Clinical and epidemiological aspects of prematurity in a Normal Delivery Center, São Paulo, Brazil

Aspectos clínicos e epidemiológicos da prematuridade em um Centro de Parto Normal, São Paulo, Brasil

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ABSTRACT

Objective: To present clinical and epidemiological aspects of prematurity in a Normal Delivery Center, and to describe outcomes. **Methods:** A cross-sectional retrospective study, with 189 medical records of premature, single, and living fetuses, with gestational ages between 25 and 36.6 weeks. **Results:** The prevalence of preterm births was 7.8%, and 23.2% in adolescent mothers. The most frequent obstetric complication was premature rupture of ovular membranes (35.4%), followed by hypertensive syndrome (18.5%). Cesarean section was performed in 33% of cases. The Apgar score in the 1st minute was < 7 in 36.0% of cases, and in the 5th minute of life, in 9.5% of cases. **Conclusion:** Among the aspects studied, results showed that the prevalence of preterm births was higher than expected for the adolescent mothers, however, with a satisfactory perinatal outcome.

Keywords: Obstetrical nursing; Parturition; Natural childbirth; Obstetric labor, premature

RESUMO

Objetivo: Apresentar aspectos clínicos e epidemiológicos da prematuridade em um Centro de Parto Normal e descrever resultados perinatais. **Métodos:** Trata-se de um estudo transversal, retrospectivo, com 189 prontuários clínicos de partos prematuros com fetos únicos, vivos, com idade gestacional entre 25 e 36,6 semanas. **Resultados:** A prevalência de prematuridade foi de 7,8%, sendo 23,2% em mães adolescentes. A intercorrência obstétrica mais frequente foi a rotura prematura das membranas ovulares (35,4%), seguida da síndrome hipertensiva (18,5%). O parto cesáreo foi realizado em 33% dos casos. O índice de Apgar, no 10. minuto, foi < 7 em 36,0% dos casos e, no 50. minuto de vida em 9,5% dos casos. **Conclusão:** Entre os

aspectos estudados, os resultados mostraram que a prevalência de prematuridade foi maior do que o esperado para as mães adolescentes, mas com resultados perinatais satisfatórios.

Descritores: Enfermagem obstétrica; Parto; Parto normal; Trabalho de parto prematuro

INTRODUCTION

Premature delivery is an important obstetric problem, since it is responsible for more than 75% of mortality and morbidity among newborns^(1,2). It is defined as a delivery that occurs between 22nd and 36th weeks and 6 days of gestation⁽¹⁾.

In Brazil, the rate of prematurity varied between 5 and $15\%^{(3,4)}$. In hospitals that treat high-risk pregnancies, such as the Obstetric Department of the *Universidade Federal de São Paulo* (UNIFESP), premature deliveries occur in about 20% of cases⁽⁵⁾.

Normal Delivery Center (CPN, acronym in Portuguese) is defined as an intrahospital unit outside of the operating room, destined to perform vaginal deliveries, with a physical structure designed to receive the woman about to give birth and her companion. Since labor and delivery of many high-risk pregnant women follows a normal course, assistance in the CPN is also applied to these women⁽⁶⁾.

In studies about premature deliveries⁽⁷⁾, it was been observed that the quality of assistance given during the period that antecedes the delivery may bring benefits or harm to the premature newborn, evidencing the

Received on: Sept 8, 2010 – Accepted on: Oct 28, 2011

Conflicts of interest: none

Study carried out at Hospital Geral de Itapecerica da Serra – HGIS, Itapecerica da Serra (SP), Brazil. Article extracted form the Master's degree thesis "Prematurity: clinical and epidemiological aspects in a Normal Delivery Center", submitted to the Universidade Federal de São Paulo – UNIFESP, São Paulo (SP), Brazil.

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particular importance of monitoring fetal heartbeats during labor and premature deliveries, preventing acidosis and intraventricular hemorrhage, thus reducing neonatal morbidity.

Prevention of the premature delivery has been studied for a long time, and the various associated risk factors that can indicate which pregnant women have a greater probability of developing premature deliveries are known.

OBJECTIVES

The objective of this research was to present the behavior of some clinical and epidemiological variables related to prematurity; to describe the practice of selective episiotomy in premature births; and to describe the perinatal results in assistance to premature deliveries.

METHODS

Type of study and location

A descriptive and retrospective study was carried out in which the clinical files were researched of women who had given birth at the *Hospital Geral de Itapecerica da Serra* (HGIS) during a one-year period, and who satisfied the inclusion criteria, i.e., any type of delivery that occurred during the period selected for the study; gestational age at the time of birth between 22 and 36 weeks and 6 days, assessed by the Capurro⁽⁸⁾ or New Ballard⁽⁹⁾ Method.

During the year 2002, a total of 4048 deliveries were performed at the HGIS, 315 of which had gestational ages under 36 weeks and 6 days. Of these, 189 clinical files were analyzed, which made up the study population, representing 60% of the total number of premature deliveries during the period.

Excluded were files with twin births, newborns with congenital malformations, stillbirths, and incomplete clinical files, totaling 126 cases.

The following obstetric variables were analyzed: maternal age, parity, prior history of prematurity, number of prenatal clinical visits, records of clinical and obstetric complications during the present gestation, cervical dilation at the time of hospital admission, condition of the amniotic membranes at admission, type of delivery, and perineal results after a vaginal delivery.

The perinatal variables studied were weight at birth, Apgar assessment values, hospitalization unit of the newborn after birth, and neonatal mortality.

Data collection was initiated after the approval by the Research Ethics Committees of the *Universidade Federal de São Paulo* (UNIFESP) and of HGIS. All the requirements of CNS Resolution 196 were met in the conduction of this study.

RESULTS

The prevalence of prematurity at the site of the study was 7.8% of all deliveries during the study period.

Mothers aged under 17 years corresponded to 9.5% of the sample analyzed. Also considering mothers with ages between 18 and 19 years (13.7%), the population of adolescents assisted was 23.2%. The results showed that 39% of the population studied was of primiparous and 5.8% was of multiparous women; the prior history of prematurity was positive in 11.1% of cases. The number of prenatal visits varied from more than six (24.3%) to none (15.9%) – data presented on table 1.

 Table 1. Distribution of the population studied according to selected obstetric variables

Obstetric variables	n = 189	%	Mean ± SD (%)
Maternal age			
≤17	18	9.5	
18 -20	26	13.7	
20 -35	121	64.0	
≥35	24	12.8	
Total	189	100.0	25.5 ± 7.3
Parity			
0	74	39.2	
1 -3	70	37.0	
3 -5	34	18.0	
≥5	11	5.8	
Total	189	100.0	2.5 ± 1.8
Prior history of prematurity			
Yes	21	11.1	
No	168	88.9	
Number of prenatal visits			
0	30	15.9	
1 -6	113	59.8	
≥6	46	24.3	
Total	189	100.0	4.0 ± 2.6

Of the obstetric complications, premature rupture of the membranes occurred in 35.4% of the cases, pregnancyinduced hypertensive syndrome was found in 18.5% of the sample; oligoamnios, in 10.6%; and gestational diabetes was identified in 2.6% of the cases (Table 2).

 Table 2. Clinical and obstetric complications during the current gestation, observed at admission of the pregnant woman/woman in labor

Complications	n*	%
PROM	67	35.4
Hypertensive syndrome	35	18.5
Oligoamnios	20	10.6
PMD	11	5.8
UTI	10	5.3
Diabetes	5	2.6

* n = 189.

A woman in labor may present with one or more associated complications.

PROM: premature rupture of the ovular membranes; PMD: premature membrane detachment; UTI: urinary tract infection

Of the variables found at the time of delivery, the selectively performed episiotomy was done in 45.6% of cases, and vaginal deliveries were assisted by obstetric nurses who, when necessary, requested medical evaluation. The rate of caesarean sections was 33.9% of cases (Table 3). Data on cervical dilation, amniotic membranes at birth, and perineal condition are also displayed on table 3.

Table 3. Distribution of the population studied according to obstetric variables at
the time of admission, and obstetric care given during the perinatal period

Variable	Ν	%	Mean \pm SD(%)
Cervical dilation (cm)			3.7 ± 3.4
≤2	85	45.0	
3 I–I 5	52	27.6	
6 I–I 8	26	13.7	
9 I–I 10	26	13.7	
Amniotic membranes			
Intact	94	50.3	
Ruptured	92	49.2	
No record	3	1.6	
Type of delivery			
C-Section	64	33.9	
Vaginal	125	66.1	
Total	189	100	
Perineal conditions			
Intact	44	35.2	
1 st degree laceration	24	19.2	
2 nd degree laceration	0	0	
Episiotomy	57	45.6	
Total	125	100	

As to the perinatal results found, we noted a greater incidence of births between the 34^{th} and the 36^{th} weeks of gestation, as these represented 69.3% of the total population. The highest frequency was of children with low weight at birth, with weights between 2000 and 2499 g (39.2%) of the population studied. The Apgar score for the newborns studied was > 7 in 90.5% of cases (Table 4).

As to the destination of the newborns after delivery, results showed that 45.5% were sent to accommodations rooming in with their mothers, and 54.5% were sent to the Neonatal Intensive Care Unit (NICU) (Table 5).

Among the neonatal deaths that occurred during the period of this study, three occurred with gestational ages between 25 and 27 weeks of gestation, characterizing extreme prematurity and mortality. The causes of newborn mortality are shown on Table 6.

Variable	n = 189	%
Gestational age (weeks)		
25 -28	3	1.6
28 -31	10	5.3
31 -34	45	23.8
34 -36	131	69.3
Weight at birth (g)		
>1000	4	2.1
1000 -1500	24	12.2
1500 -2000	35	18.5
2000 -2500	82	39.2
≥ 2500	54	28.0
1 st minute Apgar		
≤ 7 (1 a 7)	68	36.0
> 7 (8 a 10)	121	64.0
5 th minute Apgar		
≤ 7 (1 a 7)	18	9.5
> 7 (8 a 10)	171	90.5
Final destination of the NB		
Hospital discharge	182	96.3
Death	7	3.7
Total	189	100.0

n= 189; NB: newborn.

Table 5. Immediate destination of the newborn

Destination	n	RF%
Rooming in with mother	86	45.5
NICU	103	54.5
Total	189	100.00

NICU: Neonatal Intensive Care Unit; RF: Relative Frequency

Table 6. Cause of neonatal deaths studied

Weight at birth (g)	Gestational age (weeks)	Causes of deaths
710	25	Neonatal sepsis
850	26	Respiratory insufficiency, hyaline membrane pulmonary disease, pneumothorax on the right, and extreme prematurity
1140	29	Late sepsis, necrotizing enterocolitis, and clotting disorder
1700	31	Prematurity, neonatal anoxia, early cardiorespiratory insufficiency
1460	34	Septic shock, late neonatal sepsis, bronchopneumonia, prematurity, and hyaline membrane pulmonary disease
2230	34	Bilateral pneumothorax
2635	35	Severe pulmonary hypertension, early sepsis, moderate perinatal anoxia

DISCUSSION

Today prematurity is considered one of the primary causes of perinatal morbidity and mortality, and it is responsible for severe immediate damage to newborns and for late sequelae. The incidence of premature births is variable, since its etiology is based on social, biological, ethnic, and behavioral factors, among others^(1,2).

According to the Ministry of Health of Brazil⁽⁴⁾, in 1996, the rate of prematurity recorded was 5.5 and 5.8% in Brazil and in the state of Sao Paulo, respectively. Ten years later, in 2005, the rate was 5.8% in Brazil and 7.5% in *São Paulo* state, respectively. In this way, the rate of prematurity at the HGIS was similar to the state's rate of prematurity.

Also according to the Ministry of Health⁽¹⁰⁾, in *São Paulo*, during the year 2002, the adolescent population was responsible for 18.4% of the deliveries. This population is inserted in the high-risk pregnancy group, both from the psychosocial and the biological point of view⁽¹¹⁾.

In the population studied, adolescents represented practically one fourth of the sample, evidencing a potential of very high-risk pregnant individuals. Nevertheless, it is worth pointing out that the highest numbers found refer to pregnant women between 18 and 19 years of age, considered obstetrically equivalent to adult pregnant women in terms of risks⁽¹¹⁾.

Nulliparous or multiparous women are considered a risk factor for premature birth when there is a history of more than five prior deliveries⁽¹²⁾. Literature also suggests that the prior history of premature birth is also a risk factor for its occurrence^(5,13,14). In the present study, the greater number of cases was seen in nulliparous women, which favored the occurrence of prematurity, and on the other hand, in those who were multiparous, the number that reported a prior history of prematurity corroborates data in literature⁽¹²⁾.

Adequate prenatal assistance is an isolated factor of greater interference for a decrease in premature births. Precociousness at the first prenatal visit is significantly associated with the number of full-term gestations and with the weight at birth⁽¹⁵⁾. Despite the availability of governmental programs of prenatal care, a large proportion of the population in this study had no prenatal visit, which would mean greater risks for premature birth.

Various obstetric complications also contribute towards the occurrence of a premature birth, including premature rupture of the ovular membranes^(16,17), which occurs in pregnant women not in labor and with more than 20 weeks gestation. The mean incidence is 10% of the total number of births in western populations⁽¹⁷⁾. The rate found in this study, although a lot higher than what was cited, was similar to that referred by other authors, considering that it represents a majority of nulliparous women with gestational ages greater than 34 weeks⁽¹⁸⁾. The perinatal result was affected more by prematurity than by premature membrane rupture⁽¹⁹⁾.

Pregnancy-induced hypertension is also a disorder that favors premature birth^(20,21). The frequency found in this study population was high, a finding that might be related, especially, to the absence of prenatal care in a large number of expectant mothers.

Oligoamnios affects about 3 to 5% of gestations during the third trimester, and is rare during the second trimester, although it is related to premature births⁽²²⁾. The population in this study had a higher frequency than what had been referred, which contributed to the occurrence of premature deliveries.

Elective prematurity represents 20 to 30% of premature deliveries. In high-risk obstetric services, such as the Obstetrics Clinic of the Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo, practically 50% of the premature births result from maternal and/or fetal complications, with medical indications for interruption of the gestation⁽²³⁾ by means of a caesarean section. In Brazil, the Ministry of Health⁽⁴⁾ is aware of the high rate of C-sections, which has stayed high for many years. In 2005, the Brazilian rate was 43.3%, and in the State of Sao Paulo, approximately 50%. In the present study, the rate of C-sections proved lower than these data. In a systematic review of the Cochrane Library it was concluded that there was no evidence to support the practice of elective caesarean sections in premature deliveries, since it did not decrease the risk of neonatal death and could increase the risk of maternal morbidity⁽²⁴⁾. In a study on elective prematurity⁽²⁾, a 94.4% rate of C-sections was identified. Other studies on prematurity or diseases during gestation that result in prematurity report that the high rates of C-sections (51.2%, 52.5%, and 56%)are justified by the high-risk population^(18,25). In the present study, the rate of cesarean sections was shown to be well below these values.

Vaginal premature delivery should occur in the least traumatic waypossible, considering the fragility of the fetus⁽⁵⁾. The episiotomy was introduced as routine in these deliveries, although in the absence of consistent scientific indications of its efficacy⁽⁵⁾, with the intention of preventing cerebral hemorrhages and reducing perinatal asphyxia. Nevertheless, as per a systematic review, there are no data that support the assertion that the liberal use of episiotomy minimizes fetal head trauma^(25,26). At the Normal Delivery Center [CPN] of HGIS, selective episiotomy is recommended, and normal deliveries are assisted by obstetric nurses who, if necessary, request medical evaluation.

The gestational age of the expectant mothers who gave birth at the same hospital where the births of this population happened, was also similar to that reported in other studies referring to prematurity⁽²⁷⁾.

Although the score given by the Apgar index for preterm newborns has restrictions, in the population studied, it was similar to that reported in other Brazilian studies on prematurity⁽²⁸⁾.

As to the destination of the newborns, data show that even though they are premature, most of this group of newborns was discharged from the hospital approximately 48 hours after birth.

There are various causes of newborn death, however, low birth weight, that is, weight under 2,500 g, is responsible for about 40 to 70% of neonatal deaths⁽²⁹⁾. In the present study, neonatal mortality was high. Nonetheless, the lack of prenatal care in a large number of patients, the number of newborns with very low weights, and the very number of patients in the small sample analyzed, may explain this result. On the other hand, one must consider that, possibly, high-risk pregnancies under 32 weeks of gestational age should be assisted in a tertiary hospital, with pertinent material and human resources. The causes of neonatal mortality reflect this situation. Therefore, the preventable causes could be avoided by adequate prenatal care.

This study had limitations. It is a diagnosis of a situation with a relatively small number of cases. However, the findings reflect the conditions of care of a CPN in a general hospital in which some data reflect good results, due to measures that can be adopted by other institutions with similar structures.

On the other hand, despite the many strategies used over the years for prevention or treatment of premature deliveries, they have not been effective. Until new strategies are found, efforts are concentrated on the prevention of neonatal complications, using corticoids to accelerate fetal pulmonary maturity, antibiotics to prevent certain maternal, fetal and/or neonatal infections, and careful management for a nontraumatic delivery. Multi-professional assistance, with active participation of the obstetrics nurse, upholds quality obstetric care, enabling the use of the technology necessary for each case, and thus promoting satisfactory care for the expectant mother and her child.

CONCLUSION

Although various factors were identified which predispose to premature deliveries, the 7.8% incidence of prematurity was similar to that of the State of Sao Paulo.

Assistance for premature deliveries at the CPN of the HGIS proved adequate in relation to the rate of C-sections, which was below the Brazilian average, and the non-performance of routine episiotomies.

Care of the newborn in the delivery room proved adequate. Neonatal mortality occurred primarily due to low-weight newborns.

ACKNOWLEDGMENTS

This project was subsidized by the National Council of Scientific and Technological Development (CNPq), Process No. 302556/2005-2.

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