

Acute Fetal Asphyxia: Sociodemographic, Clinical, Therapeutic And Prognostic Characteristics in The Maternity Ward of The Ignace Deen National Hospital of The University Hospital of Conakry

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Abstract

Introduction: Acute fetal asphyxia due to its high frequency and the seriousness of the complications it causes, still remains today a major concern for neonatal health. The objectives of this study were to describe the sociodemographic, clinical characteristics and the management of the parturient concerned and to determine the immediate prognosis of the newborn.

Patients and Methods: This was a descriptive-type prospective cross-sectional study lasting 3 months from April 1 to June 30, 2022, carried out at the maternity ward of the Ignace Deen National Hospital of the University Hospital Center (CHU) of Conakry. Were included in the study, all parturient whose fetuses showed clinical signs of acute fetal asphyxia in the department during the study period. These were cases with meconium amniotic fluid associated with fetal bradycardia or tachycardia and all cases in which the Apgar score was less than 7/10 at birth.

Results: During the study period, we recorded 294 cases of acute fetal asphyxia (16 cases of twin pregnancies) in 278 parturient out of 1652 deliveries carried out in the department, i.e. a frequency of 17.7%. The average age of the parturient concerned was 26 ± 3.4 years. The unschooled (60.4%), married (83.8%) and those exercising a liberal profession (42.4%), nulliparous (49.6%) were the most numerous. Fetal bradycardia accounted for 81.2%. Amniotic fluid was stained in most cases (69.4%). In 100% of cases the Apgar score was less than 7 out of 10 at the first minute. There was inflation in the caesarean section rate (61.5%). In terms of therapeutic management, the clearing of the external airways (26.1%), ventilation with a manual insufflator for the supply of oxygen (24.4%) and external cardiac massage (28.23%) were the most frequently performed procedures.

Conclusion: acute fetal asphyxia is life-threatening for the newborn, improving the prognosis would necessarily go through better care conditioned by the improvement of emergency obstetric and neonatal care.

Key Words: Acute fetal asphyxia, Parturient, Ignace-Deen National Hospital, Conakry.

1. Introduction

Acute fetal asphyxia (AFA) is defined as a severe alteration of uteroplacental gas exchange leading to severe hypoxia and immediate respiratory acidosis, then to metabolic acidosis testifying to an alteration of fetal cell metabolism [1]. It causes difficulties in adapting to extra uterine life, estimated by the Apgar score at 1 and 5 minutes, which is manifested by serious complications which will result in cord blood acidosis, anoxic encephalopathy

and ischemic and/or by multiorgan failure of the fetus [2]. It is one of the main causes of morbidity and mortality in newborns in developing countries, with an incidence of 100 to 250 per 1000 live births, compared to 5 to 10 per 1000 live births in the developed countries [3].

In Guinea, a study on the risk factors and neonatal prognosis of acute fetal asphyxia in the gynecology-obstetrics department of

the Ignace-Deen university hospital center reported in 2018, 310 cases out of 2,997 deliveries, i.e. a frequency of 10.34 % [4].

The high frequency of this condition and its negative impact on the neonatal prognosis motivated the realization of this study, the objectives of which were to describe the sociodemographic, clinical characteristics and the management of the parturient concerned and to determine the immediate prognosis of the newborn.

2. Patients And Methods

This was a descriptive-type prospective cross-sectional study lasting 3 months from April 1 to June 30, 2022, carried out at the maternity ward of the Ignace Deen National Hospital of the University Hospital Center (CHU) of Conakry. Were included in the study, all parturient whose fetuses showed clinical signs of acute fetal asphyxia in the department during the study period. We're not included in the study, all those whose fetuses showed clinical signs of AFA and who did not agree to participate in the study.

We conducted an exhaustive recruitment of all cases meeting the inclusion criteria. These were cases with meconium amniotic fluid associated with fetal bradycardia or tachycardia and all cases in which the Apgar score was less than 7/10 at birth. The informa-

3.2. Sociodemographic Characteristics

Sociodemographic characteristics	Effectives (N =278)	Percentages
Age		
15 – 25	136	48.9
26 – 36	122	43.9
37 – 47	20	7.2
Extremes : 15 and 47years old		Average: 26 years±3.4
Profession		
Pupil / Student	65	23.4
Liberal	118	42.4
Housewife	67	24.1
Official	28	10.1
Education level		
No schooling	168	60.4
Superior	55	19.8
Secondary	31	11.2
Primary	14	5.0
Professional	10	3.6
Marital status		
Married	239	86.0
Single	21	7.6
Divorcee	18	6.4
Housing area		
Conakry	210	75.5
Outside Conakry	68	24.5

tion was collected by questioning, physical examination of parturient, examination of newborns and observation of their care. The parameters studied were the socio-demographic data of the mother (age, profession, level of education, marital status, origin and parity), clinical characteristics (prenatal consultation (PNC), pathologies discovered during the PNC, mode of admission, type of pregnancy, obstetrical parameters and mode of delivery), characteristics of newborns (birth weight, Apgar score, care and immediate outcome of newborns).

The immediate behavior of the child was assessed by the Apgar score. The data was collected from a survey form. The results were expressed as a percentage and as an average, analyzed using SPSS 21.0 software and presented in the form of tables and texts. Informed parental consent was obtained prior to inclusion of newborns.

3. Results

3.1. Frequency: During the study period, we recorded 294 cases of acute fetal asphyxia (16 cases of twin pregnancies) in 278 parturient out of 1652 deliveries performed in the department, i.e. a frequency of 17.7%.

Parity		
Nulliparous (0)	138	49.6
Primiparous (1)	69	25.0
Pauciparous (2-3)	51	18.3
Multipara (4-5)	11	3.9
Grand multiparous (6 and +)	9	3.2

Table 1: Distribution of parturient according to sociodemographic characteristics

3.3. Clinical features

Prenatal consultation	Effectives	Percentages
2 to 3 PNC	142	51.1
≥ 4 PNC	85	30.6
1 PNC	32	11.5
0 PNC	19	6.8
Pathologies discovered during PNC		
Anemia	74	26.6
hypertension and complications	30	10.7
Diabetes	14	5.0
HIV	7	2.5
Sickle cell disease	5	1.7
Asthma	4	1.4
Without pathology	179	64.3

Table 2: Distribution of parturient according to the prenatal consultation and the existence of a pathology discovered during the prenatal consultation (PNC).

During these prenatal consultations, 75.5% of patients received intermittent preventive treatment and 74.1% received tetanus prophylaxis. The presence of an infection was found in 69 parturient, i.e. 24.8%. Regarding the mode of admission, more than half of the parturient were evacuees (56.1%). The maternal state was satisfactory in 80.2%; unsatisfactory in 17.2% and impaired in 2.5%.

Obstetrical characteristics	Effectives	Percentages
Quality of uterine contractions (UC)		
Bad	153	55.0
Good	78	28.1
Absence of UC	47	16.9
Cardiac frequency		
Bradycardia (<120)	239	81.2
Tachycardia (>160)	55	18.8
Cervical dilation		
Incomplete	207	74.5
Complete	42	15.1
Closed collar	29	10.4
State of the membranes		
Intact	174	62.6
Ruptured membrane	104	37.4
Mode of rupture of the bag of waters		

Spontaneous	169	60.8
Artificial	109	39.2
Amniotic fluid color		
Meconium stained	193	69.4
Clear	84	30.3
Hematic	1	0.3
Amount of amniotic fluid		
Normal	254	91.4
Olygoamnios	14	5.0
Hydramnios	10	3.6
Type of presentation		
Cephalic	221	79.5
Seat	31	11.1
Transversal/oblique	28	10.1
Face	12	4.3
Forehead	2	0.72

Table 3: Distribution of parturient according to obstetrical characteristics

Dynamic dystocia was the most frequently encountered in our series, at 91.7%. Concerning the type of pregnancy, we recorded 262 parturient who carried a single pregnancy, i.e. 89.1%. The twin pregnancy rate was 10.8% with 16 cases.

Regarding the mode of delivery, 38.5% of vaginal deliveries were recorded, including 5.1% by suction cup against 61.5% by cesarean section.

Characteristics of the newborn	Effectives	Percentages
Apgar score at the 1st minute		
< 7	294	100
≥ 7	00	00
Apgar score at the 5th minute		
< 7	274	93.1
≥ 7	20	6.9
Apgar score at the 10th minute		
< 7	109	37.1
≥ 7	185	62.9
Newborn weight		
< 2500gr	279	94.9
≥ 2500gr	15	5.1

Table 4: Distribution of newborns according to their condition at birth

The care of newborns consisted in all cases of water restriction (60ml/kg), the systematic administration of vitamin K, In terms of therapeutic management, the clearing of the external airways (26.1%), ventilation with a manual insufflator for the supply of oxygen (24.4%) and external cardiac massage (28.23%) were the most frequently performed procedures.

The weakness of the technical platform did not allow us to perform an intubation followed by oxygen therapy.

3.4. Newborn Prognosis

Immediate become of the newborn	Effectives	Percentages
Stillborn	62	21.1
Died during hospitalization	19	6.4
Died during transfer to INSE	6	2.0
Alive	207	70.4

Table 5: Distribution of cases according to the become of newborns

4. Discussion

The frequency of acute fetal asphyxia was high in our series (17.7%). Fiangoa FO et al [5] reported a significantly lower frequency (6.05%). Diallo A [4] in the same department had reported a frequency of 10.33%. The high frequency in our series could be explained by the closure of the Donka National Hospital for its renovation and by the increased use of gynecology-obstetrics services at the National Ignace-Deen Hospital, which remains a reference structure of last resort and the low capacity for correct management of cases of acute fetal asphyxia in these level 2 maternity units (lack of neonatal-pediatric service).

The 15-25 age group was the most affected (48.9%). The average age in our series was 26 ± 3.4 years with extremes of 15 and 47 years. For Coulibaly O et al. the age group 18-30 years (69.5%) was the most concerned. Thiam L et al. reported that 82.0% of acute fetal asphyxia concerned mothers in the 18-35 age group [6,7]. These could be explained by the intensity of genital activity in these different age groups. Professional women represented 42.4%, housewife's 24.1%, they were married in 83% and had no schooling in 60.4% of cases.

Coulibaly O et al [6] reported that the majority of mothers were housewife's (76.6%) and they were married in 86.2%. The nulliparous were the most affected (49.64%). Diallo A et al. reported in the same department a high frequency in nulliparous (44.50%). Coulibaly et al. reported a frequency of 44.76% in primiparous [4,6]. Our result could be explained by the high frequency of dystocia in nulliparous.

More than half (51%) of cases of acute fetal asphyxia were found in parturient who performed 2 to 3 prenatal consultation. Thiam L et al. reported that 50.8% of cases of acute fetal asphyxia were found in mothers who had done at least 4 prenatal consultation [7]. Various studies have reported that parturient who have not done any prenatal consultation have a risk of acute fetal asphyxia multiplied by 2.5 compared to those who have done at least one prenatal consultation (OR= 2.52) [1, 2, 8-10].

A high number of prenatal consultations carried out by qualified personnel makes it possible to detect pathologies during pregnancy as well as the causes of dystocia.

The pathologies found during our study period are consistent with those found in the literature in sub-Saharan Africa [11,12]. In our

series, the most frequently encountered pathologies were maternal anemia (26.6%), arterial hypertension, and its complications (10.7%).

More than half (56.1%) of the patients were evacuees. Belinga et al. in Yaounde showed a high risk (38%) of fetal asphyxia among evacuees [13]. For Diallo A et al. when a parturient is referred or evacuated, the risk of acute fetal asphyxia is 5 times higher than in parturient coming directly from their home (OR= 5.06 [3.55-7.23]) [4]. This increased risk is related to the fact that it is parturient presenting or likely to present complications during labor who are subject to obstetrical evacuation or referral. Added to this is the fact that the decision to evacuate is often taken late and non-medical transport is not provided adequately.

Premature rupture of membranes was noted in 37.7% of cases and amniotic fluid was meconium in 69.4%. Thiam L et al. reported 68% of cases of meconium amniotic fluid in their study [7]. Our results are also comparable to those of Ouedraogo et al. in Burkina Faso who reported 71.8% of cases [14]. On the other hand, in other African studies, tinted or meconium amniotic fluid was found in 100% of cases [15].

Dynamic dystocia was the most frequently encountered (60.7%) and the onset of acute fetal asphyxia was frequently observed in cases of prolonged labor in a context of premature rupture of the membranes. Thiam L et al. found the same observation [7].

Concerning the mode of delivery, we noted in our series an inflation of the cesarean section rate (65.5%). Most of our parturient gave birth by Caesarean section because acute fetal asphyxia was most often diagnosed before complete cervical dilation preventing rapid extraction of the fetus through the vagina. For parturient who were at full cervical dilation with an engaged presentation, the vaginal approach was preferred, sometimes with the use of the suction cup.

All newborns had an Apgar score below 7/10 at the 1st minute of life and more than half had an Apgar score greater than or equal to 7/10 (62.9%) at the 10th minute. Thiam L et al. reported that 42.6% of newborns had an Apgar score < 7 at the 5th minute [7]. This result is lower than that of Okoko et al. in Congo Brazzaville (91.1% of newborns with an Apgar score < 7 at the 5th minute) [8]. The Apgar score is the most widely used diagnostic element in Africa [15].

With regard to care, resuscitation was provided by midwives and sometimes by doctors, intended to collect the newborn in a clean, dry and warmed cloth, to dry it quickly, to wrap in another cloth. Then proceed to clearing, tactile stimulation, ventilation with mask and bag and external cardiac massage. On the other hand, there was no intubation or administration of adrenaline let alone bicarbonate or other products due to the weakness of the technical platform. The same technique was performed by Ye et al. [16]. Thiam et al. in their study on perinatal asphyxia in Ziguinchor, Senegal reported that 100% of children had been aspirated at birth and 24.8% had been ventilated with a mask [7].

The neonatal lethality rate was 8.4% in our series. Stillbirths accounted for 21% of cases. Our neonatal lethality rate was higher than that (4.93%) reported by Munan et al in Lubumbashi [17].

5. Conclusion: Acute fetal asphyxia was frequent in our series. Improving prenatal follow-up, labor supervision, better training of providers in resuscitation in the delivery room and improving the technical platform of the neonatal resuscitation service could reduce the neonatal lethality rate, which is still very high in our structure.

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