Research Article ISSN 2689-1085

Journal of Pediatrics & Neonatology

Epidemiological, Clinical, Paraclinical, Therapeutic and Evolutionary Characteristics of Preterm Infants Admitted to Neonatology in a Hospital Located in the Suburbs of Dakar in Senegal

Ly F[1*], Keita Y[2], Niang B[3], Dia A[1], Diouf A A[4], Cissè D F[1], Diallo M[4], Sakho Kane A[1], Sarr F N[1], Diouf A[4] and Ndiaye O[3]

[1]*Pediatrics Department of Pikine National Hospital Center, Dakar, Senegal.*

[2]*Pediatric Department of Aristide le Dantec Hospital, Dakar, Senegal.*

[3]*Pediatrics Department of Albert Royer National Children's Hospital, Dakar, Senegal.*

[4]*Department of Gynecology Obstetric of the Pikine National Hospital Center, Dakar, Senegal.*

***Correspondence:**
Fatou Ly, Pediatrics Department of Pikine National Hospital Center, Dakar, Senegal, Tel: 00221776509950.

Received: 05 Jun 2022; **Accepted:** 12 Jul 2022; **Published:** 17 Jul 2022

Citation: Ly F, Keita Y, Niang B, et al. Epidemiological, Clinical, Paraclinical, Therapeutic and Evolutionary Characteristics of Preterm Infants Admitted to Neonatology in a Hospital Located in the Suburbs of Dakar in Senegal. J Pediatr Neonatal. 2022; 4(3): 1-8.

ABSTRACT

Introduction: *Prematurity remains a real public health problem in developing countries due to limited means of care. The aim of this study was to study the epidemiological, clinical, paraclinical, therapeutic and evolutionary characteristics of preterm infants admitted to neonatology at the Pikine National Hospital Center (CHNP).*

Material and Method: *This was a retrospective, descriptive and analytical study conducted within the NEONATAL UNIT OF THE CHNP. It took place over a period of five (5) years from April2014 to December 2018.*

Results: *The prevalence of prematurity was 13.47% with male predominance. The average age of mothers was 27.79 ±6.82 years. The average number of NPCs achieved was 3. Antenatal corticosteroid therapy was administered to 44 mothers. The pathologies most encountered during pregnancy were vasculorenal syndromes (63.89%) and multiple pregnancies (36.11%). The notion of UGI was noted in 12.03% of mothers. The notion of PMR was present in 32.6% of mothers. Half of the premature infants (62.73%) were admitted to the ward at less than 6 hours of life. The 1000-1500g category was the most represented (36.76%) as well as moderate prematurity (GA between 33 to 36 SA + 6d) i.e., 57.22% of cases. The main reasons for transfer were the management of prematurity in 88.10% of cases and respiratory distress in 28.57% of cases. Respiratory disorders were the most frequently reported clinical signs. Clinical diagnoses at admission were dominated by maternal-fetal infection (66.84%), hyaline membrane disease (25.13%) and perinatal asphyxia (10.96%). The average length of hospitalization was 13.90 ±10.60 and complications were found in 14.97% of cases. We noted a mortality of 29.41%. Factors associated with mortality were a number of (<0.001), a low APGAR score at M1 and/or M5 (p<0.001), low birth weight (p=0.000), high prematurity (p<0.001) and the occurrence of complications (p=0.001).*

Conclusion: *Our results attest that prematurity remain a real public health problem with a high prevalence and mortality in hospitals such as Pikine's CHN. Efforts should be made to improve the prognosis of preterm infants.*

Keywords
Prematurity, Morbidity, Mortality.

Introduction
Prematurity is a frequent reason for hospitalization in neonatal settings and a real public health problem in developing countries. Every year, 15 million children are born prematurely, i.e., more than one in 10 births worldwide. In France and in many developed countries, the frequency of preterm birth has been decreasing in recent years thanks to the implementation of preventive measures, improved collaboration between obstetricians and pediatricians, the creation of centers for premature babies and their equipment. However, there is an increase in induced prematurity [1]. In sub-Saharan Africa and South Asia, 60 per cent of births are premature with significant disparities**.** In Senegal, the rate of premature births is 10%, its prevalence is estimated at 7 to 8% of births [2].

It is responsible for 75% of early neonatal deaths, but also for distant morbidity. Indeed, it occupied the third place among the causes of neonatal mortality according to a study conducted in 2015 at the National Hospital Center of Pikine (NHCP) [3]. Survival rates show-striking inequalities from one country to another depending to socio-economic development. In low-income countries, half of preterm infants born at 32 weeks die due to a lack of incubators, an increased risk of nosocomial infections, and the unavailability of exogenous surfactant to manage the hyaline membrane disease to which very preterm infants are exposed, and all difficulties related to the feeding of preterm infants. In high-income countries, however, almost all these premature babies survive with a significant risk of long-term neurocognitive sequelae. Prematurity can be induced for medical reasons that can jeopardize the vital prognosis of the mother and/or the fetus, requiring termination of pregnancy [4]. It can occur spontaneously often related to genitourinary infections or maternal obstetric pathologies. Other factors such as unfavorable socio-economic conditions, young or advanced age of mothers, stress, and overload of physical labor of mothers in Africa are also involved. Based on this observation, we conducted a study whose purpose was to assess the management of premature newborns admitted to neonatology in the pediatric department of the NHCP. The objectives were to determine their epidemiological, clinical, paraclinical, therapeutic and evolutionary characteristics to improve their management.

Material and Method
Framework of the Study
The Neonatology Unit
Neonatology receives newborns from 0 to 28 days. It is composed of 3 units with a capacity of 27 places including 17 cradles and 10 incubators. "In born" newborns coming from the maternity of the hospital are admitted to the 2 neonatal units of the maternity and the pediatrics. While "out-born" newborns referred from different health facilities in Dakar and the suburbs are welcomed in the third neonatology unit of the pediatrics.

Staff
The staff of the pediatric service of the NHCP is composed of a chief of service who is a pediatrician, an assistant chief of clinic, four pediatricians hospital practitioners, twenty-six nurses including a major, seven caregivers, an administrative assistant, and a medical secretary. Each year, this service welcomes students enrolled in the Diploma of Special studies in Pediatrics and those in the 5th and 7th year of medicine.

Type of Study
This was a retrospective, descriptive and analytical study conducted in the NEONATOLOGY UNIT OF THE PNHC. It took place over a five (5) years period from April 2014 to December 2018.

Study Population
We have identified all the records of preterm infants admitted to the different neonatal units.

Inclusion Criteria
In this work, all premature babies were included, regardless of gestational age and their pathologies.

Non-inclusion Criteria
Premature babies with inoperable medical records were excluded from the study.

Data collection and Analysis
Data were collected from hospitalization records stored in the PNHC archives. The data was collected on a pre-established survey sheet using Microsoft Word 2016-word processing software and then modeled on Epi infos7 software for data collection. Thus, we collected: epidemiological data (age, sex, area of residence); anamnestic history and data (pregnancy monitoring, delivery process, provenance, transfer time); clinical data (state at birth, constant at admission, trophicity, maturity, clinical signs at admission, diagnosis retained); therapeutic data (ventilatory support, administered drugs, diet, SMK); evolutionary data (duration of hospitalization, complications, mortality and associated factors). The data entry was done with the software Epi info7 and the analysis with STATA version 15.1.

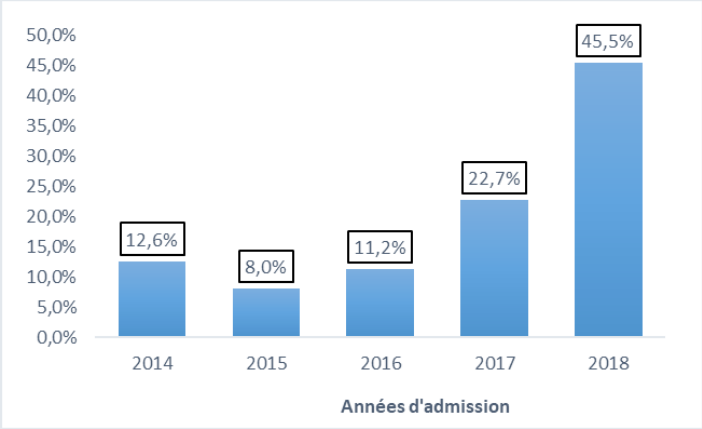

Figure 1: Distribution of preterm infants by year.

Results

Epidemiological and Socio-Demographic Data

During the study period, 384 preterm infants were admitted out of 2860 newborns, a prevalence of 13.47%. The number of preterm infants admitted was higher in 2017 (22.7%, n=85) and 2018 (45.5%, n=170) (Figure 1). The sex ratio was 1.08 with a slight male predominance. Almost all of them (98.30%, n=289) resided in the Dakar region and mainly in the suburbs (94.22%, n=175).

Anamnestic Data and Antenatal History

Age was reported among 368 mothers with an average age of 27.8 ± 6.82 years. Slightly more than 3/4 of mothers 78.53% (n=289) were aged 18-35 years. The average gestational age was 2.9 ± 2.01 gestations. Primigestes (31.15%, n=114) and paucigestes (40.16%, n=147) were more represented. The average parity was 2.74 ± 1.79 pare. Pauciparous (45.36%, n=166) and primiparous (28.14%, n=103) were also in the majority. Seventy-four (74) mothers (19.79%) had a history of abortion. The average number of abortions was 1.43 ± 1.16. High blood pressure (32.43%), sickle cell disease (18.92%) and diabetes (16.22%) were the main chronic maternal conditions. Maternal obstetric pathologies were dominated by scar uterine (51.52%) and dead egg retention (36.36%). More than half of mothers 67.38% (n=252) had pathologies during pregnancy. Vasculorenal syndromes (63.89%) and multiple pregnancies (36.11%) were the most common. Sixty-four-point three percent (64.3%) of mothers (n=236) had completed at least 3 prenatal visits (NPCs). The average number of NPCs was 2.8 ± 1.05. In addition, hepatitis B serology was positive in 6 patients (1.99%) and rubella serology in 4 patients (1.32%). The average number of ultrasounds was 1 ± 0.73. More than half of the mothers, 62.4% (n=222) had only one ultrasound. More than 3/4 of the mothers 76.40% (n=246) had a threat of preterm delivery. The number of doses of antenatal corticosteroid therapy received was reported in 44 mothers, of whom 30 (68.18%) received 1 dose and 14 (31.82%) received two doses. The notion of urogenital infection was noted in 45 mothers (12.03%), of whom more than half of 52.94% had not received treatment.

Prenatal History

Twenty percent (20%) of mothers had a premature rupture of membranes of more than 12 hours and a tinted amniotic fluid in 28.48% of cases. Delivery took place in most cases at the hospital in 87.25% (n=308) of cases and at the health center in 6.52% (n=23) of cases. However, 6 mothers (1.70%) had delivered at home. The presentation was cephalic in the majority of cases (72.66%). In terms of delivery route, 50% of preterm infants (n=185) were born by caesarean section. The birth cry was reported in 308 premature babies, of whom 214 (69.48%) had screamed at birth. Resuscitation at birth was recorded for 291 premature babies, 150 of whom had been resuscitated. Adaptation to extra-uterine life was reported in 325 premature babies at one minute of life and 326 premature at 5 minutes of life. Their APGAR score was less than 7 in 95% of preterm infants at M1 and in 32% at M5.

Admission Data

Inborns were the most represented at 87.4% (n=326). Newborns were more often referred to us from health centers and health posts. The most common reasons for referral were prematurity (88.10%) or respiratory distress (28.57%). The mode of transfer was indicated in 41 premature babies, 34 of whom had benefited from a medical transfer. More than half of preterm infants (62.73%) were admitted within 3 hours of birth, one quarter of them in less than an hour. Capillary blood glucose was reported in 330 preterm infants with an average of 0.84 ± 0.52 g/l. The temperature was reported in 357 premature babies with an average temperature of 35.65 ± 1.29 °C. Neuromorphological criteria were the main method used to determine the gestational age of preterm infants. More than half of 57.22% (n=210) had moderate prematurity; 34.8% (n=125) were very preterm infants and 8.72% (n=32) were very preterm infants (Figure 2). The mean gestational age was 32.62 SA ± 2.42. Trophicity was reported in 339 premature babies. More than half of 53.7 (n=182) had associated intrauterine growth retardation. The 1000-1500g category was the most represented (36.76%), followed by the 1501-2000g (34.89%) (Table 1). The average birth weight was 1568 ± 503 g. Respiratory disorders (81.07%), and metabolic disorders (63.37%) were the main clinical signs most frequently found at admission (Table 2). The different pathologies at admission were dominated by maternal-fetal infections (66.84%), hyaline membrane disease (25.13%) and perinatal asphyxia (10.96%) (Table 3). We have noted 171 cases of hyperleukocytosis and 23 cases of leukopenia. Anaemia was mild in 82 preterm infants, moderate in 18 and severe in 1 preterm infant. In addition, 64 cases of thrombocytopenia and 4 cases of thrombocyt have been reported. CRP was performed in 198 preterm infants (52.94%) with a positivity rate of 28.07% (n=105). Sixteen (16) cases of hypernatremia, 12 cases of hyponatremia, 9 cases of hyperkalemia and 5 cases of hypokalemia were identified.

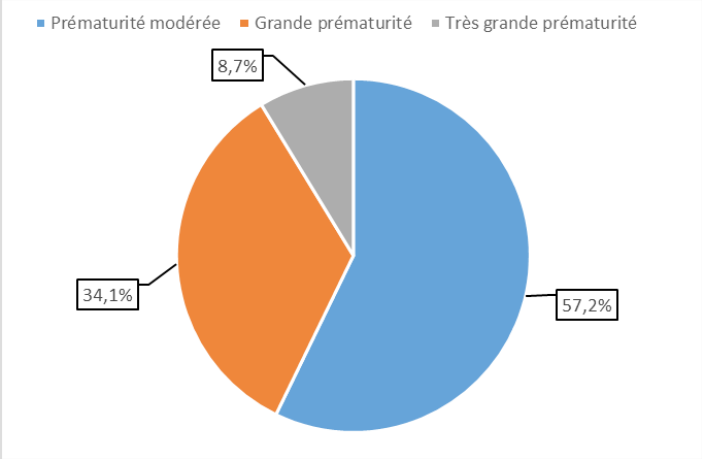

Figure 2: Distribution of newborns by degree of prematurity.

Table 1: Distribution of premature babies by birth weight.

Birthweight	Number	Percentage (%)
<1000	38	11,84
1000-1500	118	36,76
1501-2000	112	34,89
2001-2500	37	11,53
>2500 NP	16 63	4,98 16,4%
Total	384	100,00

Table 2: Distribution of premature babies by clinical signs at admission.

Clinical signs at admission	Number	Percentage (%)
Respiratory disorders	303	81,07
Metabolic disorders	237	63,37
Hypoxemia	144	38,50
Neurological disorders	70	18,72
Infectious syndrom	14	3,74
Hemodynamic disorders	6	1,60
Digestive disorders	5	1,33
Clinical anemia	4	1,07
Sero-blood bump	3	0,80
Infectious risk	3	0,80
Skin lesions	2	0,53

Table III: Distribution of premature babies by diagnosis at intake

Diagnosis at intake	Number	Percentage (%)
Materno fetal infection	**250**	66,84
Hyaline membrane disease	**94**	25,13
Perinatal asphyxia	**41**	10,96
Inhalation of amniotic fluid	22	5,88
Transient tachypnea of the born	17	4,55
Rearing of premature babies	10	1,60
Cardio-circulatory failure	5	2,67
Hypothermia	4	1,07
Jaundice	7	1,87
Infectious risk	4	1,07
Transfusion syndrome	4	1,07
Neonatal anemia	3	0,80
Incompatibility Rhesus	2	0,53
Digestive malformation	2	0,53
Obstetric trauma	2	0,53
Metabolic disorders	2	0,53

Therapeutic Data

Two hundred and ninety-six (296) (75.12%) of preterm infants had received oxygen therapy, 104 (35%) of whom were on simple oxygen spectacles and 192 (64%) on bCPAP. Antibiotic therapy was given to almost all preterm infants (95.99%, n=359). The most used antibiotics were, in order of frequency, 3rd generation cephalosporins (87.47%) associated with aminoglycosides (60.2%) and ampicillin (12.26%). 251 premature infants (67.11%) had benefited from other medications such as caffeine and blood transfusion. More than three quarters of preterm infants, (78.49%) were on mixed breastfeeding with an average introduction time of 61.17 ± 62.96 hours. Breastfeeding was exclusive (9.4%), artificial (12.1%) and mixed in most cases (78.5%). One hundred and twenty-nine (129) premature babies (40.95%) had received kangaroo mother care (KMC) with an average age of 9.74 ± 9.1 days and an average duration of 5.57 ± 4.12 days.

Scalable Data

The average length of hospitalization was 13.90 ± 10.60. The average weight at discharge was 1690 ± 545 g with an average weight gain of 108.58 ± 267 g per week. More than half of the preterm infants 60.70% (n=227) had a favourable outcome, only 2.14% (n=8) were transferred to another facility. The most frequent complications were ulcerative necrotizing enterocolitis (44.44%, n=28) and nosocomial infection (49.24%, n=31%).

We found an overall mortality rate of 21.36% (n=110) out of 515 recorded neonatal deaths and a mortality rate of 29.41% over all preterm infants admitted to neonatology during the study period. The average age at death was 6.7 ± 8.01 days. Deaths occurred mostly during the first week, especially at birth and on the second day of life (Figure 3). Respiratory distress (48.18%), multi-visceral failure (23.6%) and haemorrhage (23.36%) were the main causes of death in premature infants. Factors associated with mortality were number of NPCs<3 (p<0.001), APGAR score<7 at M1 and M5 (p<0.001), degree of prematurity (p<0.001), complications (p=0.000), low birth weight (p<0.001), ECU (p<0.001) and MMH (p=0.000) (Table 4).

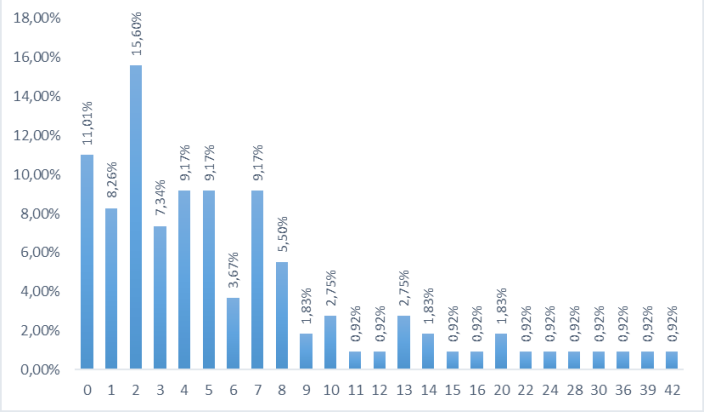

Figure 3: Distribution of premature babies by age at death.

Table 4: Factors Associated with Preterm Mortality.

Factors			Mortality				Total	P value	Or [IC à 95%]
			Oui		Non				
			N	%	N	%			
CPN number	<3 CPN		52	52,28	71	57,72	123	**<0,001**	**2,53 [1,58-4,05]**
Apgar	M1	< 7	66	39,29	102	60,71	168	**<0,001**	**2,98 [1,79-4,98]**
	M5	< 7	40	56,34	31	43,66	71	**<0,001**	**4,80 [2,75-8,38]**
Birthweight	Moins de 1000		33	86,84	5	13,16	38	**<0,001**	**16,5 [16,5-150]**
	1000-1500		47	39,50	72	60,50	119	**<0,001**	**4,92 [2,48-9,77]**
Degree of maturity	Grande		52	41,60	73	58,40	125	**<0,001**	**3,96 [2,36-6,65]**
	Très grande		22	68,75	10	31,25	32	**<0,001**	**12,24 [5,30-28,26]**
Hyaline membrane disease	Oui		46	48,94	48	51,06	94	**0,000**	**3,73 [2,25-6,16]**
Complications	Oui		25	44,64	31	55,36	56	**0,001**	**2,21 [1,2-3,9]**

Discussion

The hospital prevalence of preterm infants admitted to the neonatology department was 13.47%. This high prevalence not only shows that the CHN of Pikine is one of the main referral hospitals in the suburbs of Dakar where low birth weights infants from other health structures are referred; but it also has a maternity ward which directly admits inborn infants. However, this prevalence is underestimated, because it does not consider preterm infants born in the structure not admitted to neonatology.

On the other hand, it was significantly lower than that found by Gueye et al. in Senegal and Bobossi et al. in the Central African Republic with rates of 28.8% and 22.4% respectively [5,6]. Other studies reported rates close to 11.1% and 12% [7,8]. However, our prevalence was far higher than those of Cissé et al. in Senegal (2.8%) [9], Diallo et al. in Guinea-Bissao (4.35%) [10] and Amri et al. in Tunisia (2%) [11].

Concerning the maternal data, a history of abortion was found in 19.79% of the mothers compared to 11.3% in the study of Balaka et al. in Togo [7]. Indeed, multiparous women with a history of preterm delivery or late miscarriage have a 2 to 5 times higher risk of preterm delivery [12]. Diallo et al. in Senegal also found that the risk of prematurity was multiplied by 12 times in case of a history of stillbirth [10]. A history of chronic pathologies was reported in 8.56% of mothers, Diouf et al. reported the same finding [13].

These pathologies were dominated by hypertension and sickle cell disease. Indeed, the risk of preterm delivery would be higher in homozygous sickle cell pregnant women than in the general population [14]. The association of sickle cell disease and pregnancy is responsible for a high maternal and fetal morbidity. There are exchanges of bad processes between sickle cell disease and pregnancy, the latter being said to favor more vaso-occlusive crises, which lead to a premature birth in 14 to 15% of cases [15]. The same is true for chronic hypertension, which is widely recognized as a direct and indirect risk factor for prematurity, especially in cases of added preeclampsia. It was found in 9.7% of cases in the study of Gueye et al. in Senegal [6].

Among the maternal obstetrical histories, the scarred uterus occupied the first place. It is a factor of weakening and risk of uterine rupture, which explains the indication of caesarean section at the slightest sign of alert even if the fetal prognosis is engaged by this induced prematurity. A study on the impact of previous caesarean sections on the risk of prematurity revealed that caesarean sections performed during the second stage of labor would increase the risk of preterm delivery for a subsequent pregnancy by a factor of 6 [16]. For pregnancy follow-up, several NPCs<3 was statistically associated with mortality ($p<0.001$). Indeed, prenatal consultations are an opportunity to detect and prevent all complications that may occur during pregnancy and induce prematurity. According to Cissé, the frequency of NPCs is strongly correlated with prematurity.

In fact, he showed that 25% of women who had never undergone NPCs gave birth to a premature baby [9]. For Prazuck, the number of NPCs less than 3 was a predictive factor of prematurity (OR = 9.3; $p=0.001$) [17]. Urogenital infection was present in 12.03% of mothers in our study. Elsewhere, higher percentages have been reported in other studies conducted in Senegal by Diouf et al. (25%) [13]; and in Niger by Kamaye et al. (18.6%) [18]. Urogenital infection is strongly correlated with a risk of preterm birth even if its prevalence is often underestimated, because in most cases, it is often asymptomatic or poorly documented due to the lack of systematic screening for strepto B infection during pregnancy.

Maternal vascular pathologies were dominated by preeclampsia. Preeclampsia is recognized as a risk factor for prematurity, as it causes chronic hypoxia and stress in the fetus with a life-threatening prognosis if the fetus is not extracted before term [19]. The rate of preeclampsia found in our study was higher than that of Cissé et al. in Senegal (14.5%) and Kamaye et al. in Niger (15.1%) [9,18].

Twin pregnancies also represented 36.11% of obstetric pathologies. They increase the risk of preterm birth 8 to 12 times compared to monofoetal pregnancy [20] and more than 15 times before 35 weeks' gestation [11]. Berthelot et al. had shown that twin pregnancies represent a significant risk of preterm birth compared to single pregnancies [21]. The threat of preterm delivery was an important factor in our series. It is recognized as a risk factor for preterm birth. Berthelot also demonstrated this link: after hospitalization for the threat of preterm delivery, about one patient out of three had a preterm delivery in case of a single pregnancy. 6 multiply this risk if the pregnancy is twin [21]. More than a quarter of the mothers had experienced premature rupture of membranes (RPM).

Indeed, preterm deliveries occur in 20% to 45% of cases after RPM and despite tocolysis in 20 to 50% of cases [22]. Concerning the data at birth, in our study, there was a strong association between a low APGAR < 7 at M1 and/or M5 and mortality in preterm infants ($p<0.001$). Blondel et al. in France found that 75.5% of deceased preterm babies had an Apgar<7 [23] in t. The APGAR score shows perinatal asphyxia which is often the cause of high mortality in preterm infants who have neurological immaturity even if the AFN occurs most often in neonates close to term. Amri et al. reported this same observation [11]. This difficulty of adaptation can be explained by the immaturity of the major respiratory and circulatory functions and the fragility of the homeostasis control mechanisms in preterm infants [24]. In our study, 4.26% of births tookplace at home. This percentage, even if negligible, must be considered with great consideration, because home deliveries increase the risk of neonatal infections and favor the occurrence of complications that affect the vital prognosis of premature babies. All deliveries should take place in a medical setting to increase the survival rate of newborns. Regarding the means of transport used, although most premature babies had benefited medical transport, no newborn regardless of any gestational age should benefit non-

medical transport. The transfer time was relatively short, which is explained by the predominance of inborn in our study and the proximity of the neonatal unit to the maternity hospital.

Clinically, gestational age was determined in more than half of the cases by neuromorphological examination. These neuromorphological criteria compared to chronological and ultrasound criteria are more used in our daily practice, because most of the time women are illiterate and do not know their last menstrual date (LMD). They do their first NPCs after the first trimester and ultrasounds are often performed late [6]. The majority of newborns were in the category of moderate to large prematurity. In contrast, Aboussad et al. in Morocco reported a rate of 60.8% mild prematurity and 34.6% severe prematurity [25]. In our study, the latter category was strongly correlated with mortality ($p<0.001$), as large and very large preterm infants had respectively 4 and 12 times more chance of death than moderate preterm infants.

This is due to the immaturity of the major functions of preterm infants exposing them to respiratory, circulatory, neurological, and metabolic complications that often burden their vital prognosis. Intrauterine growth retardation (IUGR) was often associated with prematurity in slightly more than half of the cases. It is responsible for a high neonatal morbidity and mortality ($p<0.001$). As with maturity, preterm babies who weighed less than 1000 g or between 1000-1500g had respectively 16.5 times and 5 times more chance of death than others chance. This proves that birth weight is an important indicator of newborn survival. The crucial element in the obstetric management of the IUGR fetus is the choice of the most appropriate term of birth [26].

In this difficult choice, the risks of induced prematurity are weighed against those of continued exposure to an unfavorable intrauterine environment. There is also a probable relationship between hypotrophy and induced prematurity. This mechanism of inducing preterm labor would be related to a maturative advance of the hypotrophic fetus due to chronic stress. Other authors have found a frequent association between hypotrophy and prematurity [6,27]. Clinical signs at admission were dominated by respiratory distress. Indeed, the lower the gestational age, the more severe and frequent it is [28]. It is often due to pulmonary immaturity responsible for the hyaline membranes disease due to lack of surfactant production and favored by the absence of antenatal corticosteroid therapy.

Metabolic disorders were frequently reported. Indeed, due to their low reserves and skin immaturity, premature babies are exposed to hypothermia, hypoglycemia, and hypocalcemia. The diagnoses at admission were dominated by maternal-fetal infection and hyaline membrane disease. Indeed, neonatal infections are frequent in premature babies because of the immaturity of their immune system. They can cause or complicate prematurity and remain today a major cause of neonatal morbidity and mortality in developing countries [11].

From a therapeutic point of view, the management of the premature newborn is global. It aims to fight against thermoregulation disorders, to set up a strategy for the prevention and management of complications, and to initiate an adapted, effective, and well-tolerated diet.

In our study, nearly two-thirds of preterm infants had received bubble CPAP (bCPAP). This non-invasive ventilation method allows obtaining a positive expiratory pressure, to reduce the work of the respiratory muscles and to maintain the opening of the alveoli. It allows the management of preterm babies with respiratory distress, especially in MMH context, because exogenous surfactant is not available in developing countries due to high cost.

Most of preterm infants had received antibiotic therapy. Despite the susceptibility of preterm babies to infections, antibiotic therapy should not be systematic, and progress should be made on the respect of asepsis rules in birth rooms and neonatology units in our structures. The same is true for feeding which was mixed in most cases. This can be explained by the fact that the promotion of early breastfeeding and exclusive breastfeeding remains low in most facilities, particularly the CHN of Pikine where mothers are not involved in neonatal care. The benefits of breastfeeding on the neurodevelopmental and sensory prognosis of the preterm infant in the long term are no longer in question [29]. For kangaroo mother care (KMC), the average duration was relatively short at five days. This duration is very negligible, because the paediatric department does not yet have a KMC unit due to the limited space available. Preterm infants only receive temporary KMC. Our result is low, compared to that of Kamaye et al. in Niger (17 ± 8 days) [18]. In terms of evolution, the average length of hospitalization was 14 days. This relatively long duration is explained by the complications that often accompany prematurity and the high rate of very premature babies in our study. The average weight at discharge was 1690 ± 545 g, however, Amri et al. reported a higher average weight at discharge of 2010 g [8]. This average weight remains very far from what is accepted for a premature newborn however, the capacity of the neonatology units within our structure does not allow us to reach an optimal weight. The demand is much higher than the supply; not to mention the risk of developing a nosocomial infection linked to a prolonged hospitalization. However, premature babies are systematically reviewed as outpatients after delivery in the absence of any complication. The occurrence of complications was statistically associated with mortality ($p=0.001$). Indeed, preterm babies who had complications were 2 times more likely to die than others were. These complications were dominated by ulcerative necrotizing enter colitis and nosocomial infection, both of which are associated with high mortality. The mortality rate was 29.41% with a higher early neonatal mortality rate (73.3%) during the first week. This mortality was quite high compared to that of developed countries and reflects the efforts to improve the vital prognosis of preterm infants in developing countries. However, this rate is lower compared to the study of Koko et al. in Gabon of 39.8%

[30]. It is due, on one hand, to the transfer of premature babies in conditions that are often inadequate (non-respect of the heat chain, glucose, respiration, and asepsis rules) and, on the other hand, to a lack of human and material resources in our health care structures. The main causes of death found in our study were similar to those reported in the literature, dominated by respiratory distress and nosocomial infections [30].

Conclusion

Our results attest that prematurity remains a real public health problem with a high prevalence and mortality in hospitals such as the Pikine National Hospital Center. Efforts must be made to improve the vital prognosis of preterm infants through better collaboration between obstetricians-gynecologists and pediatricians, for a transfer in utero as soon as possible and the introduction of systematic antenatal corticosteroid therapy in case of a threat of preterm delivery to reduce the risk of complications related to prematurity. It is also necessary to improve the technical facilities of hospitals by providing CPAP and incubators among others.

References

1. Morisaki N, Togoobaatar G, Vogel JP, et al. WHO Multicountry Surveyon Maternal and New-born Health Research Network, fetal. Risk factors for spontaneous and provide r-initiated preterm delivery in high and low Human Development Index countries: a secondary analysis of the World Health Organization Multicountry Surveyon Maternal and Newborn Health. BJOG. 2014; 121: 101-109.
2. Profile of preterm and low birth weight prevention and care. Every Prime Scale. 2017.
3. Ly F, N diaye M, Ba LA, et al. Evaluation de la mortalité néonatale au CHN de Pikine de 2008 à 2012. Med Afr Noire. 2016; 63: 643-651.
4. Organisation mondiale de la santé. Qu'est-ce qu'un bébé prématuré? 2015.
5. Bobossi-Serengbe G, Mbongo-Zunda-moyen AN, Diemer H, et al. Les nouveau-nés de faible poids de naissance à l'unité de néonatologie du complexe pédiatrique de Bangui (RCA): devenir immédiat et pronostic. Med Afr Noire. 2000; 47.
6. Gueye M, Faye PM, Gueye Diagne NR, et al. Aspects épidémiologiques et évolutifs de la prématurité au Centre Hospitalier Abass Ndao de Dakar (Sénégal). Journal de la SAGO. 2011; 12: 7-12.
7. Balaka B, Baeta S, Agbere AD, et al. Facteurs de risque associéà la prématurité au centre hospitalier universitaire de Lomé (Togo). Bull soc Pathol Exot. 2002; 94: 208-283.
8. Wessel H, Cnattingius S, Bergstrom S, et al. Facteurs de risques maternels liés à la prématurité et au faible poids de naissance. Acta Obstet Gyneco Scand. 1996; 75: 360-366.
9. Cissé CTA, Tall Diaw C, Sow S, et al. Accouchement prématuré, épidémiologie et pronostic au centre hospitalier universitaire de Dakar (Sénégal) J. Gynécol Obstet Biol Reprod. 1998; 27: 71-76.
10. Diallo FB, Diallo MS, Sylla M, et al. Accouchement prématuré, épidémiologie, facteurs étiologiques, stratégies préventives. Dakar Med. 1998; 43: 70-73.
11. Amri F, Fatnassi R, Negra S, et al. Prise en charge du nouveau-né prématuré. J Pediatr Puéric. 2008; 21: 227-231.
12. Kazemier BM, Buijs PE, Mignini L, et al. Impact of obstetric history on the risk of spontaneous preterm birth in singleton and multiple pregnancies: a systematic review. BJOG. 2014; 121: 1197-1208.
13. Diouf B. Etude rétrospective sur les Entérorocolite ulcéro-nécrosantes du nouveau-né au centre hospitalier national de pikine. Dakar UCAD. 2017.
14. Levardon M, Seneze J, Thoyer-Rozat J. Conduite thérapeutique dans les grossesses drépanocytaires. Rev Fr Gynécol. 1975; 70: 629-624.
15. Omrani H, Bennis H, Wahbi H, et al. Drépanocytose et grossesse. Maroc Med. 2011; 33.
16. Levine LD, Sammel MD, Hirshberg A, et al. Does stage of labor at time of cesarean delivery affect risk of subsequent preterm birth? Am J Obstet Gynecol. 2015; 212: 1-7.
17. Prazuck T, Tall F, Roisin AJ, et al. Risk factors for preterm delivery in Burkina Faso (west Africa). Int J Epidemiol. 1993; 22: 489-494.
18. Kamaye M, Garba M, Mahamane Sani M, et al. Évaluation de la prise en charge du nouveau-né de faible poids de naissance par la méthode kangourou à la maternité Issaka-Gazoby de Niamey. J Pediatr Pueric. 2017; 30: 1137.
19. Fernandez Jonusas S, Ceriani Cernadas JM. The effects of arterial hypertension during pregnancy on birth weight, intra-uterin growth retardation and neonatal evolution. A matched-case control study. Ann Esp Pediatr. 1999; 50: 52-56.
20. Zeitlin J, Szamotulska K, Drewniak N, et al. Preterm birth time trends in Europe: a study of 19 countries. BJOG. 2013; 120: 1356-1365.
21. Berthelot-Ricouabe A, Turc S, Guidicelli B, et al. Étude pronostique du risque d'accouchement, des patients hospitalisées pour menace d'accouchement prématuré, dans une maternité de niveau III. J Gynecol Obstet Biol Reprod. 2013; 43: 600-609.
22. Senat MV, Tsatsaris V, Ville Y, et al. Menace d'accouchement prématuré. Encycl Méd Chir. 1999; 24: 213.
23. Blondel Breart G. Mortinatalité et mortalité néonatale: description facteurs de risque et évaluation des soins. EMC Obstétrique. 2004; 1: 97-108.
24. Lacaze-Masmonteil T. Prématurité et hypotrophie: épidémiologie, causes et prévention. In: Pédiatrie 2 Édition Michel Odievre. Paris: Doin éditeurs. 1999; 1-7.
25. Aboussad A, Maoulainine F, Ouattara L. P071 - Facteurs pronostiques de la mortalité chez le prématuré à Marrakech. Archives de Pédiatrie. 2010; 68.

26. Perrotin F, Simon EG, Potin J, et al. Modalités de naissance du fœtus porteur d'unRCIU. J Gynecol Obstet Biol Reprod. 2013; 42: 975-984.

27. Ndiaye O, Fall AL, Gueye Ba M, et al. Facteurs de risques associés au petit poids de naissance: à propos d'une étude cas-témoin à la maternité du centre hospitalier de Thiès (Sénégal). J Pediatr Pueric. 2006; 19: 153-158.

28. Lewis DF, Futayyeh S, Towers CV, et al. Preterm delivery from 34 to 37 weeks of gestation: Is respiratoiry distress syndrome a problem? Am J Obstet Gynecol. 1996; 174: 525-528.

29. Montjaux-Régis N, Gazeau M, Raynal F, et al. Allaitement maternel du prématuré. Arch Pediatr. 2009; 16: 8334.

30. Koko J, Dufillot D, Gabouma D, et al. Facteurs de mortalité des prématurés dans le service de pédiatrie de l'hôpital pédiatrique d'Owendo-Libreville (Gabon). Archiv Pediatr. 2002; 9: 655.

© 2022 Ly F, et al. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License