

Newborn of a diabetic mother result of investigation at the neonatology department of Constantine University Hospital “6-month retrospective study”

S Hadjit*, R Bourgheda, MT Tercha, N Zerrouki, H Boumaraf

lecturer B in Pediatrics.

*Correspondence Author: S Hadjit, lecturer B in Pediatrics.

Received Date: November 06, 2024 | Accepted Date: December 11, 2024 | Published Date: January 13, 2025

Citation: S Hadjit, R Bourgheda, MT Tercha, N Zerrouki, H Boumaraf, (2025), World Class Iraqi Pediatric Experiences: Bridging Modern Excellence with Mesopotamian Legacy, *Clinical Trials and Case Studies*, 4(1); DOI:10.31579/2835-835X/099

Copyright: © 2025, S Hadjit. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract:

Introduction: Infants born to “NDM” diabetic mothers are exposed to a significantly higher risk of perinatal morbidity and mortality. The objective of this study is to describe the epidemiological aspect of NDM, evaluate the morbidity of NDMs and identify the main maternal and neonatal risk factors.

Materials And Methods: Retrospective survey with a descriptive and analytical aim of NDMs hospitalized in the neonatology department of CHU Constantine from 01/01/22 to 30/06/22. Newborns who died were excluded from the study.

Results: Among 4135 births surveyed, 321 (7.76%) cases of NDM. 90% gestational diabetes, 7.7% chronic diabetes and 2 cases of corticosteroid-induced diabetes. Associated maternal pathologies: pregnancy-related hypertension 15.9%, chronic hypertension 7.2%, preeclampsia 5.2%, dysthyroidia 5.3%, urogenital infection 4.1% and Antiphospholipid syndrome 1.9%. 95% of pregnancies monitored. 78.1% high births. 55.1% male and 44.9% female. 74.2% full-term born, 25.8% premature, 76% had a birth weight between 2500-4000g. 93.7% NDMs admitted. Neonatal complications: respiratory distress 30.9%, infection (maternal-fetal, nosocomial) 14.3%, jaundice 14%, ICH 11.5%, macrosomia 10.2%, perinatal asphyxia 4.7%, malformation syndrome 4%, hypoglycemia 3.1%, hemorrhagic syndromes 2.5% and 2% hypertrophic cardiomyopathy. The average length of hospitalization was 10.5 days.

Conclusion: NDM remains a child at risk. Efforts must be focused on balancing maternal diabetes. Thus, improving the maternal-fetal prognosis will require the involvement of a multidisciplinary team before conception, during pregnancy and childbirth, and postpartum.

Keywords: diabetes; pregnancy; macrosomia; neonatal complications

Introduction

Babies born to diabetic mothers are exposed to a significantly higher risk of numerous complications: congenital malformation, perinatal mortality, prematurity, macrosomia, fetal trauma, respiratory distress, metabolic disorders (hypoglycemia, hypocalcaemia, hyperbilirubinemia, etc.) [1-2].

The prognosis of these newborns can be improved thanks to better management based on pregnancy programming with normoglycemic conception and rigorous monitoring by multidisciplinary collaboration [2].

Objective

Describe the epidemiological aspect of newborns of diabetic mothers (NDM).

Evaluate the morbidity of NDM.

Identify the main maternal and neonatal risk factors.

Materials and Methods

Retrospective survey with a descriptive and analytical aim of NDMs hospitalized in our department from 01/01/22 to 30/06/22, using a pre-established form which provides information on the characteristics of newborns maternal history, the progress of pregnancy and childbirth.

Deceased newborns are excluded from the study. The statistical analysis of the collected data was done using Excel.

Results

Among 4135 births surveyed, 321 (7.76%) cases of NDM.

1.1. Characteristics of mothers

1.1.1. Maternal diabetes

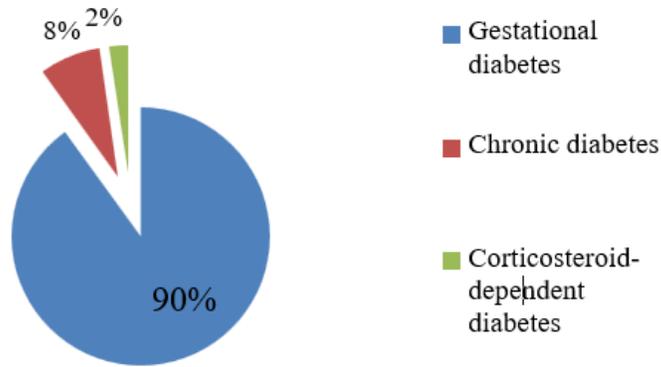


Figure 1: Distribution of the population according to maternal diabetes

1.1.2. Associated maternal pathologies

Anti-phospholipid syndrome	1.9
urogenital infection	4.6
Dysthyroidism	5.3
Preeclampsia	5.2
Chronic hypertension	7.2
Pregnancy-induced hypertension	15.9

Figure 2: Distribution of the population according to maternal pathologies

1.1.3. Course of pregnancy and childbirth

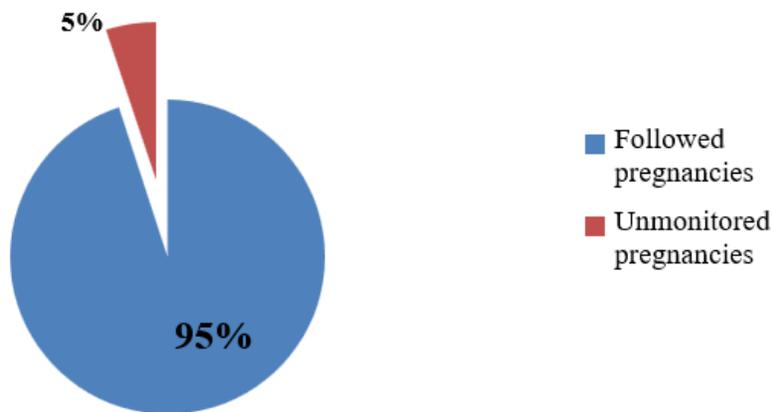


Figure 3: Distribution of the population according to pregnancy monitoring

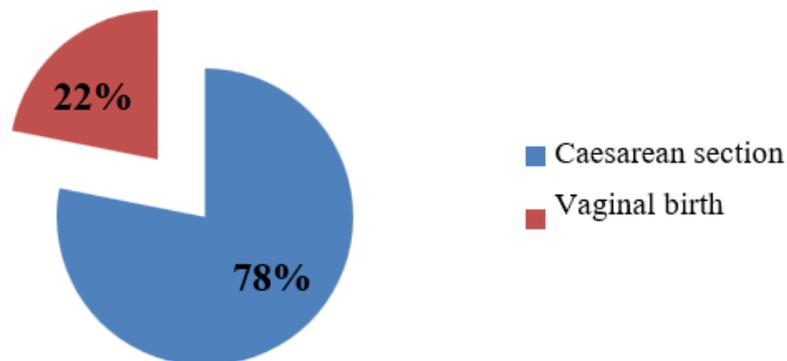


Figure 4: Distribution of the population according to route of delivery

1.2 Characteristics of newborns

1.1.1. Gestational age

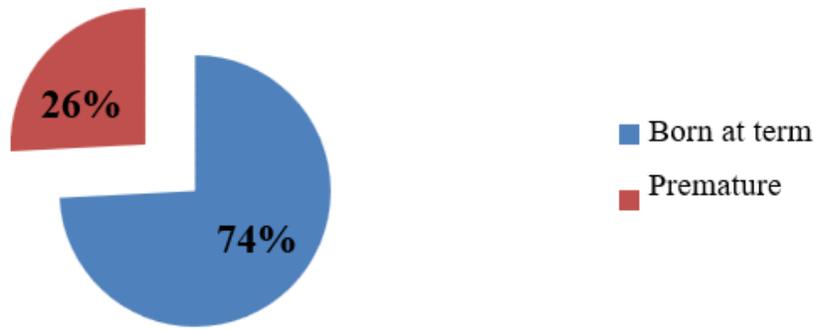


Figure 5: Distribution of the population according to gestational age

1.2.2. Birth weight

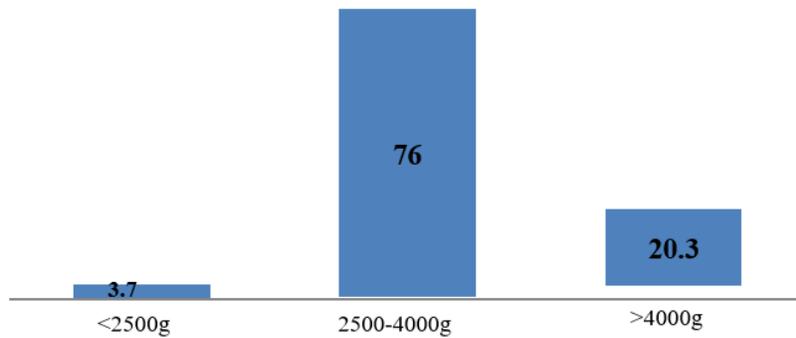


Figure 6: Distribution of the population according to birth weight

1.2.3. Sex

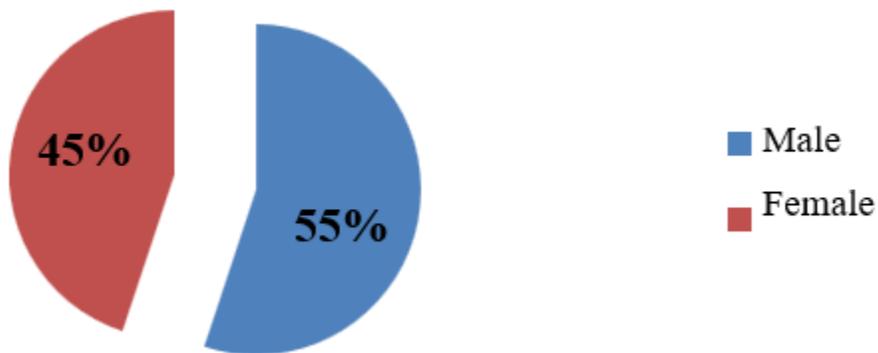


Figure 7: Distribution of the population according to sex

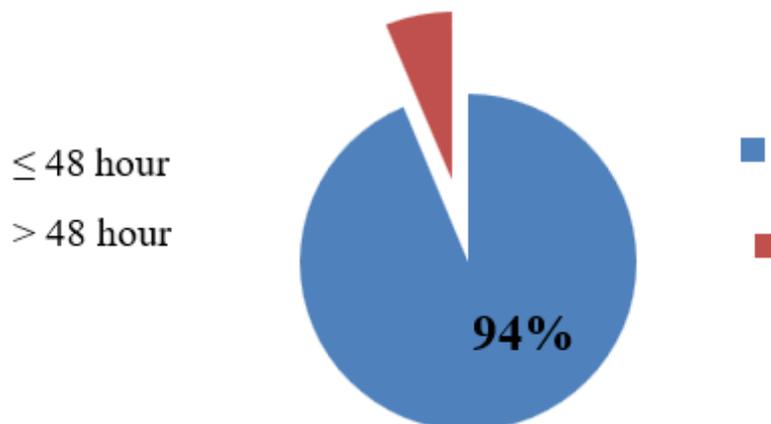


Figure 8: Distribution of the population according to age of hospitalization

1.2.5. Causes of hospitalization

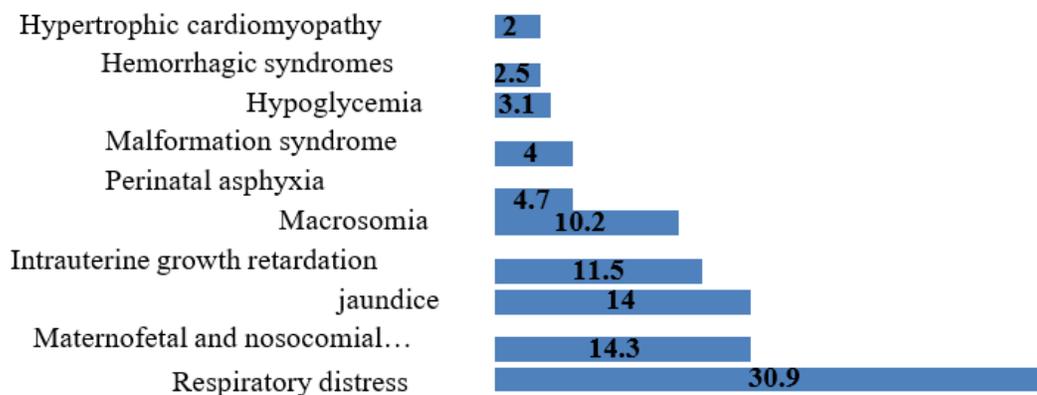


Figure 9: Distribution of the population according to causes of hospitalization

1.2.6. Length of hospitalization

The length of hospitalization varied from 1 to 21 days with an average stay of 6,5 days.

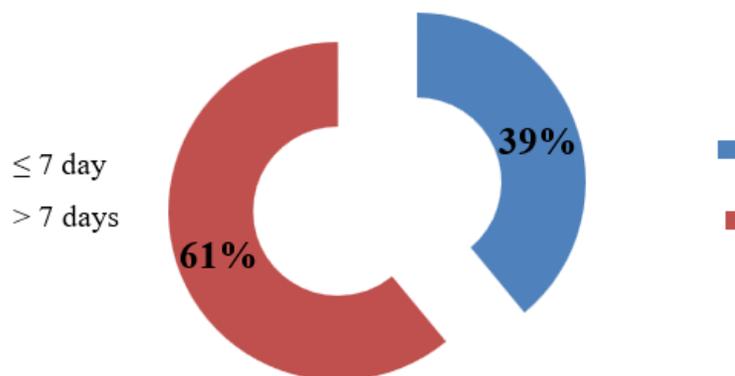


Figure 10: Distribution of the population according to length of hospitalization

Discussion

Diabetes constitutes a major public health problem worldwide. The incidence of diabetes during pregnancy is constantly increasing in the current context of the obesity and non insulin-dependent diabetes pandemic. Around 3 to 10% of pregnancies are marked by a glycemic regulation disorder [2-3]. The frequency during pregnancy in our series is 7.7%, close to that reported in the literature.

The cesarean rate is 78.1%, it seems that knowledge of diabetes in parturients influences delivery methods, the increase in the cesarean rate had already been reported by other authors: Abdelmoneim (84%) [4], Peace Opara et al (80%) [5] and Boiro et al (87,8%) [6].

Among neonatal complications, macrosomia is one of the most common with a high incidence of 45% [2]. In the case of maternal diabetes, macrosomia is classically attributed to fetal hyperinsulinism reactive to maternal hyperglycemia [7], due to the anabolic effect of insulin, in our study represents 10.2%.

The frequency of prematurity during diabetic pregnancy is increasingly increased (23-26%) [8], ours corroborates this (25.8%). The main associated factors are poor glycemic control and the occurrence of eclampsia [8-9]. In the study of Cordero et al in the USA, the rate of prematurity was 14% before 34 weeks [10].

NDMs are usually at greater risk of developing neonatal respiratory distress. Three causes are possible: prematurity, surfactant maturation abnormalities and cesarean births which increase the risk of respiratory distress due to delayed resorption of pulmonary fluid [9,11].

Hypoglycemia was predominant and significantly secondary to macrosomia, as was poor maternal glycemic control peripartum [2-3].

The prevalence of congenital malformations varies between 2 and 7% in the literature [1]. Cordero et al, report 5% of congenital malformations [10]. The risk is higher in patients with pre-gestational diabetes but the malformations described in gestational diabetes are similar to those reported in pre-gestational diabetes: cardiac, skeletal and cerebral [2,9,11]. Our study reports a 4% rate of congenital malformations.

Conclusion

NDM remains a child at risk. Efforts must be focused on balancing maternal diabetes. Indeed, the existence of pre-gestational diabetes is the factor most associated with neonatal complications. Thus, improving maternal-fetal prognosis will require the involvement of a multidisciplinary team before conception, during pregnancy and childbirth, and postpartum.

Expression of interest

The authors declare that they have no conflict of interest relating to this article.

References

1. Mitanchez D (2010). Particularités de la prise en charge du nouveau-né de mère avec diabète gestationnel. *Environnement pédiatrique. J Gynécologie Obstétrique Biol Reprod.* 2010 ;39:S281–288.
2. Saint-Faust M, Simeoni U (2012). Devenir des enfants nés de mère

- diabétique. *Médecine MalMétaboliques*. 2012; 6:300–304.
3. Senouci H, Benomeur . K (2017). Nouveau né de mère diabétique] [Thesis].
 4. Kheir AE, Berair R, Gulfan IG, Karrar MZ, Mohammed ZA (2012). Morbidity and mortality amongst infants of diabetic mothers admitted into Soba university hospital, Khartoum, Sudan. *Sudan J Paediatr*. 2012; 12:49.
 5. Opara PI, Jaja T, Onubogu UC (2010). Morbidity and mortality amongst infants of diabetic mothers admitted into a special care baby unit in Port Harcourt, Nigeria. *Ital J Pediatr*. 2010; 36:77.
 6. Boiro D, Guéye M, Seck N, Ndongo AA, Thiongane A, Niang B, et al (2017). Les nouveau-nés de mère diabétique au service de néonatalogie du chu de Dakar (Sénégal). *J Pédiatrie Puériculture*. 2017 ;30:150–155.
 7. VAMBERGUE A, BARNAS A, LANGLOIS C, DERUELLE P (2014). Le métabolisme des lipides au cours de la grossesse diabétique : Endocrinopathies et grossesse. *Métabolisme Lipides Au Cours Grossesse Diabét Endocrinopathies Grossesse*. 2014; 18:111–116.
 8. Lepercq J, Timsit J (2005). Diabète préalables à la grossesse : complications périnatales. *Arch Pédiatrie*. 2005;12:763–765.
 9. Mimoso G, Oliveira G (2017). Morbilidade Neonatal na Diabetes Gestacional: Coincidência ou Consequência do Consenso de 2011. *Acta Médica Port*. 2017 ;30:589–598.

Ready to submit your research? Choose ClinicSearch and benefit from:

- fast, convenient online submission
- rigorous peer review by experienced research in your field
- rapid publication on acceptance
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

At ClinicSearch, research is always in progress.

Learn more <https://clinicsearchonline.org/journals/clinical-trials-and-case-studies>



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.