**Determining the factor of good prognosis of vagina delivery of fetal macrosomia in N’Djamena Mother and Child University Hospital, Chad**

**Abstract**

**Background:** Fetal macrosomia is defined as a term weight greater than or equal to 4000g. Macrosomia represents a real public health problem in both developed and developing countries.

**Objective**: This work aims to determine the factors of good prognosis of the delivery of a fetal macrosomia.

**Patients and method:** This was a descriptive-analytical survey with prospective data collection, carried out in the delivery room of N’Djamena Mother and Child University Hospital (NMCUH) during the period from 1st January 2024 to 30th November 2024. All patients that had delivered fetuses≥ 4,000 g were included. The studied variables were clinical and prognostic. We used the p-value statistical test to compare the results.

**Results:** During the study period, we recorded 81 cases of macrosomia among 3,654 deliveries giving a frequency of 2.2%. Patients with a history of previous macrosomia delivery accounted for 53.1% (p=0.002). Fetus with cephalic presentation predominated with 96.3% (p=0.003), and the pelvis was normal in the majority of cases (80.2%) (p=0.001). The majority of parturients had given birth vaginally (64.2%). Newborns whose weight varied between 4,000-4,500g represented 75.3% and the Apgar score was 7/10 in 79%. Multiparity was significantly associated with vaginal delivery (p=0.009). In 49.4% of the delivery was by vagina for newborns weighing between 4,000 and 4,500g

**Conclusion:** Delivery of fetal macrosomia is frequent in our context. Multiparity, normal maternal pelvis and fetus with cephalic presentation are factors with a good prognosis for vaginal delivery.

*Keywords: macrosomia, good prognosis, NMCUH N'Djamena Chad*

**Introduction**

Fetal macrosomia is defined as a term weight ≥4000g. Compared with the delivery of a normal-weight newborn, maternal and fetal morbidity and mortality are increased in cases of macrosomia [1]. Macrosomia is a public health problem in both developed and developing countries. The prevalence varies in different countries, approximately 10%, but the latest analyzes describe an increasing trend, reaching 20% in developed countries. The World Health Organization (WHO) mentions that fetal macrosomia causes immediate morbidity and mortality, generating complications such as hypoglycemia, infection, birth trauma, respiratory distress, death, and admission to the neonatal intensive care unit likewise increased risk of cesarean section[22-24]  In Asia, it ranges from 4.1% depending on the province [2]. In America, great variations are also observed, ranging from 1.7% to 7% [3] The frequency of fetal macrosomia varies around the world. In France, according to the national perinatal survey, the rate of fetal macrosomia was 6.8% in 2016[4] In Africa, studies carried out in Algeria in 2017, Morocco in 2018 and Congo in 2019 reported respectively the prevalences of 6.3% [5], 5.18% [6] and 9.1% [7] respectively.

There are many fetal complications, the most frequent of which is shoulder dystocia, leading to elongation of the brachial plexus and irreversible sequelae secondary to perinatal asphyxia, or even death. Metabolically, neonatal hypoglycemia and hypocalcemia were observed. The main maternal complications were haemorrhage during delivery and traumatic cervix and -vagina tears [8].

Predisposing factors may be constitutional: maternal obesity, birth weight, racial factors, and sex of the fetus. They may also be acquired: multiparity, maternal age over 35 years, a history of fetal macrosomia, maternal weight gain, post-term, hydramnios and diabetes [8]. Many unfavourable foetal outcomes, including macrosomia, shoulder dystocia, birth traumas, hypoglycaemia in neonates, congenital defects, stillbirths, and occasionally elevated neonatal mortality and morbidity, were brought due to diabetes during pregnancy [19-21].

However, it is necessary to try to detect macrosomia during pregnancy, mainly by a simple examination and obstetric ultrasound, in order to propose appropriate management during delivery. The objective of this study is to determine the factors of good prognosis of the delivery of fetal macrosomia.

**Patients and method**

This was a descriptive analytical survey with prospective data collection, carried out in the delivery room of N’Djamena Mother and Child University Hospital (NMCUH) during the period from 1st January 2024 to 30th November 2024. ≥ 4,000 g were included.

The study included.

* All parturient with a newborn weight ≥4000g (or weight ≥ 10° percentile)
* Consenting parturient.
* Term ≥ 28 weeks of amenorrhea.

 Data were collected using a pre-established file. The studied variables were: clinical and prognostic. We used statistical tests such as p-value (p significant if < 5%) to compare data.

**Results and Discussion**

During this study, we recorded 81 cases of fetal macrosomia among 3654 deliveries, giving a frequency of 2.2%.

Age

Table I: age

|  |  |  |
| --- | --- | --- |
|  Age | n | % |
| < 20 |  7 |  8.6 |
| 20-29 | 32  |  39.5 |
| 30-35 | 25 |  30.9 |
| > 35 | 17 |  21.0 |
| Total | 81 |  100 |

The age group of 20-29 years represented 39.5%. The mean age was 28.3 ± 2.4 years, with extremes of 17 and 45 years.

**Parity and history of fetal macrosomia**

Multiparity was represented in 76.6%. (p=0.01). A history of fetal macrosomia was found in 53.1% (p=0.002).

**Fetal presentation**

Table II: presentation

|  |  |  |
| --- | --- | --- |
| Presentation  | n | % |
| Cephalic | 78 | 96.3 |
| Front |  1 |  1.2 |
| Face |  1 |  1/2 |
| Transverse |  1 |  1/2 |
| Total | 81 |  100 |

Cephalic presentation accounted for 96.3% (p=0.003)

**Type of pelvis and route of delivery**

The pelvis was normal in the majority of cases (80.2%). (p=0.001)

The majority of parturient delivered by vagina (64.2%).

Episiotomy was performed in 19.8% and 6.2% presented a perineal tear (p=0.2).

**Newborns at birth**

The majority of newborns had had a birth weight between 4000-4500g (75.3%) and in 3.7% the birth weight. The average weight of the newborns was 4,336g, with extremes of 4,000 and 5,590g.

Newborns with Apgar score ≥ 7/10 accounted for 79% at 1 minute and 5 minutes.

**Fetal complications**

Table III; Fetal complications

|  |  |  |
| --- | --- | --- |
| Fetal complications | n | % |
| Trauma |  3 |  3.7 |
| Hypoglycaemia | 12 |  14.8 |
| Perinatal asphyxia |  8 |  9.9 |
| Brachial plexus elongation |  2 |  2.5 |
| Stillbirth |  9 |  11.1 |
| Haemato-encephalon |  8 |  9.9 |
| None |  39 |  48.1 |
| Total |  81 | 100 |

Hypoglycemia was the most common fetal complication, accounting for 14.8%.

**Maternal complications**

Immediate postpartum haemorrhage was noted in 8.6% of maternal complications (p=0.01).

**Correlation between vaginal delivery and parity**

Table IV: Correlation between vaginal delivery and parity

|  |  |  |
| --- | --- | --- |
| Vagina delivery | parity | Total |
| primipara | multipara |
|  | No | n | 12 | 17 | 29 |
| %  | 14.8 | 21 | 35.8 |
| Manoeuvre | n |  4 |  8 | 12 |
| %  |  4.9 |  9.9 | 14.8 |
| Dystocie des épaules | n | - |  3 |  3 |
| %  | - |  3.7 |  3.7 |
| Expulsion spontanée | n |  3 | 34 | 37 |
| % |  3.7 | 42 | 45.7 |
|  Total | n |  19 |  62 | 81 |
| %  |  23.5 | 76.5 | 100 |

p=0.009. Multiparity is significantly associated with vaginal delivery.

 **Correlation between newborn weight and caesarean section**

Table: V: Correlation between newborn weight and caesarean section

|  |  |  |
| --- | --- | --- |
| Caesarean section done at the first stage of delivery | Newborn weight | Total |
| 4,000-4,500g | 4500-5000g | plus de 5,000g |
|  | Non | n | 40 | 12 | 2 | 54 |
| %  | 49.4 | 14.8 | 2.5 | 66.7 |
| Oui | n | 21 |  5 | 1 | 27 |
| %  | 25.9 |  6.2 | 1.2 | 33.3 |
| Total | n | 61 | 17 | 3 | 81 |
| %  | 75.3 | 21 | 3.7 | 100 |

p=0.92. In 49.4% of the delivery was by vagina for newborns weighing between 4,000 and 4,500g

**Correlation between caesarean section and parity**

Table: VI: Correlation between caesarean section and parity

|  |  |  |
| --- | --- | --- |
| Caesarean section at the first stage of delivery | Parity | Total |
| primipara | multipara |
|  | Non | n | 7 | 47 | 54 |
| %  | 8.6 | 58 | 66.7 |
| Oui | n | 12 | 15 | 27 |
| %  | 14.8 | 18.5 | 33.3 |
| Total | n | 19 | 62 | 81 |
| %  | 23.5 | 76.5 | 100 |

p=0.002

Multipara had delivered by vagina in 58%.

During this study, we recorded 81 cases of fetal macrosomia among 3,654 deliveries giving the frequency of 2.2%. This rate can be attributed to factors such as the morphology of the patients and the history of the pregnancy. Some pathologies, such as diabetes, can often cause fetal macrosomia.

According to the age, we noted that the age group of 20-29 was the most represented at 39.5%. The average age was 28.3 ± 2.4 years. Other authors such as Ndiaye in Senegal [10] and Bitwe [7] in DRC reported a similar average age of 28 and 29 respectively. This result showed that age can play an important role in the genesis of macrosomia.

Concerning clinical aspects, we noticed, that multiparity is classically considered to be a factor favoring the occurrence of fetal macrosomia [7,9]. This study confirms this finding, with 76.6% of multipara women. This result differs from that of Li [2] which reported a proportion of multipara of 12.71%. Our result is similar to the literature data which shows that multiparity multiplies by 2 the relative risk of the occurrence of fetal macrosomia [2,7,10,11]. Then multipara women are predisposed to have a child by increasing the fetal weight.

In terms of delivery mode, 64,2%% of babies were delivered vaginally compared with 35.8% by caesarean section. This predominance of vaginal delivery is reported by all authors in the literature [7,8,10,12]

 Fetal macrosomia is a risk factor for neonatal morbidity linked to the mechanical problems of delivery to which fetal macrosomia is exposed [13]. In this study, the majority of newborns had had a birth weight between 4000-4500g (75.3%) and the average weight of the newborns was 4,336g, with extremes of 4,000 and 5,590g. This high risk of delivery exposes the mother to perineal tears, justifying preventive episiotomy. With regard to maternal complications, in this series we observed an episiotomy rate of 6.2%. This high risk of episiotomy was even greater when the weight reached or exceeded 4250g. The second reason is that episiotomy is a procedure performed to prevent perineal tears. Indeed, in the presence of a narrow perineum, the only way to avoid perineal tears is to systematically perform an episiotomy.

According to maternal complications, we noted in this study that 8.6% of patients had presented an immediate post-partum haemorrhage. This result could be explained on the one hand by the uterine distension caused by macrosomia, and on the other hand by the lack of follow-up during the pregnancies. No maternal deaths related to macrosomia were recorded during the study period.

 As regards the condition of the newborns, we recorded a rate of 79% of newborns with an APGAR > 7/10 at 1 minute and 5 minutes. According to the literature [14-18], macrosomia is a factor that increases neonatal morbidity. This morbidity can be manifested by hypoglycemia, which represented 14.8% in this series, followed by stillbirths (11.1%) and perinatal asphyxia (9.9%). N'Diaye [10] found 12% of perinatal asphyxia. This neonatal mortality seems to be linked either to poor monitoring of high-risk pregnancies, such as diabetic pregnancies, or to delays in evacuation from peripheral health facilities.

In studying the relationship between parity and mode of delivery, we found that most multiparous women (58%) had vaginal deliveries. These results are similar to those reported by Bitwe [7] and Fatnassi [8], who found a high rate of vaginal delivery in multiparous women. These results could be explained by the fact that multiparous women have delivered many times and their pelvis can allow the delivery of fetal macrosomia. Comparing the correlation between fetal weight and delivery, we noted a p= 0.92. This can be explained by the fact that the determining factor in the vaginal delivery of fetal macrosomia is the maternal pelvis and parity. Then patients with a good pelvis and with a previous history of fetal macrosomia can deliver easily babies weighing ≥4000g.

**Conclusion**

Fetal macrosomia delivery is frequent in our context. Vagina delivery is always possible, although it can be performed with significant morbidity and mortality in neonatal and maternal. Multiparity, a normal maternal pelvis and a cephalic fetus presentation were noted as factors of good prognosis of vagina delivery.

**COMPETING INTERESTS DISCLAIMER:**

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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Details of the AI usage are given below:

1.

2.

3.

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