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Pediatrics in the Maternity Unit at the Teaching Hospital Gabriel Touré of Mali: Results of a Year of Activities

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Research Article

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Abstract

Introduction: Pediatrics in maternity unit is a particular mode of practice of neonatology, which cannot be reduced to the simple transposition, in an obstetric environment, of neonatal practice performed in a pediatric environment, let alone in a neonatal resuscitation environment.

Methodology: It was a retrospective study over 12 months from January 1st to December 31st, 2018. Data were collected from birth records, newborn resuscitation and newborn follow-up registers. The variables studied were the indication of the call for a pediatrician, the delivery route, the pediatrician's actions according to the ILCOR's recommendations, the reason for transfer to the neonatology and the fate of newborns.

Results: Over the year, 3168 deliveries were made, of which 38.16% (n = 1209) by caesarean section. The pediatrician was asked for 590 deliveries that led to the management of 641 newborns. The main reason for the calls was cesarean delivery (81.4%). The main indications for Caesarean section were severe pre-eclampsia (24.1%), eclamptic crisis (21%) and scarred uterus (16.4%). For the majority of newborns, or 63.6% (n = 408), the management stopped at phase A of ILCOR. It continued to phase B and C in 21.5% (n = 151) and 8.4% (n = 54), respectively. Resuscitation failure was observed in 10 newborns (1.6%). In 47.1% of cases (n = 302), neonates were transferred to the neonatal department. The main reasons for transfer were preterm birth (66.2%), perinatal anoxia (15%) and respiratory distress (4.6%). In neonatology, the mortality rate was 14% (n = 42)

Conclusion: The pediatric activity in the maternity unit has permitted the management of a large number of newborns from birth at Gabriel Touré Teaching Hospital. Its regular evaluation will improve it and ensure better survival of newborns.

Keywords: Pediatrician; Maternity; Resuscitation; Neonatology

Abbreviations: WHO: World Health Organization; DHS: Demographic and Health Survey; CHU: Centre Hospitalo Universitaire; ILCOR: International Liaison Committee on Resuscitation; UNICEF: United Nations Children's Fund.

Introduction

According to the World Health Organization (WHO), the global neonatal mortality is 19 per 1000 live births and accounts for 47% of all deaths in children under 5 years old [1,2]. However, progress in reducing the number of newborn deaths (those less than one month old) has been less impressive, since 7,000 newborns dye every day [3].

The newborns' chances of survival are closely related to the income level of the country in which they were born. In high-income countries, the average neonatal mortality rate is only three per 1,000 [1-3]. In contrast, low-income countries have a neonatal mortality rate of 27 per 1,000 [1-3].

In Mali, according to the Demographic and Health Survey (DHS VI) (2018), the neonatal mortality rate decreased from 46 per thousand in 2006 to 34 per thousand in 2012 and to 33 per thousand live births in 2018 [4].

The neonatology service of the Teaching Hospital Center (CHU) Gabriel Touré is the only national referral structure for the care of newborns in Mali where the mortality rate is very high. It was 40% in 2007 and 33.2% in 2008. The "In born" births were 14% up to 2013 [5,6] then 25% according to the latest statistics of the neonatology service [7]. Given these statistics, a pediatric service in maternity with a permanent presence of a pediatrician was set up. It is the first experience in Mali and one of the few in the subregion where care for the newborn in the maternity unit is done exclusively by midwives [8,9].

Pediatrics in maternity unit is a particular way of exercising neonatology, which cannot be reduced to simply transposing neonatal practice performed in obstetric service, let alone, in a neonatal resuscitation unit [10].

It is to evaluate this activity that this study has been conducted.

Methods

Our work was conducted at the maternity unit of the Obstetrics and Gynecology Department in the Teaching Hospital Center (CHU) Gabriel Touré. This service represents the last referral level for the care of pregnant women in Mali.

In collaboration with the neonatology department of the same hospital, the permanent presence of a pediatrician neonatologist assisted by a pediatric resident is ensured. This team of neonatology ensures the reception of the newborn in the birth room in case of indication as well as the follow-up of newborns at the maternity ward. The place of care for newborn after birth is equipped with a heating table with a device of pure oxygen without mixer. Management is based on the recommendations of the International Liaison Committee on Resuscitation (ILCOR) [11,12]. Phase D of the algorithm is not performed because of the available technical platform.

This was a 12-month retrospective study from January 1st to December 31st, 2018. Data were collected from birth records, newborn resuscitation, and newborn follow-up registers.

The variables studied were the indication of the call for pediatrician, the delivery route, the actions performed by the pediatrician, the motive for transfer to neonatology and the fate of newborns.

Results

During the study period, 3168 deliveries were made, of which 38.16% were caesarean sections. The pediatrician was asked for 590 deliveries (18.62%). Caesarean section accounted for 81.4% of the calls. The main indications were severe pre-eclampsia (24.1%), eclamptic crisis (21%) and scarred uteri (16.4%) (Table 1).

There were 02 quadruple pregnancies, 05 triplet pregnancies and 14 twin pregnancies, making a total of 641 newborns. Among them, 18 (or 2.9%) were stillborn. According to ILCOR recommendations, 408 newborns (or 63.6%) benefited from phase A; 151 (or 21.5%) of phase B and 54 (or 8.4%) of phase C. Ten neonates (1.6%) died despite resuscitation action (Table 2).

After birth care, 47.1% (302) of neonates were transferred to the service of neonatology. The main reasons for transfer were prematurity (66.2%), perinatal anoxia (15%) and respiratory distress (4.6%) (Table 3).

We have recorded a neonatal mortality rate of 14%. Prematurity was the leading cause of death (with 90.5%).

Indication	Number	Percentage
Severe pre-eclampsia	116	24.2
Eclamptic crisis	101	21
Scarred uterus	79	16.5
Fetal Suffering	54	11.2
Vicious presentation	22	4.6
Retroplacental Hematoma	20	4.2
Multiple pregnancies	14	3
Heart Disease / Cancer / Anemia	12	2.5
Cervical dystocia	11	2.3
Premature rupture of membranes	10	2.1
Fæto-pelvic disproportion	10	2.1
Anomalies of the pelvis	8	1.7
Placenta previa	7	1.5
Prolapse of the umbilical cord	5	1
Old Primiparous	4	0.8
Uterine rupture	4	0.8
oligohydramnios	3	0.6
Total	**480**	**100**

Table 1: Indication of call for pediatrician in case of caesarean section.

Gesture performed	Number (n=641)	Percentage
Phase A only	408	63.6
Phase A and B	151	23.5
Phase A, B and C	54	8.4
Failure of resuscitation	10	1.6

Table 2: Distribution of newborns according to ILCOR procedures.

Reason for transfer	Number	Percentage
Prematurity	200	66.2
Perinatal anoxia	45	15
Transient respiratory distress	14	4.6
Macrosomia	11	3.6
Malformations	9	3
Hypotrophy	6	2
Probable neonatal infection	5	1.6
Surveillance	12	4
Total	302	100

Table 3: Reasons for transfer to neonatology.

Discussion

In advanced countries, there are perinatal networks consisting of pediatrician neonatologists, resuscitators and obstetricians. The maternity pediatrician is then part and partial of the maternity staff. He is in charge of receiving newborn in the birth room, resuscitation, eventual transfer, treatment at the maternity unit and subsequent follow-up [12,13]. This organization of the management of newborn could explain the low rate of neonatal morbidity and mortality in the developed countries. In West Africa, pediatric service is not yet a daily activity in health centers. Twenty years ago, Ayivi B deplored the absence of this activity in Benin [9]. But again in 2016, Yalgado Ouédraogo CHU in Burkina Faso, no delivery was made in the presence of a neonatologist pediatrician [8]. In Mali, this activity started slowly in 2009 but the permanent presence of a pediatrician at the maternity ward was effective from January1st, 2018. This presence seems relevant since we found that the pediatrician was asked for 18.62% of deliveries. The development of this activity could increase the frequency of call for pediatrician. Indeed, in a structured pediatric system in maternity such as the CHU Poitiers in France, the call frequency is 30% [14].

Caesarean section was the main indication of pediatrician call. Vierne F reported that with forceps delivery, it represents three quarters of the activity of the pediatrician in the birth room [15].

In our context, the main indications for Caesarean section were complications of high blood pressure during pregnancy (severe pre-eclampsia and eclamptic crisis). This could be accounted for by the fact that CHU-Gabriel Touré maternity unit is the last referral level of health structure in Mali. High blood pressure is the leading cause of hospitalization of pregnant women and fetal death in utero [16,17]. In Madagascar, Rasolojatovo JDC describes the same situation [18].

According to ILCOR recommendations, Phase A consists of the control of hypothermia by drying and reheating, suction of airways, and vitamin K1 administration [9,12]. In Dakar, a study conducted among the maternity staff found out that drying was not systematic and that vitamin K1 administration was performed in 32% [19]. In Cameroon Njom Nlend had found that the peripheral health center workers administered vitamin K1 in 84.2% of cases [20]. During our activity, all newborns benefited from all stages of the phase A. This could strongly suggest that the presence of a

pediatrician among maternity staff can help improve immediate neonatal care.

Oxygen was administered in 23.5% of cases. In the series of Kinda B, 79.5% of newborns received oxygen [8]. At the CHU Gabriel Touré, we do not have an air-oxygen mixer, which leads to the administration of pure oxygen regardless of the level of oxygen saturation. Administration of high concentration oxygen can damage the lungs, interfere with brain perfusion and subsequent development of cancer [21]. All recommendations agree on the initial resuscitation with ambient air and the additional oxygen supply if the saturation remains insufficient [12,22]. According to the WHO, resuscitation can and should be conducted anywhere, including in areas where oxygen is not available [23].

Heart massage was performed in 8.4% of newborns. Some studies conducted in structures where a pediatrician is not present in the birth room report higher completion rates of external cardiac massage ranging from 19.3% [8] to 28% [24]. Would the pediatrician's presence make it possible to take care of most newborns before phase C?

We have recorded 1.6% of resuscitation failure. We do not perform Phase C of the ILCOR due to the availability of intubation equipment and appropriate drugs. The lack of equipment was reported in Burkina Faso by Kinda B where the death rate is closely 22.90% [6]. Our low rate compared to his could perhaps be explained by the presence of a pediatrician for the previous stages of resuscitation.

A transfer to the neonatology department was made in 47.1% of cases. The main reason was prematurity. In Poitiers, France, prematurity was also the main reason for transferring neonates to neonatology (84%) [15].

Of the newborns transferred to neonatology 14% died, including 90.5% prematurity. At the global level, the United Nations Children's Fund (UNICEF) reports that prematurity with complications at birth and infections are the leading causes of neonatal deaths [2]. This death rate remains lower than most of the results found in southern Africa of Sahara 22.9% in Burkina [8], 24.9% in Togo [25], 37.4% in Brazzaville Congo [26]. This difference could be explained by the presence of the pediatrician at the maternity unit in our study.

Conclusion

Pediatric activity in maternity unit is not common in West Africa. It has permitted the management of a large number of newborns from birth at CHU Gabriel Touré in Mali. Its regular evaluation will improve it and ensure better survival of newborns.

Conflicts of Interest: None

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