.[13-15]

Given the efficacy of antenatal corticosteroid therapy, which has beneficial and indisputable effects on the respiratory tract of a preterm child, in addition to reducing the incidence of intraventricular hemorrhage and necrotizing enterocolitis, this therapy should be used for pregnant women at a risk of preterm delivery between 24 and 34 weeks of gestation.[11,13,14] In the present study, it was observed that most pregnant women (approximately 70%) who did not receive this therapy were in advanced labor, indicating that failure to administer this therapy was due to insufficient time because it would no longer have been possible to prevent labor.

Regarding the most prevalent neonatal outcomes, the fact that almost all neonates in the study sample presented low birth weight may be explained not only as a consequence of preterm birth per se but also because the study participants belonged to a population routinely referred to a service that exclusively treats high-risk newborns. The cases of early sepsis assessed in this study were related to pre- and perinatal factors; sepsis was more frequently observed in preterm infants with lower weight and gestational age, in agreement with the findings in the literature.[15,17] Respiratory alterations are very frequent events in preterm infants and is an important factor of mortality and morbidity in childhood.[13-15] When assessing patients with PIVH, a significant association was observed with preterm newborns who had no prenatal care, presence of infection, and other complications.[17,18] The present results demonstrate that these patients require more complex care and present greater chances of complications and sequelae at various levels, highlighting the importance of the availability of technical structure, equipment, and human resources capable of caring for cases of greater complexity and reversing risk situations at birth.

CONCLUSION

The results of this study, representative of the reality of the institution where the research was conducted, indicate that preterm birth, despite its multifactorial etiology, is primarily related to lifestyle habits, quality of prenatal care, and maternal clinical and socioeconomic status. The fragility of preterm infants contributes to the imminent possibility of risks, injuries, and sequelae of various types, with wide-ranging consequences in the child's development and growth. Therefore, it is necessary to identify the local clinical and epidemiological profiles of preterm birth to predict and consider risks and prognoses, ensuring that preventive measures capable of improving the current reality can be established and promoted.

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