J Pediatr Perinatol Child Health 2021; 5 (1): 039-045 *DOI: 10.26502/jppch.74050061*

Research Article

Prognosis of the End of Obstetrical Newborn-Born to EHS Nouar Fadela "Preliminary Results"

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Received: 09 February 2021; **Accepted:** 25 February 2021; **Published:** 05 March 2021

Citation: Bouabida D, Zelmat S, Belalaoui I. Prognosis of the End of Obstetrical Newborn-Born to EHS Nouar Fadela "Preliminary Results". Journal of Pediatrics, Perinatology and Child Health 5 (2021): 039-045.

Abstract

Introduction: Performing a cesarean section at term or near term disrupts the normal cardiorespiratory adaptation of the newborn.

Objective: To study the neonatal prognosis of the delivery of newborns.

Materials and Methods: This is a cross-sectional, descriptive and analytical study; carried out at the "Nouar Fadéla neonatal service" during the period from April 15, 2015 to March 15, 2017 inclusive. The study looked at risk factors, the mode of delivery and perinatal complications.

Results: 6741 deliveries were performed. 889 newborn mothers were included in this study. For maternal characteristics: on average, mothers were 30 ± 5.70 years old and had a BMI of 27.4 ± 4.9 kg/m^2. The upper route was the main outcome of the delivery of macrosome newborns. For the characteristics of newborns: the birth weight (PN) varied between 4000 gr and 5900 gr with an average PN of: 4172 ± 339 gr. Neonatal morbidity by route of delivery is dominated respectively by: hypoglycemia in 19.3%; deep hematomas in 3.8% and brachial plexus palsy (PPB) in 2.1%. Lethality was noted in 0.9% of cases.

Conclusion: The vaginal delivery is the main mode of delivery. However, shoulder dystocia is the main complication requiring management of childbirth by experienced obstetricians.

Keywords: Cardiorespiratory adaptation; Pregnancy; Obstetrical newborn; Delivery

1. Introduction

Performing a cesarean section at term or near term (especially before labor) is a clearly identified risk factor for the onset of respiratory distress in the newborn. This way of delivery disrupts the normal cardiorespiratory adaptation of the newborn objective: to study the neonatal prognosis of macrosome delivery.

2. Methods

Retrospective and analytical descriptive study including 324 macrosomes at term during the period from January 1, 2015 to December 31, 2015 at the neonatology department of EHS NOUAR FADELA. The study looked at risk factors, mode of delivery as well as fetal perinatal complications. We compared these results to the results of a eutrophic full-term birth weight control group during the same period. Variable analysis was performed using SPSS version 9.0 software. The results were expressed as mean ± standard deviation. The student test to compare the means. The differences observed are considered significant when p was less than 0.05.

3. Results

On average, the mothers were 30 ± 5.70 years old; measured 1.63 m ± 6.49; the mean term of 38.82 ± 1.31, parity of 2.32 ± 1.18 and BMI of 27.45 ± 4.96 kg/m^2. During pregnancy, they gained an average of 9.99 ± 7.43 kg with significant differences.

Mothers Characteristics	**Macrosomes N = 425 average**	**No Macrosomes N = 464 average**	**Meaning Threshold P**
Age: Years	30.60 ± 5.7	30.08 ± 6.30	**NS**
Medium Term (Sa)	38.82 ± 1.3	38.57 ± 1.18	**0.003**
Parity	2.32 ± 1.1	2.00 ± 1.09	**<0.0001**
Weight Before Pregnancy (Kg)	73.64 ± 13	67.47 ± 12.5	**<0.0001**
Size (cm)	163.85 ± 6.4	162.39 ± 6.25	**= 0.001**
Bmi (Kg/m^2)	27.45 ± 4.9	25.56 ± 4.50	**<0.0001**
Weight During Pregnancy (Kg)	83.63 ± 14	76.36 ± 13.0	**<0.0001**
Weight Gain (Kg)	9.99 ± 7.4	8.89 ± 6.29	**= 0.018**

Table 1: Maternal characteristics.

ATCD	**Macrosomes N = 425**		**No Macrosomes N = 464**		**OR [95% CI]**	**Meaning threshold P**
	NOT	**%**	**NOT**	**%**		
Abortion (Abrt)	69	16.2	60	12.9	1.3 [0.89 - 1.89]	NS
Death in utero (MIU)	19	4.5	22	4.7	0.93 [0.5 - 1.76]	NS
Gestational Diabetes	88	**20.7**	48	10.3	**2.26 [1.54 - 3.31]**	**<0.0001**
Chronic diabetes	23	**5.4**	10	2.2	2.59 [1.22 - 5.52]	**0.01**

Arterial hypertension (hypertension)	79	18.6	72	15.5	1.24 [0.87 - 1.76]	NS
Macrosomia history	170	**40.0**	53	11.4	**5.18 [3.66 - 7.29]**	**<0.0001**

Table 2: Maternal ATCD.

The antecedent of macrosomia (40% versus 11.4%): (p <0.0001) is the most characteristic antecedent in our studied population with a risk multiplied by 5.18 with a significant difference (P<0.0001) follow-up of gestational diabetes (20.7% vs 10.3%): p < 0.0001 and chronic diabetes (5.4% vs 2.2%) (p = 0.01).

3.1 Characteristics of New Born

The male sex (72.9%) is more frequent than the female sex (27.1%). This difference is statistically significant with (p <0.0001) compared to eutrophic NNs with a relative risk multiplied by 2. The birth weight (PNN) varied between 4000g and 5900g with an average PNN of: 4172 ± 339 gram vs the birth weight of the controls varied between 2380g and 3800g with an average PNN of: 3296 ± 278 gram (p <0.0001). The mean bw of macrosome newborns was: 35.82 ± 1.26 vs. controls was 34 ± 1.10 cm (p <0.0001). The mean size of the newborn macrosomes was: 51 ± 2.31 cm vs the controls was 48.7 ± 2.12 cm (p <0.0001).

3.2 Evolution of Labor and Decision of the Method of Delivery

The majority of deliveries of NN macrosomes were by the upper route, i.e. 314 cases (73.3%) vs. 111 cases (26.1%) by the base route with a significant difference (p = 0.005) (Table 3).

3.3 Complications of Nn in Relation to the Path of Delivery of Macrosomes

In the low route, compared to the high route outcome; traumatic complications are dominated in macrosomes by brachial plexus palsy (p = 0.042) followed by BSS (p = 0.01) (Table 4).

Macrosomia	**Yes NOT(%)**	**No NOT(%)**	**Meaning Threshold P**
HIGH	314	305	**0.005**
	73.3%	71.6%	
LOW	111	159	
	26.1%	36.5%	

Table 3: Distribution of newborns by route of delivery.

Route of Delivery			
Complications	**High channel Basic channel N (%)**		**Meaning threshold P**
Hypoglycemia (<0.40 gr/l)	64 (20.4)	18 (16.2)	NS
Hypocalcaemia (<80 mg/l)	6 (1.9)	1 (0.9)	NS

Hyperbilluribenemia	29 (9.2)	16 (14.4)	NS
Polycythemia	1 (0.3%)	0 (0)	NS
Perinatal Asphyxia	44 (14)	10 (9)	NS
Respiratory Distress	34 (8)	8 (1.8)	NS
Hypertrophic Cardiomyopathy (CMH)	3 (1)	0 (0)	NS
Brachial Plexus Palsy (PPB)	4 (1.3)	**5 (4.5)**	**0.042**
Clavicle Fracture	2 (0.9)	**1 (0.6)**	**NS**
Humeral Fracture	4 (1.3)	**1 (0.9)**	**NS**
Serum Blood Lump BSS	21 (14.4)	**16 (6.7)**	**0.01**
Hematomas	12 (3.8)	**4 (3.6)**	**NS**
Death	2 (0.6)	**2 (1.8)**	**NS**

Table 4: Complications of NN over the route of delivery of macrosomic.

4. Discussion

Our hospital prevalence is 6.3%. Our results remain close to those found by the majority of studies; on the other hand, some authors report a higher frequency [1, 2]. This increase may be linked to a higher maternal weight gain during pregnancy, to the increase in the frequency of maternal obesity and diabetes, and diet. However, other authors report a lower frequency, especially in African countries. These variations in frequency between series could be explained by: the size of the sample, insufficient follow-up, lack of healthy lifestyle during pregnancy as well as low socio-economic level [3, 4]. Compared to literature data, age and multiparity were not statistically significant as a risk factor in our study. Exceeding the term was observed in 32% of mothers with emacrosomes, which is consistent with most studies. This can be explained by: lack of an early ultrasound for dating the pregnancy, imprecision of the date of the last period and the irregular nature of prenatal consultations [1, 5, 6]. As for the 25% rate of obesity cases found in our series, it is similar to that observed in the literature [7]. And the risk of giving birth to a macrosome is multiplied by 2 in pregnant women who are overweight and obese. While in the literature this risk is multiplied by 3 with a weight gain interval varying between 12-18 Kg [8]. In our series, the weight gain was 15 kg and the risk is multiplied by 2. The excessive weight gain can be explained by a modification of the maternal metabolism because it is dependent on food, thus explaining the macrosomia by anabolism [9, 10].

Regardless of the type of diabetes, our results match those of the literature, but the percentage of gestational diabetes in our series is higher compared to studies. This can be explained mainly by the ethnic and genetic variations of the populations, but also, to a lesser extent, by the diversity of the strategies and screening methods used [9, 11] the antecedent of macrosomia is the most implicated factor. However, its pathophysiology has not yet been elucidated, which confirms that a woman who has given birth to a macrosome most often recurs with a risk multiplied by six (OR = 6). And in our series , this is multiplied by 4 [11-13].

Male predominance has been reported by most authors, with a relative risk multiplied by 2, and our results agree with most studies. For this, hypotheses have been proposed to explain why girls are born lighter than boys. Wilkin and Murphy have suggested that the gender

specific genes affecting insulin sensitivity are responsible for the difference between the birth weights of the two sexes [14-16]. According to them, the female fetus is genetically more resistant to insulin and less sensitive to the trophic effects of insulin and is therefore smaller [11, 17, 18, 19]. The majority of macrosomal childbirths were eutocic (73.9% vs. 65.7% controls) via the upper route with a significant difference. This rate of cesarean section in the macrosome group is high compared to that found by most studies, therefore, macrosomia increases the risk of cesarean section (p = 0.005). This rate varies according to the studies [20, 21, 22]. As evidenced by the majority of Moroccan series, the delivery of a macrosome is first spontaneous.The use of forceps is rare, unlike in European and American countries, where the use of forceps is more frequent [20, 23-24].

The morbidity and neonatal mortality of newborns macrosomes related to the delivery route:

Our results had shown a significantly higher rate of cesarean section in mothers of macrosomes than in mothers of eutrophic patients 73% vs 49.3% statistically significant (p = 0.005). This rate of cesarean section in the macrosome group is identical to that found in the literature [24, 25]. Cesarean sections were in 95 (30.1%) prophylactic cases for estimated fetal weight (3900-5300g). This attitude aims to reduce fetal morbidity by some authors [26, 27]; while several studies have shown that vaginal delivery is a more reasonable alternative to elective caesarean section [28]. The American College of Obstetric Gynecology has suggested carrying out a prophylactic cesarean delivery for any suspicion of macrosomia with PFE ≥ 5000g in non-diabetic women and ≥ 4500g in cases of diabetes [29].

In our study, the upper pathway in macrosomes is dominated by metabolic complications, namely hypoglycemia 64 cases (20.4%) followed by perinatal asphyxia 44 cases (14%), and respiratory distress 34 cases (8%). Complications according to the low channel is at the macrosomic are dominated s by traumatic complications such as paralysis of the brachial plexus 5 cases (4.5%) and blood serum bump (6.7%). The neonatal morbidity linked to the delivery of a macrosome is not negligible. It is dominated by lesions of the brachial plexus (p = 0.042) and sero-blood bumps (p = 0.01). The latter are formidable and quite frequent in our series. They reflect the existence of a fetopelvic disproportion. This is in line with the results found by other authors. This morbidity seems to be linked to a lack of early management of high-risk pregnancies, especially in cases of fetopelvic disproportion. Added to this is the delay in evacuations from peripheral centers and the quality of prenatal consultation.

5. Conclusion

Vaginal delivery is the primary mode of delivery in macrosomia. There is no indication for systematic caesarean section in the event of a fetal weight exceeding 4 kg. However, shoulder dystocia constitutes the main neonatal complication of childbirth by natural means requiring childbirth management by experienced obstetricians.

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