

## Persistent pulmonary hypertension in newborns: retrospective study of 103 cases at Farhat Hached Maternity Center in Sousse

Elghoula O<sup>1</sup>, Barka M<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Persistent Pulmonary Hypertension of the Newborn (PPHN) is a serious neonatal condition causing refractory hypoxemia due to high pulmonary resistance. Its incidence varies globally from 0.4 to 6.8 per 1,000 live births, and despite treatment advances, it still leads to significant early morbidity and mortality. The aim of our work is to study the various clinical, etiological, therapeutic, and evolutionary aspects of PPHN.

**Methods:** This retrospective study gathered data on all newborns with PPHN admitted to Farhat Hached University Hospital's NICU (2021–2025), analyzing their clinical features, treatments, and outcomes from medical records.

**Results:** This study involved 103 newborns, with a slight male predominance (sex ratio 1.1). The average age at admission was 35 hours (5 min–8 days). Among them, 53 were premature, including 11 very premature. Neonatal respiratory distress was the leading cause of admission, with 47% requiring Intermittent Controlled Assisted Ventilation and 45% receiving High-Frequency Oscillation. PPHN was confirmed by transthoracic ultrasound in 92% of cases. The primary causes were advanced hyaline membrane disease (39.8%), severe bacterial infections (30%), congenital heart disease (20%), and meconium aspiration (9.7%). Inhaled Nitric Oxide was used in 74% of cases for an average of six days, and Tadalafil was administered to 51% with severe, refractory PPHN. Outcomes were favorable in 68%, with an average hospital stay of 26 days. Mortality reached 32%, primarily due to severe PPHN (42%), septic shock (37%), and alveolar hemorrhage (21%).

**Conclusion:** PPHN is a severe neonatal condition with high morbidity. Prognosis depends on early treatment and underlying cause. Despite therapeutic advances like iNO and PDE-5 inhibitors, prevention remains the key to improved outcomes.

## Morbidité respiratoire des nouveau-nés de mère diabétique

Boubakker R, Charfi M, Abdennadher A, Kolsi N, Bouraoui A, Regaieg C, Hamida N

Service de Néonatalogie, CHU Hedi Chaker, Sfax

**Introduction :** La détresse respiratoire néonatale est la plus fréquente des morbidités chez le nouveau-né de mère diabétique. Nous visons à étudier ses particularités épidémiologiques, cliniques et thérapeutiques.

**Méthodes:** Il s'agit d'une étude rétrospective, étudiant les dossiers de tous les nouveau-nés de mère diabétique hospitalisés au service de néonatalogie de Sfax pour détresse respiratoire néonatale durant l'année 2022.

**Résultats :** Nous avons colligé 129 nouveau-nés avec un sex-ratio H/F de 1,38. Le diabète était pré gestationnel dans 11,6% des cas. Le recours à l'insulinothérapie était nécessaire au cours de 26,3 % des grossesses. Une macrosomie fœtale était notée dans 22,5% des cas. La détresse respiratoire était d'apparition secondaire dans 7,8% des cas à un âge moyen de 16 heures. Le score de Silverman était  $\geq 5$  dans 32,5% des cas. La tachypnée transitoire était l'étiologie prédominante (69,7% des cas), suivie de la maladie des membranes hyalines (16,3% des cas). L'administration de surfactant exogène était nécessaire pour 20 nouveau-nés (15,5% des cas) dont 2 à terme. L'hypertension artérielle pulmonaire était la complication respiratoire prédominante (10% des cas) avec recours au monoxyde d'azote inhalé dans 7 cas. Le recours à la ventilation mécanique était nécessaire dans 11% des cas avec une durée moyenne de ventilation de 70 heures. La durée moyenne d'oxygénothérapie totale était de 48 heures [2 à 432 heures]. Le nombre de décès était égal à 12 nouveau-nés (9,3 %).

**Conclusion :** Le diabète maternel expose le nouveau-né à une morbidité respiratoire d'étiologies et de sévérité diverses. L'équilibre du diabète demeure essentiel pour améliorer le pronostic.

## Hyaline Membrane Disease in Diabetic Mother Infants: Clinical Spectrum and Therapeutic Challenges

Harzallah G, Abdelmoula S, Elouer M, Jaouadi H, Elghali M, Rouis C, Ben Khalifa M, Ghorbeli A, Dridi S, Ben Hamida H

Department of Intensive Care and Neonatal Medicine, Teaching Hospital of Monastir

**Introduction:** Hyaline membrane disease (HMD) represents a major neonatal complication in infants of diabetic mothers (IDMs), resulting from delayed pulmonary maturation due to fetal hyperinsulinism. This study aims to analyze the clinical severity and incidence of complications of HMD in IDMs.

**Methods:** We conducted a 5-year retrospective study (2020–2024) including all HMD cases in IDMs at our institution.

**Results:** Among 44 cases analyzed, we observed a male

predominance. The vast majority (91%) were premature: very preterm (<32 weeks) in 54.8%, moderate preterm (32-33 weeks) in 21.5%, and late preterm (34-36 weeks) in 16.7%. Gestational diabetes accounted for 84.1% of cases. Clinically, severe respiratory distress was common, with radiological staging showing advanced disease (stage 3-4) in 29.5% of cases. Initial respiratory support included non-invasive ventilation (68.1%) and immediate intubation (29.5%). Surfactant was administered in 63.6% of cases, with acute complications during administration in 7.1% (chest wall rigidity, desaturation, and hypotension). Post-surfactant complications were frequent (81.8%), including sepsis (29.5%), hemodynamic instability (6.8%), and air leak syndromes (4.5%). Associated conditions included infectious alveolitis in 9%. Mean ventilation duration was 4 days and mean hospitalization was 18.4 days, with only two fatal outcomes.

**Conclusion:** This study highlights the severe clinical presentation and high complication rate of HMD in IDMs. The frequent need for respiratory support and high incidence of infectious and hemodynamic complications underscore the vulnerability of this population. Strict glycemic control, timely antenatal corticosteroids, and vigilant monitoring for complications are essential to optimize outcomes in these high-risk neonates.

### Lung Ultrasound for Differentiating Transient Tachypnea from Respiratory Distress Syndrome: Diagnostic Accuracy Study

Ben Brahim I<sup>1</sup>, Mghirbi O<sup>1,2</sup>, Maatalah A<sup>1,2</sup>, Barka M<sup>1,2</sup>, Taamali M<sup>1,2</sup>, Braham D<sup>1,2</sup>, Soyad N<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Background:** Distinguishing transient tachypnea of the newborn (TTN) from respiratory distress syndrome (RDS) is essential for appropriate management but can be clinically challenging. This study assessed the diagnostic accuracy of lung ultrasound (LUS) for this differentiation.

**Methods:** A prospective diagnostic accuracy study included 116 neonates with respiratory distress (103 TTN, 13 RDS based on final clinical diagnosis). LUS was performed within the first hour of life using a standardized 6-zone technique with a scoring system (0–18). Specific ultrasound patterns, including predominant A-lines, diffuse B-lines, and white lung, were analyzed. Chest radiography findings were compared.

**Results:** Mean LUS scores differed significantly between groups (TTN: 6.8 vs. RDS: 12.5). Predominant A-lines were observed in 86.4% of TTN cases versus 0% in RDS. White lung pattern was present in 61.5% of RDS cases versus 0% in TTN. Using a score  $\geq 12$  to identify RDS, sensitivity was 92.3%, specificity 91.3%, positive predictive value 63.2%, negative predictive value 98.9%, and overall accuracy 91.4%. LUS concordance with final diagnosis (94.5%) exceeded that of chest radiography (89.8%). Severity distribution differed: TTN cases were predominantly mild-moderate (100%), while RDS cases were moderate-severe (100%).

**Conclusion:** LUS demonstrates excellent accuracy for

differentiating TTN from RDS in neonates, outperforming chest radiography. Distinct patterns—predominant A-lines for TTN and white lung for RDS—combined with quantitative scoring provide reliable early discrimination. LUS should be considered as a first-line imaging modality for this critical diagnostic distinction.

### Determinants of Extubation Failure in Preterm Neonates: Insights from a Prospective Study

Abdennadher A, Khemakhem M, Bouraoui A, Kolsi N, Regaieg R, Regaieg C, Charfi M, Hamida N

Neonatology Department, Hedi Chaker University Hospital, Sfax

**Introduction:** Extubation in preterm infants represents a critical step, with frequent failure influenced by multiple determinants.

**Methods:** A prospective study was conducted at Sfax University Hospital between April and December 2024, including preterm infants >26 weeks gestational age and >700 g, ventilated for hyaline membrane disease (HMD) and followed for 72 h after extubation. Extubation failed when the infant was reintubated within this period.

**Results:** Fifty-one infants were enrolled. The overall failure rate was 21.6% (n = 11). The causes of failure were mainly severe apnea (45.5%) and poor respiratory mechanics (45.5%), followed by hemodynamic instability (9%). Failure occurred more frequently in infants with lower birth weight (<1500 g: 54.5% vs. 27.5%; p = 0.09) and in those with a hemodynamically significant patent ductus arteriosus (36.4% vs. 17.5%; p = 0.061). Significant predictors of failure included: delayed intubation >12 h after birth (27.3% vs. 5%; p = 0.04), higher initial inspiratory pressure (20 vs. 19.5 cmH<sub>2</sub>O; p = 0.032), late surfactant administration beyond 8 hours of life (42.9% vs. 14.3%; p = 0.03), hematocrit >55% (27.3% vs. 5%; p = 0.03), recent discontinuation of sedation (<4 h before extubation: 54.5% vs. 20%; p = 0.045), and unfavorable pre-extubation blood gases, with lower PaO<sub>2</sub> (37.3 vs. 41 mmHg; p = 0.026) and reduced bicarbonate levels (18.4 vs. 20 mmol/L; p = 0.021).

**Conclusion:** The identification of clinical, biological, and radiological determinants may provide valuable insights to refine extubation strategies and thereby contribute to improved neonatal outcomes.

### Ultrasound Scoring System for Predicting Invasive Ventilation Requirement in Neonatal Respiratory Distress

Ben Brahim I<sup>1</sup>, Mghirbi O<sup>1,2</sup>, Maatalah A<sup>1</sup>, Barka M<sup>1,2</sup>, Soyad N<sup>1,2</sup>, Taamali M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** To evaluate the predictive value of an early lung ultrasound (LUS) scoring system for identifying neonates requiring invasive mechanical ventilation.

**Methods:** We conducted a single-center prospective cohort study in a Level III NICU over 12 months, including 128 term and preterm neonates with respiratory distress requiring support. LUS was performed within the first hour

of life, and a standardized score (0–18) was calculated based on pleural line abnormalities, B-line distribution, and lung consolidation. The primary outcome was the need for invasive ventilation within 24 hours.

**Results:** Eighteen neonates (13.5%) required invasive ventilation. Mean LUS scores were significantly higher in invasively ventilated infants (11.8 vs. 6.4). ROC curve analysis showed excellent discriminative ability with area under curve of 0.892 (AUC 0.892). At a cutoff of 10 points, sensitivity was 83.3%, specificity 87.8%, positive predictive value 55.6%, and negative predictive value 96.2%. Scores  $\geq 12$  identified severe cases with 99.1% specificity.

**Conclusion:** Early LUS scoring within the first hour of life is an excellent predictor of the need for invasive ventilation in neonates with respiratory distress. This rapid, radiation-free tool can guide timely therapeutic decisions and optimize resource allocation.

### Lung Ultrasound Score as a predictor of Neonatal Respiratory Distress severity

Bahlous O, El Guerchi S, Koumi Y, Miraoui A, Attar S, Tamboura A, Ben Dhia M, Bouziri A, Borgi A, Menif K  
PICU of Bechir Hamza Children's Hospital Tunis

**Introduction:** Point-of-Care Lung Ultrasound (LUS) has emerged as a promising, non-invasive, imaging modality for neonatal respiratory assessment.

**Aim:** To assess the role of LUS in guiding ventilatory support decisions in the management of neonatal respiratory distress syndrome (NRDS).

**Methods:** We conducted a retrospective, descriptive and comparative study in the PICU of Bechir Hamza Children's Hospital of Tunis over a 9-month period (January 1 – September 30, 2025).

We included newborns aged  $\leq 72$  hours and admitted for NRDS.

Patients were divided into two groups. Group 1 (G1): newborns who received mechanical ventilation (MV), and Group 2 (G2): those who received non-invasive ventilation (NIV).

**Results:** A total of 114 patients were included.

G1: 88 newborns (sex ratio 2.7) with a mean gestational age (GA) of 37 weeks. The mean initial respiratory rate (RR) was  $63.12 \pm 17.21$  breaths/min, and the median Silverman score (SS) was 5.0 [4.0–5.0]. The mean initial LUS score was  $17.69 \pm 6.15$ .

G2: 26 newborns (sex ratio 5.5) with a mean GA of 37+5 days. The mean RR was  $61.15 \pm 16.02$  breaths/min, and the median SS was 4.5 [4.0–5.0]. The median LUS score was 7.0 [5.25–13.25]. Comparative analysis between groups showed no statistically significant differences in median Silverman score ( $p = 0.77$ ) or mean respiratory rate ( $p = 0.59$ ). However, the LUS score differed significantly between the groups ( $p < 0.00001$ ).

**Conclusion:** This study highlighted the superior discriminative power of increased LUS score to assess the severity of NRDS.

### Lung Ultrasound versus Chest Radiography for Respiratory Distress Diagnosis in Neonates: A Concordance Study

Maatallah A<sup>1</sup>, Mghirbi O<sup>1,2</sup>, Ben Brahim I<sup>1</sup>, Barka M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Tammlil M<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Lung ultrasound (LUS) is emerging as a radiation-free alternative to chest radiography (CXR) in neonatal respiratory distress. We evaluated the diagnostic concordance between LUS and CXR against final clinical diagnosis.

**Methods:** Prospective observational study over 12 months including 128 neonates with respiratory distress admitted to neonatal intensive care. LUS was performed at H1 of life using a standardized scoring system (0-18 points). CXR was obtained per standard protocol. Final diagnosis was determined by clinical evolution and response to treatment.

**Results:** Among 128 analyzable cases, diagnostic concordance between LUS and final diagnosis was 94.5% compared to 89.8% for CXR. Cohen kappa coefficient was 0.89 indicating excellent agreement. LUS demonstrated 94.5% sensitivity, 92.8% specificity, 96.2% positive predictive value, and 89.3% negative predictive value. Discordance occurred in only 7 cases primarily in mixed or evolving pathology. LUS was performed earlier than CXR.

**Conclusion:** LUS shows excellent diagnostic concordance with final clinical diagnosis, superior to CXR, with advantages of bedside availability, absence of radiation, and earlier diagnostic capability. LUS appears suitable as first-line imaging modality in neonatal respiratory distress.

### Impact of Prolonged Operative Duration on Surgical Site Infections Following Neonatal Abdominal Surgery

Jarboui O<sup>1</sup>, Zouari M<sup>1</sup>, Rhaïem W<sup>1</sup>, Tounsi MK<sup>1</sup>, Charfi M<sup>2</sup>, Hamida N<sup>2</sup>, Ben Dhaou M<sup>1</sup>, Mhiri R<sup>1</sup>

1. Pediatric surgery Department, Hedi Chaker University Hospital, Sfax

2. Neonatology Department, Hedi Chaker University Hospital, Sfax

**Introduction:** Surgical site infections (SSIs) remain a critical postoperative complication in neonates undergoing abdominal procedures. They contribute to prolonged hospital stays, increased antibiotic use, antimicrobial resistance, reoperations, and higher morbidity rates.

**Methods:** The aim of this study was to investigate the association between operative duration and the risk of SSIs in neonates undergoing abdominal surgery. We conducted a retrospective case-control study in the Department of Pediatric Surgery, University Hospital of Sfax, Tunisia. Medical records of neonates (0–28 days old) who underwent abdominal surgery between January 2014 and December 2023 were reviewed.

**Results:** Among 281 neonates who underwent abdominal surgery, 25 (8.9%) developed SSIs within 30 postoperative days. The cohort included 144 (51.2%) females and 137 (48.8%) males, with antenatal diagnoses documented

in 68 cases. The mean gestational age was  $36.5 \pm 3.2$  weeks, and the mean birth weight was  $2.7 \pm 0.8$  kg. Comorbid conditions were noted in 74 (26.3%) neonates, with cardiac anomalies present in 46 cases. The mean operative time was significantly longer in the SSI group compared to the non-SSI group ( $102 \pm 70.9$  vs.  $72.6 \pm 36.3$  minutes,  $p = 0.001$ ). Notably, an operative duration  $>122$  minutes was strongly associated with an increased risk of SSIs (32% vs. 3.9%,  $p < 0.001$ ; OR = 11.576).

**Conclusion:** Extended operative duration is a significant predictor of SSIs in neonatal abdominal surgery. These findings highlight the importance of optimizing surgical efficiency and perioperative management to reduce infection-related morbidity in this vulnerable population.

### Predictive Factors of Short-Term Mortality Following Surgical Repair of Anorectal Malformation

Boukettaya M, Ben Ahmed Y, Ezzine R, Marzouki M, Noura F, Jilidi S  
Service de chirurgie pédiatrique Hôpital d'enfants Tunis

**Introduction:** Anorectal malformation (ARM) is a potentially life-threatening congenital anomaly. Early identification and timely surgical management are critical for survival.

**Methods:** We conducted a retrospective review of medical records of neonates who underwent surgical repair of ARM at our institution between January 2012 and December 2024. Statistical significance was defined as  $p < 0.05$ .

**Results:** A total of 66 neonates were included, comprising 42 males (63.6%) and 24 females (36.4%), with an overall 30-day mortality rate of 13.6% (9/66). ARM was diagnosed during routine neonatal examination in 42 patients (63.6%), based on symptoms of neonatal intestinal obstruction in 15 patients (22.7%), and through parental observation in 9 cases (13.6%). High-type ARM was present in 44 neonates (66.7%), whereas 22 (33.3%) had low-type ARM. The rate of prematurity was 10.6% (7 cases). Birth weight ranged from 1475 g to 4500 g, with a mean of 2950 g. The mean admission delay was 1.7 days (0–5 days) for high ARM, whereas low forms were admitted later. Associated congenital anomalies were identified in 35 patients (53.0%). Comparative analysis revealed several independent predictors of 30-day mortality: prematurity (gestational age  $<37$  weeks) was associated with a threefold increased risk ( $P = 0.025$ ), low birth weight ( $<2500$  g) with a fourfold increased risk ( $P < 0.003$ ), and delayed admission ( $>24$  hours) with a 2.8-fold increased risk ( $P = 0.037$ ). High-type ARM and the presence of associated congenital anomalies were also significantly associated with mortality ( $P = 0.006$ ).

**Conclusion:** Early identification of these risk factors is crucial to improve outcomes.

### Effects of somatostatin/octreotide treatment in neonates with congenital chylothorax.

Barka M<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Ghith A<sup>1</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia  
2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Congenital chylothorax (CC) is a rare but serious neonatal condition caused by lymphatic fluid accumulation in the pleural space, leading to respiratory distress and nutritional and immunological compromise.

**Methods:** A retrospective descriptive study was conducted in the NICU of Farhat Hached University Hospital, including neonates diagnosed with CC between January 2015 and October 2025.

**Results:** Nine neonates were diagnosed with CC (6 males, 3 females), including six preterm infants. Antenatal findings included hydrops fetalis in one case and isolated pleural effusion in another. All neonates presented with respiratory distress at birth. Lung ultrasound revealed moderate effusion in three cases and massive effusion in six. Diagnosis was confirmed by pleural fluid analysis. Chest drainage was required in five cases. All patients received total parenteral nutrition, and octreotide was administered in five. Enteral feeding with medium-chain triglyceride formula was introduced after stabilization. Trisomy 21 and congenital hypothyroidism were each identified in one case. Surgical thoracic duct ligation was required in one neonate. Outcome was favorable in six patients, while three died from septic shock. Median hospital stay was 45 days.

**Conclusion:** Management of CC is mainly medical, combining pleural drainage, nutritional support, and reduction of chyle production, with octreotide when indicated.

### Grossesses multiples et multiples défis : Étude sur le devenir de 159 nouveau-nés

Mansour K<sup>1</sup>, Hannachi S<sup>1,3</sup>, Ben Salah F<sup>1,3</sup>, Fraj H<sup>1,3</sup>, Landolsi H<sup>1</sup>, Chouikha M<sup>1</sup>, Mannai E<sup>1</sup>, Chargui A<sup>1</sup>, Ben Ghalia M<sup>2,3</sup>, Arfaoui R<sup>2,3</sup>, Blibech S<sup>1,3</sup>.

1. Service de Néonatalogie et Réanimation Néonatale.

2. Service de Gynécologie Obstétrique. Hôpital Militaire Principal d'Instruction de Tunis

3. Faculté de Médecine de Tunis, Université Tunis El Manar

**Introduction :** Les nouveau-nés (NN) issus des grossesses multiples représentent un enjeu majeur en néonatalogie. L'augmentation de la prématurité, du retard de croissance intra-utérin, du syndrome transfuseur–transfusé et de la mortalité périnatale en sont les clés du challenge. L'essor de la procréation médicalement assistée (PMA) a accru la fréquence des grossesses multiples.

**Objectifs :** Étudier le devenir hospitalier, les facteurs pronostiques et l'évolution des nouveau-nés (NN) issus des grossesses multiples.

**Méthodes :** Étude rétrospective, descriptive et analytique, du devenir des NN hospitalisés issus des grossesses multiples sur une période de 3 ans (2022 – 2024).

**Résultats :** 159 NN ont été colligés issus de 77 grossesses (55 Gémellaires, 15 triples et une quadruple) dont 54,7% étaient issues de PMA. La fréquence des mort-nés était de 2.3%. Le genre-ratio : 1,17. L'âge maternel moyen était de 30,4 ans (23 à 43 ans). Les pathologies gravidiques étaient le diabète gestationnel (37 %cas), l'hypertension artérielle gravidique (26% cas) et la double dysgravidie (18%cas). La naissance était par césarienne dans 94%cas. L'âge gestationnel moyen  $32+3j$  SA (27 - 38SA). Le PN moyen était de 1965 g (720 - 2760 g). La

corticothérapie anténatale a été administrée dans 76,6 %cas. Une détresse respiratoire néonatale était survenue chez 47% dont 88% l'étiologie était une MMH nécessitant l'instillation de surfactant.

La prématurité concernait 85.86 %, l'hypotrophie 66.78 %, le syndrome transfuseur-transfusé 3.18 %. Les malformations congénitales 0.9%. La mortalité néonatale était de 11.3 %. La durée d'hospitalisation moyenne de 38 jours.

**Conclusions :** Malgré les progrès de la réanimation néonatale, les grossesses multiples demeurent à haut risque néonatal de sur morbidité - surmortalité. Le suivi prénatal rigoureux et la prise en charge multidisciplinaire sont essentiels pour améliorer le pronostic.

### Impact of Paternal Support on Maternal Breastfeeding Self-Efficacy and Father-Infant Attachment: Cross-Sectional Study

El Ouaer M<sup>1</sup>, Dridi S<sup>1</sup>, Aguir W<sup>2</sup>, Ben Khalifa S<sup>2</sup>, Ismail M<sup>2</sup>, Abdelmoula S<sup>1</sup>, Ghali M<sup>1</sup>, Bizid M<sup>1</sup>, Ben Hamida H<sup>1</sup>, Monastiri K<sup>1</sup>

1. Neonatal Intensive Care Unit, Teaching Hospital of Monastir, Tunisia.

2. Higher School of Health Sciences and Techniques of Sousse, Tunisia.

**Background:** Paternal support is crucial for promoting exclusive breastfeeding by boosting maternal breastfeeding self-efficacy and strengthening emotional bonds within the family. Although this relationship is recognized internationally, it has not been sufficiently studied in the Tunisian context. The aims of the study are to describe the levels of paternal support, maternal breastfeeding self-efficacy, and father-infant attachment among parents of children aged 1 to 24 months, and to assess the influence of paternal support on maternal self-efficacy and paternal attachment.

**Methods:** A descriptive and correlational cross-sectional study was conducted at the Jawhara Maternal and Child Health Center in Sousse, Tunisia. A total of 149 parental dyads with children aged from 1 to 24 months participated. Data were collected through a self-administered questionnaire that included three validated scales: the Paternal Breastfeeding Involvement Scale (PBIS), the Postpartum Paternal-Infant Attachment Questionnaire (PPAQ), and the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF).

**Results:** The average maternal age was 31.2 years. More than half had a university education, and 46.3% were unemployed. Among fathers, 56.4% were aged 30–40 years, 50.3% had a university degree, and 46.3% were salaried employees. Most families reported a middle monthly income (53.7%). Significant positive correlations were found between maternal breastfeeding self-efficacy (BSES) and paternal support (PBIS) ( $r_s = 0.604$ ,  $p < 0.001$ ), as well as between paternal support (PBIS) and father-infant attachment (PPAQ) ( $r_s = 0.566$ ,  $p < 0.001$ ).

**Conclusion:** Targeted strategies to educate and engage fathers should be integrated into maternal and child health programs to promote sustained and exclusive breastfeeding.

### Épuisement professionnel en réanimation néonatale : les facteurs de risque chez le personnel soignant

Zairi R, Chourou H, Tigourt M, Ben Aziza R, Ayari F, Sdiri Y, Kacem S  
Centre de Maternité et de néonatalogie de Tunis

**Introduction :** Le burnout constitue une problématique croissante dans les services de réanimation néonatale où les exigences émotionnelles, cognitives et physiques sont particulièrement élevées. Une meilleure compréhension de ses facteurs de risques est essentielle pour élaborer des stratégies de prévention ciblées et améliorer la qualité de vie au travail du personnel soignant.

**Méthodes :** Il s'agit d'une étude analytique et multicentrique via un questionnaire au sein des services de réanimation néonatale du grand Tunis sur une période de 1 mois allant du 1er au 31 janvier 2024.

**Résultats :** On a colligé 124 réponses. Le taux du burnout dans notre étude était de 12.9%. Pour l'étude des caractéristiques sociodémographiques, on a objectivé une corrélation positive entre la survenue du burnout et les antécédents pathologiques personnels (0.049) et l'alcoolisme ( $p=0.047$ ). L'étude des conditions de travail a objectivé un lien significatif entre le burnout et la non-disponibilité d'un espace de repos ( $p=0.001$ ), le nombre de gardes/mois ( $p=0.032$ ) et le nombre de nouveau-nés pris en charge/jour ( $p=0.036$ ). L'évaluation de la satisfaction des conditions de travail a objectivé un lien significatif entre le burnout et l'insatisfaction de l'organisation des lieux ( $p=0.039$ ) et la non-disponibilité de protocoles ( $p=0.005$ ). Une corrélation positive était présente entre la survenue du burnout et le regret du choix professionnel ( $p=0.012$ ) et le besoin de consulter en psychiatrie ( $p=0.032$ ).

**Conclusion :** Le burnout apparaît comme un syndrome auquel il faut accorder une attention particulière en raison de ses conséquences néfastes sur le personnel soignant et sur la qualité des soins. C'est pour cela qu'il faut identifier ses facteurs de risques afin de renforcer les mesures préventives.

### Morbidity and Mortality of Extremely Preterm Infants in a Level 3 Neonatal Intensive Care Unit

Ben Khalifa M<sup>1</sup>, Taamli M<sup>1,2</sup>, Ben Brahim I<sup>1</sup>, Ben Mansour H<sup>1</sup>, Ghoudi T<sup>1</sup>, Barka M<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Extreme prematurity is defined as birth before 28 weeks of gestation (WG). Despite advances in neonatal resuscitation and non-invasive ventilation, the vital and functional prognosis of these infants remains concerning. Although survival has improved over recent decades, it is still associated with high morbidity.

**Methods:** We conducted a retrospective analytical study from 2019 to 2024 in the Neonatology Department of Sousse, including preterm infants born at  $\leq 28$  WG.

**Results:** Eighty-seven extremely preterm infants were included, corresponding to a prevalence of 28.5%. Mean gestational age was 26 weeks and 5 days, and mean birth weight was  $997 \pm 285$  g (540–1955 g), with

a male predominance. Neonatal morbidity was high. Perinatal asphyxia occurred in 59.9% of cases. All infants required mechanical ventilation for a mean duration of 8 days. Severe hyaline membrane disease (grade 3–4) was observed in 92.2%. Transfontanellar ultrasound was abnormal in 90% of patients, showing grade IV intraventricular hemorrhage in 23.8%. Healthcare-associated infections occurred in 28.6%. Necrotizing enterocolitis was reported in 19% and bronchopulmonary dysplasia in 2.4%. Forty-two deaths were recorded, yielding a mortality rate of 48%. Mean age at death was 11 days (4 hours–111 days). The main causes of death were septic shock (38.1%), intraventricular hemorrhage (19%), refractory hypoxemia (16.7%), and hemorrhagic shock (14.3%).

**Conclusion:** Extremely preterm infants constitute a highly vulnerable population, posing significant challenges for neonatal care. Early identification of risk factors and optimization of management strategies are crucial to reduce morbidity and mortality.

### Mortalité néonatale précoce et conditions des transferts extramuros des nouveau-nés

Jbebli E, Jouini H, Ben Ahmed S, Amdouni R, Farhat R, Haddad S, Fedhila F, Rhayem S, Khemiri M  
Service de pédiatrie A - Hôpital d'Enfants de Tunis

**Introduction :** La mortalité néonatale précoce est un indicateur clé de la santé. Les conditions de transfert vers les services de prise en charge influencent le pronostic des nouveau-nés en détresse.

**Objectif:** Décrire les conditions de transfert des nouveau-nés décédés avant sept jours de vie.

**Méthodes :** Étude rétrospective descriptive menée au service de pédiatrie A de l'Hôpital d'Enfants sur 14 ans (2010- 2023), incluant tous les nouveau-nés décédés avant sept jours de vie.

**Résultats :** Cent cinquante-huit cas ont été recensés (sex-ratio = 1,3). Les principaux motifs de transfert étaient la détresse respiratoire (81,6%), la prématurité (42,4%), l'asphyxie périnatale (17,1%) et les malformations congénitales (12%). Deux nouveau-nés abandonnés ont été transportés par la protection civile et neuf par leurs parents. Parmi les 147 autres, 84,8% ont bénéficié d'un transport médicalisé. Le moyen de transport était une ambulance de type A dans 15,6 %, de type B dans 59,9%, et non précisé dans 24,5%. Cinquante-cinq pour cent étaient transportés dans un berceau et 121 étaient sous oxygène. Dix-huit (13,6%) étaient intubés et ventilés manuellement. À l'admission, les anomalies les plus fréquentes étaient l'hypothermie (70,2%), l'hypoglycémie (19,9%), l'instabilité hémodynamique (24,7%) et les troubles neurologiques (22,8%).

**Conclusion :** Les troubles observés à l'admission traduisent, dans la majorité des cas, un transport insuffisamment structuré. La mise en place d'un système de transfert néonatal organisé et assuré par des équipes formées permettrait de réduire significativement la mortalité néonatale précoce.

### Neonatal obstetric trauma after vaginal delivery: analysis of 200 cases

Chouikha M<sup>1</sup>, Ben Salah F<sup>1,3</sup>, Hannachi S<sup>1,3</sup>, Fraj H<sup>1,3</sup>, Landolsi H<sup>1</sup>, Chargui A<sup>1</sup>, Mannai E<sup>1</sup>, Ben Ghalia M<sup>2,3</sup>, Arfaoui R<sup>2,3</sup>, Blibech S<sup>1,3</sup>.

1. Service de Néonatalogie et Réanimation Néonatale.

2. Service de Gynécologie Obstétrique. Hôpital Militaire Principal d'Instruction de Tunis

3. Faculté de Médecine de Tunis, Université Tunis El Manar

**Introduction:** Natural delivery, whether spontaneous or instrumental, is a severe ordeal for the fetus and can sometimes cause obstetric trauma (OT) of varying severity in the newborn (NB).

**Objectives:** To describe the epidemiological aspects, management, and follow-up of neonatal OT in instrumental and non-instrumental vaginal deliveries (VDs).

**Methods:** Descriptive, retrospective study of neonatal OTs associated with normal and instrumental vaginal deliveries hospitalized over a 3-year period (January 1, 2022 - December 31, 2024).

**Results:** Out of 7,553 total births, 200 birth defects were recorded, including 1 stillbirth (decapitation) and 199 hospitalized birth defects. The hospital prevalence was 5.6%. Birth defects in instrumental deliveries occurred in 131 cases (126 forceps and 5 vacuum extractors) and 69 by non-instrumental vaginal delivery.

The mean gestational age (GA) was 38 weeks and the mean weight was 3185 g. An Apgar score ≤7 at 5 minutes of life was recorded in 10.5%. The OTs were severe in 38 cases, including 73.7% due to non-instrumental VB. The observed OTs included: Serosanguinous bumps in 58.9%, cephalohematomas in 10%, dermabrasions in 10%, subconjunctival hemorrhages in 8.6%, and wounds in 4.6% of cases. Clavicular fractures were noted in 14.6% of cases, brachial plexus strain in 9.3%, facial paralysis (1 case), and subgaleal hemorrhage (1 case). Jaundice complicated the cranial effusions in three-quarters of cases. Cerebral MRI was performed in 13% of cases. The average hospital stay was 3 days.

**Conclusion:** Obstetric trauma related to vaginal deliveries remains a worrying reality with multiple challenges, hence the need for continuing professional training for both midwives and physicians.

### Neonatal outcome of pregnancies complicated by premature rupture of membranes before 28 weeks of amenorrhea

Barka M<sup>1,2</sup>, Guerrioui A<sup>1</sup>, Kaabia O<sup>2,3</sup>, Ghith A<sup>1</sup>, Taamli M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Bouguizene S<sup>2,3</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

3. Gynecology and Obstetrics department, Farhat Hached university hospital.

**Introduction:** Preterm premature rupture of membranes (PPROM) before 28 weeks of amenorrhea (WA) is a rare condition, affecting about 0.7% of pregnancies, and is associated with high maternal and fetal morbidity, particularly infection, extreme prematurity, and long-term neurosensory and respiratory complications.

**Methods:** This prospective study included all pregnancies complicated by PPROM before 28 WA, lasting at least 24 hours, managed at Farhat Hached University Hospital between January 2022 and August 2025.

**Results:** Forty-three cases of PPROM before 28 WA were recorded. Medical termination was proposed in 14 cases and declined in two. Mean maternal age was  $32.1 \pm 5.4$  years, and 41.9% were multiparous. Pregnancy-related complications were present in 45.2%, mainly gestational diabetes (29%) and pregnancy-induced hypertension (9.7%). Mean gestational age at rupture was  $25.5 \pm 2$  weeks, with a mean latency of 29.9 days. Oligohydramnios occurred in 51.4% of cases. Mean gestational age at delivery was  $29.8 \pm 3$  weeks. All newborns presented with respiratory distress; hyaline membrane disease occurred in 71%, and pulmonary hypoplasia in two cases. Maternal-fetal infection was confirmed in 19.4% of cases. Patent ductus arteriosus occurred in 12.4%, intraventricular hemorrhage in 48.4%, bronchopulmonary dysplasia in 25.8%, and neonatal mortality was 29%.

**Conclusion:** Early PPROM remains an ethical and clinical challenge. Management decisions should integrate gestational age, infection risk, and neonatal prognosis.

### Beyond Near-Term: Analyzing Risks and Protective Role of Corticosteroids in Late Preterm Birth

Abdelmoula S, Rouis C, El Quaer M, El Ghali M, Ben Mohamed W, Ben Hamida H  
Department of Intensive Care and Neonatal Medicine, Teaching Hospital of Monastir

**Introduction:** Late prematurity (34 weeks to 36 weeks+6 days of gestation) is the most common form of prematurity. Despite being near-term, these neonates face higher risks of morbidity and mortality compared to term infants, particularly from respiratory complications. The use of antenatal corticosteroids (ACS) remains debated in this gestational age window. This study aims to describe the morbidity spectrum of late preterm neonates and to evaluate the impact of ACS administration on their clinical outcomes.

**Methods:** A retrospective descriptive study was conducted, including all neonates born between 34 and 36+6 weeks gestation at the Maternity and Neonatology Center of Monastir from January 2025 to April 2025.

**Results:** Among the 105 cases collected, a slight female predominance was noted (sex ratio 0.9). The mean gestational age was 35+4 weeks. Spontaneous prematurity accounted for 52.4% of cases, while induced prematurity accounted for 42%, primarily for fetal rescue (58%). The main etiologies were gestational diabetes (32.4%), materno-fetal infection (27.6%), and toxemia (17.1%). Immediate neonatal respiratory distress was frequent (41%), including hyaline membrane disease (22.9%). Other common complications were hypoglycemia (30.5%), hypothermia (29.5%), jaundice (44.8%), and digestive intolerance (23.8%). Intensive care admission was required for 11.4% of neonates, with invasive ventilation needed in 4.8% and a mortality rate of 2.9%. Neonates who received antenatal corticosteroids

(37%) had significantly fewer complications ( $p=0.049$ ) and a shorter hospital stay ( $p=0.02$ ).

**Conclusion :** This study confirms the high burden of preventable morbidity in late preterm infants. More importantly, it provides evidence that antenatal corticosteroid administration between 34 and 36+6 weeks significantly reduces neonatal complications and healthcare utilization. These findings support reconsidering current guidelines to extend ACS prophylaxis to this vulnerable population.

### Chambre des erreurs pour la sécurité néonatale : Evaluation des connaissances des soignantes

Ben Aziza R, Chourou H, Belhadj Ammar W, Ben Aba N, Sdiri Y, Ayari F, Kacem S  
Centre de maternité et néonatalogie de Tunis

**Introduction :** Les erreurs en unité de soins intensifs néonataux (USIN) compromettent la sécurité des nouveau-nés prématurés. Cette étude visait à évaluer les connaissances du personnel médical et paramédical en matière d'identitovigilance et de prévention des infections en USIN.

**Méthodes :** Une simulation via une chambre des erreurs a été conduite avec 50 soignants médicaux et paramédicaux dans l'USIN du Centre de Maternité et de Néonatalogie de Tunis, utilisant un scénario de prématuré. Les erreurs détectées ont été analysées par domaine (prévention du risque infectieux, identitovigilance), profession, et ancienneté, avec des tests statistiques (test t, Fisher).

**Résultats :** Globalement, 32% des erreurs ont été détectées. Les soignants ont détecté 35% des erreurs d'hygiène contre 25% des erreurs d'identitovigilance. Les erreurs les plus détectées étaient la lancette laissée sur le champ du patient (90%) et le chariot non propre (78%), mais les erreurs comme le circuit CPAP traînant par terre (4%) étaient peu repérées. Le personnel médical a détecté 35% des erreurs d'hygiène et les paramédicaux 34% ( $p = 0,04$ ), tandis que pour l'identitovigilance, les taux étaient respectivement de 25% et 24% ( $p = 0,968$ ). Une différence significative a été observée pour le pansement souillé ( $p = 0,036$ ). L'ancienneté n'a pas influencé la détection (IC (-8,81 ; 3,16)). La satisfaction atteignait 91%.

**Conclusion :** La chambre des erreurs est un outil ludique et pertinent pour former les soignants, mais des formations ciblées en identitovigilance sont nécessaires. Ces **Résultats** soutiennent son adoption dans les USIN tunisiennes.

### Impact of a Breastfeeding Education Program: A Case-Control Study

Regaieg C<sup>1</sup>, Mefteh W<sup>2</sup>, Dahmen R<sup>2</sup>, Bouraoui A<sup>1</sup>, Ben Hamad A<sup>1</sup>, Ben Thabet A<sup>1</sup>, Charfi M<sup>1</sup>, Hamida N<sup>1</sup>

1. Department of Neonatology, Hedi Chaker University Hospital, Sfax, Tunisia

2. Higher School of Health Sciences and Techniques of Sfax, Tunisia  
Faculty of Medicine of Sfax

**Introduction:** Knowledge, attitudes, and self-efficacy regarding breastfeeding are modifiable factors associated

with continued breastfeeding and can be improved through educational interventions.

In Tunisia, the rate of exclusive breastfeeding (EBF) remains very low, and there is limited scientific evidence regarding this practice in hospitals.

This study aimed to evaluate the effectiveness of an educational program for first-time mothers in improving breastfeeding knowledge, attitudes, and self-efficacy, as well as its impact on the duration and exclusivity of breastfeeding during the first 3 months of life.

**Methods:** A comparative case-control, longitudinal, quasi-experimental study was conducted, (105 women/group). Mothers in the intervention group received an educational session on breastfeeding between 12 and 24 hours after birth, followed by telephone follow-up at 7- and 14-days post-discharge. The Breastfeeding Knowledge Questionnaire (BFK-A), Iowa Infant Feeding Attitude Scale (IIFAS-A), and Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) were used to assess knowledge, attitudes, and self-efficacy, respectively.

**Results:** Data from 100 mothers in the control group (CG) and 99 in the intervention group (IG) were analysed. The 2 groups were comparable at baseline. After 3 months, the IG showed significantly higher scores for knowledge, attitude, and self-efficacy ( $p < 0.001$ ). The intervention also led to longer breastfeeding duration ( $\chi^2 = 14.015$ ;  $p=0.000$ ) and a higher exclusivity rate (IG: 69.7%, versus CG: 17%,  $\chi^2=56.297$ ;  $p=0.000$ ). Knowledge scores, duration of EBF and peer demand for help were predictors of the intervention effect at 3 months (Pseudo  $R^2=0.934$ ).

**Conclusion:** Postnatal education significantly improved breastfeeding knowledge, attitudes, self-efficacy, and practices. Integrating antenatal education could further enhance these outcomes.

### Comparative efficacy and safety of paracetamol versus ibuprofen for PDA closure in preterm neonates: retrospective study

Abid M<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Barka M<sup>1,2</sup>, Brahém D<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Nabiha Mahdhaoui N<sup>1,2</sup>.

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Patent ductus arteriosus (PDA) is a common cardiovascular complication in preterm neonates, associated with significant morbidity. While ibuprofen is increasingly used as an alternative to indomethacin, paracetamol has emerged as a potential therapeutic option. Comparative data between paracetamol and ibuprofen remain limited. To compare the efficacy, safety, and clinical outcomes of paracetamol versus ibuprofen for closure of hemodynamically significant PDA in preterm neonates.

**Methods:** Retrospective cohort study including 67 preterm neonates with echocardiographically confirmed PDA (ductal diameter  $\geq 2$  mm, LA/Ao ratio  $>1.5$ , diastolic flow reversal). Patients received either paracetamol ( $n=25$ ) or ibuprofen ( $n=42$ ) per standard dosing. Primary outcome was ductal closure after initial treatment.

Secondary outcomes included need for additional treatment courses, ductal reopening, and treatment-related complications.

**Résultats:** Baseline characteristics were comparable. Ductal closure was significantly higher with ibuprofen (90.2% vs 62.5%,  $p<0.05$ ). Fewer patients required a second course in the ibuprofen group (4.8% vs 16%,  $p=0.09$ ). Ductal reopening occurred in 2 paracetamol and 1 ibuprofen-treated neonates. Overall complication rates were similar (paracetamol 72% vs ibuprofen 85.7%,  $p=0.15$ ), with most frequent events being hemodynamic instability and hemorrhage. Multivariate analysis confirmed ibuprofen as an independent predictor of successful closure (adjusted OR 5.8, 95% CI 1.7–19.4,  $p<0.01$ ).

**Conclusion:** Ibuprofen is more effective than paracetamol for pharmacological closure of PDA in preterm neonates, with fewer repeat treatment courses, while both drugs show comparable safety profiles. Paracetamol may be reserved for patients with contraindications to NSAIDs or as salvage therapy. Prospective randomized studies are warranted to optimize treatment strategies.

### Morbidity and mortality of referred outborn neonates : experience from the neonatology department in Mahdia

Day N, Youssef M, Mahjoub K, Fekih Romdhane I, Saidane M, Ben Hamouda H

Department of Neonatology, Tahar Sfar University Hospital, Mahdia, Tunisia

**Introduction:** Outborn infants represent a high-risk population due to delayed access to specialized care, often inadequate transport conditions, and limited initial monitoring in peripheral maternity units. Assessing their morbidity and mortality is essential to identify preventable factors and guide strategies to improve perinatal and neonatal care.

**Méthodes:** A retrospective descriptive study was conducted at the Neonatology Department of Tahar Sfar University Hospital of Mahdia. All newborns transferred from other maternity units and admitted between 1 January 2024 and 30 June 2025 were included. Data were collected from medical records and included clinical characteristics, main diagnoses, and hospital outcomes (survival or death).

**Résultats:** A total of 155 outborn newborns were included in the study. Morbidity was mainly attributed to neonatal respiratory distress (21%), perinatal asphyxia (19%), and hypothermia (18%). Other frequent conditions included small for gestational age (16.7%), prematurity (12.5%), hypoxic-ischemic encephalopathy (12%), suspected neonatal infection (11.5%), hypoglycemia (9%), congenital malformations (7.7%), vomiting (6.4%), macrosomia (5.8%), and anemia (1.2%). Regarding outcomes, four newborns presented with seizures, and two deaths were recorded, both related to severe infection and prematurity, likely resulting from delayed management before transfer.

**Conclusion:** Morbidity among transferred outborn

newborns is mainly driven by preventable conditions such as perinatal asphyxia, respiratory distress, and hypothermia. Improving delivery room care, strengthening the skills of peripheral maternity staff, ensuring proper pre-transfer stabilization, and optimizing neonatal transport systems are crucial steps to reduce avoidable deaths and improve outcomes.

### Sulfate de magnésium prénatal pour la neuroprotection des prématurés avant 32 semaines

Ben Aziza R\*, Samaali K\*\*, Sabkha NH\*\*, Chourou H\*, Neji K\*\*, Kacem S\*

\* Centre de Maternité et de néonatalogie de Tunis

\*\*Service de gynécologie et d'obstétrique B CMNT

**Introduction :** La morbidité neurologique et les lésions cérébrales précoces liées à la prématurité constituent une cause majeure de mortalité néonatale et de déficience à long terme. Cette étude vise à évaluer l'efficacité du sulfate de magnésium administré en période prénatale pour la prévention des séquelles neurologiques, ainsi que son innocuité maternelle et fœtale.

**Méthodes :** Il s'agit d'une étude observationnelle, comparative et prospective menée au service B du Centre de maternité et de néonatalogie de Tunis (janvier 2022-décembre 2023). Cent cinquante parturientes programmées ou en travail entre 26 et 32 SA ont été incluses et réparties en deux groupes selon l'exposition ou non au sulfate de magnésium. Cent quatre-vingts nouveau-nés ont été suivis, dont 94 exposés in utero. Une surveillance materno-fœtale et postnatale rigoureuse a été assurée.

**Résultats :** La majorité des parturientes (58,7 %) ont reçu la dose de charge dans les 4 heures précédant l'accouchement. Les nouveau-nés exposés au sulfate de magnésium ont présenté une meilleure adaptation à la vie extra-utérine, avec une réduction des anomalies de tonus et des réflexes ( $p < 0,001$ ). L'incidence et la gravité des hémorragies intraventriculaires étaient diminuées ( $p < 0,001$ ), avec une protection contre la leucomalacie périventriculaire ( $p < 0,05$ ). L'effet neuroprotecteur était plus marqué chez les prématurés de 28-32 SA ( $p$  entre 0,004 et 0,013), sans influence significative de la dose ou du délai d'administration. Une légère augmentation de la rétinopathie a été observée ( $p = 0,048$ ).

**Conclusion :** Le sulfate de magnésium prénatal avant 32 SA semble améliorer les issues neurologiques néonatales avec une sécurité materno-fœtale acceptable. Des études multicentriques sont nécessaires pour confirmer ces Résultats.

### Psychological Impact of NICU Hospitalization

Abdennadher A<sup>1</sup>, Regaieg C<sup>1</sup>, Ben Amar S<sup>1</sup>, Bouzidi N<sup>1</sup>, Ben Hamed A<sup>1</sup>, Aloulou J<sup>2</sup>, Bouraoui A<sup>1</sup>, Hamida N<sup>1</sup>

1. Neonatology department, Hedi Chaker University Hospital, Sfax. Faculty of medicine of Sfax

2. Psychiatry department, Hedi Chaker University Hospital, Sfax. Faculty of medicine of Sfax

**Introduction:** The hospitalization of a newborn in a neonatal intensive care unit (NICU) is a highly stressful

experience for parents, potentially leading to post-traumatic stress disorder (PTSD).

**Methods:** This was a prospective, descriptive, and analytical study conducted over three months (January–March 2024). Parents of newborns hospitalized in the NICU at Hedi Chaker hospital between November 2023 and March 2024 were included. Newborns hospitalized for more than 28 days were excluded. Data were collected through telephone interviews conducted at least one month after the newborn's admission to the NICU. The PCL-5 questionnaire, which aligns with DSM-5 diagnostic criteria for PTSD, was used to assess symptoms.

**Results:** One hundred parents were interviewed (65 mothers and 35 fathers). Their mean age was 34.26 years (range: 23–50 years). Overall, 97% of participants reported receiving emotional support from their partner when facing challenges related to their newborn's hospitalization. Thirty-eight percent of parents saw their newborn for the first time immediately after birth. Thirty-one percent of parents exhibited symptoms of post-traumatic stress disorder (PTSD). Women had significantly higher PTSD scores than men (27.2% vs. 16%;  $p = 0.000$ ). Parents under 30 years old had higher PTSD scores compared to older parents (28.8% vs. 20%;  $p = 0.017$ ). A significant association was also found between PTSD symptoms and a maternal gynecological history ( $p = 0.018$ ).

**Conclusion:** This study highlights the importance of preventing PTSD through effective communication with parents during their newborn's hospitalization. Implementing a structured PTSD screening protocol could help identify at-risk parents and provide them with necessary psychological support.

### Impact of maternal diabetes mellitus on neonatal outcomes in mahdia : a retrospective cohort study

Saidane M<sup>1</sup>, Ataallah B<sup>1</sup>, Fekih Romdhane I<sup>1</sup>, Green J<sup>1</sup>, Mlouki I<sup>2</sup>, El Mhamdi S<sup>2</sup>, Youssef M<sup>1</sup>, Ben Hamouda H<sup>1</sup>

1. Department of Neonatology, Tahar Sfar University Hospital, Mahdia, Tunisia

2. Department of Preventive and Community Medicine, University Hospital Tahar Sfar, Mahdia, Tunisia

**Introduction:** Maternal diabetes mellitus (DM) during pregnancy whether pregestational (PDM) or gestational (GDM) is a major public health concern with rising prevalence and substantial economic burden. Understanding its neonatal consequences is essential to guide preventive and therapeutic strategies toward more effective maternal-fetal health policies. This study aims to assess the impact of maternal diabetes on short-term neonatal outcomes by comparing infants born to diabetic mothers (IDMs) and those born to non-diabetic mothers (NDMs).

**Méthodes:** This retrospective cohort study was conducted at Tahar Sfar Hospital, Mahdia, from January 1 to June 30, 2024. Neonatal outcomes of 277 IDMs (92% from mothers with GDM) were compared with 277 matched NDMs.

**Résultats:** Maternal diabetes was significantly associated with increased neonatal morbidity, particularly

macrosomia (RR = 3.10; 95% CI: 1.87–5.13), perinatal asphyxia (RR = 3.49; 95% CI: 1.73–7.03), neonatal respiratory distress (RR = 4.76; 95% CI: 2.58–8.78), hypoglycemia (RR = 6.11; 95% CI: 2.32–16.08), and congenital malformations (RR = 3.73; 95% CI: 1.95–7.11), mainly cardiac, urogenital, and musculoskeletal anomalies. IDMs had higher rates of cesarean delivery, delivery room resuscitation, hospitalization, NICU admission, and both invasive and noninvasive ventilation. No significant difference was observed in hemodynamic instability, healthcare-associated infections, or postnatal mortality.

**Conclusion:** Maternal diabetes is strongly associated with increased neonatal morbidity, notably macrosomia, hypoglycemia, respiratory distress, perinatal asphyxia, and congenital anomalies. These findings highlight the need for early screening, multidisciplinary management, and close neonatal monitoring to mitigate adverse outcomes and reduce the burden of diabetic pregnancies.

### Facteurs de risque et dépistage de la rétinopathie du prématuré au CMNT

Tigorti M, Chourou H, Ben Aziza R, Zairi R, Bel Haj W, Ben Aba N, Sdiri Y, Ayari F, Kacem S  
Centre de Maternité et de néonatalogie de Tunis

**Introduction :** La rétinopathie du prématuré (ROP) constitue une complication multifactorielle liée à la prématurité. Le but de ce travail a été d'étudier les caractéristiques épidémiologiques des nouveau-nés présentant une rétinopathie du prématuré et déterminer les facteurs de risque associés à cette complication.

**Méthodes :** Il s'agit d'une étude rétrospective, descriptive menée au service de médecine et réanimation néonatale au Centre de Maternité et Néonatalogie de Tunis sur une période de 6 mois du 1er janvier 2024 au 31 Juin 2024. Ont été inclus les nouveau-nés ayant un âge gestationnel <33 semaines d'aménorrhée (SA) et/ou un poids de naissance (PN) <1600g et/ou une instabilité clinique. La méthode utilisée pour le dépistage a été la Retcam.

**Résultats :** Parmi 248 nouveau-nés prématurés hospitalisés, 94 ont été inclus dans l'étude. La prévalence de la ROP a été estimée à 27.3% des patients. Le délai moyen de dépistage a été de 35 jours. La rupture prématurée et prolongée des membranes, la chorioamniotite ainsi que le caractère induit de la grossesse se sont révélés être des facteurs de risque statistiquement significatifs de survenue de la ROP. On a noté à une association significative entre la ROP et un âge gestationnel < 33 SA, un poids < 1300g, une ventilation mécanique ≥7 jours et une anémie (p=0,002). Une simple surveillance a été indiquée dans ⅓ des cas, un traitement par photocoagulation au laser a été préconisé pour 9 rétines atteintes et une injection intra-vitréenne d'anti-facteur de croissance vasculaire endothélial ou anti-Vascular endothelial growth factor (anti-VEGF) a été effectuée pour 5 rétines.

**Conclusion :** La prévention de la ROP fait intervenir une meilleure gestion de certains facteurs de risque anténatals tels la RPPM et la chorioamniotite ainsi que

des facteurs postnatals dont la surveillance rigoureuse de l'oxygénothérapie ainsi que l'optimisation de la prise en charge des troubles hémodynamiques.

### Patterns and causes of neonatal readmission : a retrospective study from a tunisian neonatal unit

Rhouma R, Fekih Romdhane I, Elguerchi S, Day H, Saidane M, Ben Hamouda H  
Department of Neonatology, Tahar Sfar University Hospital, Mahdia, Tunisia

**Introduction:** Neonatal readmission to intensive care units reflects the quality and continuity of perinatal care. Infants who experienced complications during their initial hospitalization are particularly vulnerable to readmission in the early weeks of life. The causes are multifactorial and include infections, respiratory distress, congenital anomalies, feeding difficulties, and growth issues.

**Méthodes:** This was a retrospective descriptive study conducted in the Neonatology Department of Tahar Sfar Hospital, Mahdia (Tunisia), from June 1, 2023, to May 31, 2024. All neonates readmitted during this period were included. Demographic, clinical, and outcome data were collected and analyzed.

**Résultats:** A total of 39 neonatal readmissions were recorded, representing a frequency of 2.6%, with a slight male predominance (sex-ratio 1.05). More than half of the infants (51.3%) were preterm, and 53.8% had a birth weight above 2500 g. The main causes of initial hospitalization were respiratory distress (53.8%), suspected early-onset infection (48.2%), and cardiac manifestations (30%), including hemodynamic instability and congenital heart disease. Neonatal jaundice represented 23.4% of initial admissions, mainly due to feto-maternal incompatibility requiring phototherapy. The leading causes of readmission were respiratory symptoms (61.5%) and infectious signs (46.2%). Acute bronchiolitis was the most frequent diagnosis (61.5%), followed by fever, dehydration, and viral illness. The overall outcome was favorable in 92.3% of patients, with 7.7% mortality.

**Conclusion:** Neonatal readmission remains a significant indicator of perinatal care quality. Reducing its incidence requires early identification of at-risk infants, structured discharge planning, effective parental education, and well-coordinated post-discharge follow-up to ensure continuity of care and prevent avoidable morbidity and mortality.

### Facteurs de risque et pronostic materno-fœtal des grossesses prolongées : à propos de 160 cas

Kamoun D, Hriz C, Bouraoui A, Bouzidi N, Ben Thabet A, Ben Hamed A, Charfi M, Hamida N  
Service de néonatalogie, CHU Hedi Chaker de Sfax. Faculté de médecine de Sfax

**Introduction :** La grossesse prolongée est reconnue comme un problème à haut risque auquel sont confrontés les obstétriciens et les néonatalogistes. Notre étude a pour objectif d'identifier les facteurs de risque

associés à la prolongation de la grossesse et d'en évaluer le pronostic materno-fœtal.

**Méthodes :** Étude rétrospective portant sur 160 nouveau-nés, dont 120 issus de grossesses à terme avancé et 40 de grossesses à terme dépassé. Les paramètres maternels et néonataux ont été analysés afin de déterminer les facteurs prédictifs de la prolongation de la grossesse et ses complications.

**Résultats :** Les principaux facteurs de risque identifiés étaient : le sexe fœtal masculin (57 %), un suivi prénatal insuffisant (54 %), l'origine rurale (55 %), un âge maternel compris entre 20 et 30 ans (49 %), la primiparité (47,5 %) et un niveau d'instruction primaire (24 %). La prolongation de la grossesse était associée à une morbidité maternelle accrue : déclenchement du travail dans 46 % des cas et recours à la césarienne dans 56 % des cas. Sur le plan fœtal, une corrélation significative a été observée avec plusieurs complications : anomalies du rythme cardiaque fœtal ( $p = 0,04$ ), liquide amniotique méconial ( $p = 0,032$ ), oligoamnios ( $p = 0,03$ ), traumatismes obstétricaux ( $p = 0,01$ ), score d'Apgar à la première minute compris entre 3 et 7 ( $p = 0,003$ ) et hospitalisation en réanimation néonatale ( $p = 0,007$ ). Le taux de mortalité néonatale était égal à 6,9 %.

**Conclusion :** La grossesse prolongée demeure un facteur de risque important de morbidité materno-fœtale. Un suivi prénatal rigoureux et une surveillance en fin de grossesse sont essentiels pour améliorer le pronostic.

### Facteurs associés à la mortalité néonatale au service de néonatalogie de Mahdia

Ben Hassen A, Toumi H, Fekih Romdhane I, Tarhouni N, Saidane M, Ben Hamouda H  
Service de Néonatalogie, CHU Tahar Sfar, Mahdia, Tunisie

**Introduction :** En Tunisie, malgré les progrès réalisés en soins maternels et périnataux, la mortalité néonatale reste préoccupante. Nos objectifs étaient d'évaluer l'incidence de la mortalité néonatale hospitalière et identifier les facteurs associés.

**Méthodes :** Étude rétrospective incluant 273 nouveau-nés décédés entre janvier 2018 et décembre 2022 dans le service de néonatalogie de l'hôpital universitaire Tahar Sfar de Mahdia.

**Résultats :** Le taux de mortalité néonatale était de 14 pour 1000 naissances vivantes. Elle était relativement plus fréquente chez les nouveau-nés de sexe masculins (55,7%). Les accouchements ont lieu dans la maternité de Mahdia (90,8%), compliqués de SFA (31,1%). Ces nouveau-nés étaient admis à la naissance (82,4%), ont nécessité une parentérale (83,2 %), un support ventilatoire (83,5%), un support hémodynamique (59,7%), une antibiothérapie (77,3%) et une transfusion sanguine (49,1%). La majorité étaient des prématurés (72,4%) avec un terme moyen de  $32 \pm 4$  SA et un poids moyen de 1650 g. Ils avaient un retard de croissance intra-utérin (34,1%). La détresse respiratoire (91,9%), les infections associées aux soins (50,9%) et les malformations congénitales (38,8%) étaient fréquentes. La mortalité néonatale était précoce (63,3%). Les causes principales de mortalité étaient

les malformations congénitales (21,2%), les infections associées aux soins (20,9%) et la très grande prématurité (15,4%). Les causes immédiates étaient dominées par la détresse respiratoire sévère (31,9%), la défaillance hémodynamique (29,7%) et le choc septique (20,9%).

**Conclusion :** Le caractère multifactoriel de la mortalité néonatale implique une stratégie d'intervention multidisciplinaire, engageant un renforcement de la surveillance des grossesses, la prévention de la prématurité et une prise en charge périnatale optimale.

### Neonatal Outcomes in Infants of Diabetic Mothers: A Comparative Study of Gestational and Pregestational Diabetes

Abdennadher A<sup>1</sup>, Khemakhem M<sup>1</sup>, Bouraoui A<sup>1</sup>, Kammoun D<sup>1</sup>, Regaieg R<sup>1</sup>, Ben Hamed A<sup>1</sup>, Kolsi N<sup>1</sup>, Hamida N<sup>1</sup>  
Neonatology department, Hedi Chaker university hospital, Sfax. Faculty of medicine of Sfax

**Introduction:** Newborns of diabetic mothers (NDMs) are at higher risk of neonatal morbidity and mortality, with complications varying according to whether the diabetes is gestational or pregestational.

**Methods:** We conducted a descriptive and comparative study at Hedi Chaker Hospital of Sfax, including all NDMs admitted to the neonatal unit between January 1 and December 31, 2023, born to mothers with either gestational or pregestational diabetes.

**Résultats:** Three hundred forty newborns were identified (22.6% of neonatal admissions). Mothers were predominantly aged between 30 and 40 years (58%), multiparous in 70% of cases, and carrying singleton pregnancies in 89%. In 41% of cases, we noted a threatened preterm labor requiring antenatal corticosteroid therapy. Preterm birth (<37 weeks) occurred in 32.6% of cases, more frequent in gestational diabetes (35%) than in type 1 (24.1%) or type 2 diabetes (19.4%) ( $p = 0.034$ ). Cesarean delivery accounted for 82% of births and was almost systematic in type 2 diabetes (96.8%,  $p = 0.027$ ). At birth, 25.3% of NDMs were macrosomic and 23.5% small for gestational age, with no significant difference by diabetes type. Immediate adaptation was poor in 4% cases. Respiratory distress was observed in 64%. Echocardiography was performed in 36%, revealing hypertrophic cardiomyopathy in 7%. Metabolic complications included hypoglycemia (36.7%) and hypocalcemia (12.8%), with no difference according to diabetes type. Mean hospital stay was 7 days, and overall neonatal mortality was 6%, without significant variation by diabetes type.

**Conclusion:** NDMs represent a high-risk population with a significant incidence of respiratory and metabolic complications. Early identification are essential to improve neonatal outcomes.

### Défis du diagnostic périnatal des malformations congénitales : A propos de 84 cas.

Ben Salah F<sup>1,3</sup>, Nouria K<sup>1</sup>, Hannachi S<sup>1,3</sup>, Mansour K<sup>1</sup>, Fraj H<sup>1,3</sup>, Cherif H<sup>1</sup>, Ben Ghalia M<sup>2,3</sup>, Arfaoui R<sup>2,3</sup>, Blibech S<sup>1,3</sup>.  
1. Service de Néonatalogie et Réanimation Néonatale.

2. Service de Gynécologie Obstétrique. Hôpital Militaire Principal d'Instruction de Tunis
3. Faculté de Médecine de Tunis, Université Tunis El Manar

**Introduction :** Le diagnostic anténatal échographique (DAN) permet de dépister tôt les malformations congénitales et d'optimiser la prise en charge à la naissance.

**Objectif :** Évaluer la performance du diagnostic anténatal dans le dépistage des malformations congénitales.

**Méthodes :** Etude rétrospective descriptive portant sur les nouveau-nés (NN) hospitalisés avec diagnostic de malformation congénitale de diagnostic anté ou postnatal sur une période de 3 ans (1er Janvier 2022-31 Décembre 2023)

**Résultats :** 84 NN ont été retenus avec un diagnostic anténatal de malformation congénitale ou porteur de malformation congénitale à la naissance. L'âge gestationnel moyen était de 38 SA. Les NN issus de la procréation médicalement assistée 5% des cas. Le diabète gestationnel a été retrouvé dans 24% des cas.

Le diagnostic anténatal a été établi dans 55% des cas : anomalies cardiaques (30% des cas), anomalies neurologiques (20% des cas), malformations réno-urinaires (21%), anomalies pulmonaires (7% des cas), syndromes polymalformatifs (6% des cas), malformations digestives (5% des cas), malformations de la face et de la sphère ORL (4% des cas). Les vrais positifs ont représenté 47% des DAN, les faux positifs 1/5 des cas et les faux négatifs dans 1/3 des patients. Une meilleure sensibilité du DAN a été relevée pour les malformations réno-urinaires (86%), les malformations digestives (75%) et les malformations cardiaques (64%). La durée moyenne d'hospitalisation était de 14 jours.

**Conclusion :** Le DAN a métamorphosé l'approche diagnostique, de prise en charge et pronostique des malformations congénitales majeures. La prévention de ces malformations et l'interruption médicale de grossesse reste encore un débat de société.

### Allo-immune thrombocytopenia : clinical manifestations and genotype-phenotype correlations

Barka M<sup>1,2</sup>, Ben Brahim I<sup>1</sup>, Mghirbi O<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia
2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Neonatal alloimmune thrombocytopenia (NAIT) is an uncommon condition responsible for severe neonatal thrombocytopenia. Its severity is mainly related to the risk of intracranial hemorrhage, estimated at 10–20%.

**Methods:** We conducted a retrospective study over 22 years, up to 2025, including newborns admitted for NAIT.

**Results:** Twenty-seven newborns were included (18 males, 9 females). A family history of NAIT was found in four families. Diagnosis was prompted by bleeding manifestations (n=5), an incidental complete blood count (CBC) (n=18), or a CBC performed because of a family history of NAIT (n=4). Initial platelet counts ranged

from 3,000 to 109,000/mm<sup>3</sup> and were below 50,000/mm<sup>3</sup> in 63% of cases. NAIT diagnosis was confirmed by a positive platelet Coombs test in all patients. Platelet genotyping performed in 22 newborns showed parental incompatibility in 16 cases: HPA1 (n=8), HPA5 (n=4), HPA15 (n=3), and HPA3 (n=1). The platelet nadir was <10,000/mm<sup>3</sup> in 75% of HPA1-related NAIT cases, whereas it was >50,000/mm<sup>3</sup> in all HPA5 cases. Treatment consisted of intravenous immunoglobulins with or without platelet transfusion in 17 newborns, platelet transfusion alone in two, and no treatment in eight neonates with platelet counts >50,000/mm<sup>3</sup>. Outcome was favorable in 26 cases.

**Conclusion:** NAIT can be severe due to hemorrhagic complications and its risk of recurrence within families. The HPA1 system is the most frequently involved and associated with the most severe thrombocytopenia.

### Morbi-mortalité chez le grand prématuré : association avec le taux d'hémoglobine à la naissance

Cherif E, Benali M, Khelifa R, Salah S, Jaouhari S, Ben Hamida E  
Service de néonatalogie, Hôpital Charles Nicolle, Tunis

**Introduction :** L'association entre le taux d'hémoglobine (Hb) à la naissance et la morbi-mortalité chez le grand prématuré demeure un sujet à controverses. L'objectif était de décrire les morbidités sévères et la mortalité chez le grand prématuré et de rechercher leur association avec le taux d'Hb à la naissance.

**Méthodes :** Il s'agissait d'une étude rétrospective, descriptive sur une période de cinq ans (2019-2023), incluant tous les prématurés, d'âge gestationnel (AG) entre 28 et 31 SA révolues, ayant eu un taux d'Hb prélevé dans les 12 premières heures de vie. Le critère de jugement principal était le risque composite mortalité/morbidités sévères.

**Résultats :** Nous avons inclus 199 patients. L'AG moyen était de 30,2±1,1SA (28-31SA+6jours). Le poids de naissance (PN) moyen était de 1377±344 g (510–2500g). L'évolution des grands prématurés était le décès (30,7%), une survie sans morbidité sévère (59,3%) et une survie avec morbidité sévère (10%). L'analyse multivariée a montré que le taux d'Hb bas à la naissance était un facteur associé de façon indépendante au risque composite de morbidités sévères/mortalité (ORa=1,219; IC95%[1,009–1,473]; p=0,04) après ajustement selon l'AG, le PN, le sexe, la pathologie hypertensive maternelle, le diabète gestationnel, le retard de croissance intra-utérin et la rupture prolongée des membranes. Un taux d'Hb à la naissance de 15,3g/dl avait une sensibilité de 56,8% et une spécificité 58,5% pour prédire le risque composite de morbidités sévères ou de mortalité.

**Conclusion :** Notre travail a montré que le taux bas d'Hb à la naissance était un facteur associé de façon indépendante au risque composite de morbidités sévères/mortalité.

## Epidemiology of Hemolytic Disease of the Newborn in the Neonatology Department of Farhat Hached Hospital

Barka M<sup>1,2</sup>, Ben Brahim I<sup>1</sup>, Maatallah A<sup>1</sup>, Ghith A<sup>1</sup>, Benlamine Z<sup>3</sup>, Romdhane H<sup>3</sup>, Taamli M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Batoul H<sup>3</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia
2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia
3. Blood Transfusion Center, Farhat Hached University Hospital, Sousse.

**Introduction:** Hemolytic disease of the newborn (HDN) is a potentially life-threatening condition caused by maternal–fetal blood group incompatibility due to maternal alloantibodies. It commonly presents with jaundice and/or anemia, which may be severe. Despite improved screening and prevention, HDN remains a frequent cause of neonatal hospitalization.

**Methods:** We conducted a retrospective study over nine years, starting in 2017, including newborns admitted to the Neonatology Department for jaundice with a positive direct antiglobulin test (DAT).

**Results:** A total of 123 newborns with HDN were included, with an estimated incidence of 0.25% and female predominance (65.9%). Mean age at diagnosis was 24 hours, and mean gestational age was 37 weeks. Antenatal diagnosis was established in 21 cases. One fetus with RhD alloimmunization complicated by hydrops fetalis and severe anemia required intrauterine transfusion. All newborns showed clinical and biological signs of hemolysis, with strong DAT positivity (3+) in 40 cases. Jaundice was present in 105 newborns (85.4%), sometimes associated with pallor, hepatosplenomegaly, or respiratory distress. Severe hyperbilirubinemia occurred in 12 cases (9.8%), and hemolytic anemia in 50 cases (40.7%), including eight severe cases. Acute fetal anemia was observed in three newborns. Etiologies included ABO incompatibility (52.8%), RhD incompatibility (26.8%), and minor blood group antigens (19.5%). Treatment consisted of intensive phototherapy (89.4%), exchange transfusion (17.1%), conventional phototherapy (17.9%), and albumin infusion (30.1%). Outcome was favorable in 84.6%, with six deaths (4.9%).

**Conclusion:** HDN remains a significant cause of neonatal morbidity and mortality, underscoring the importance of early diagnosis and appropriate management.

## Safety and feasibility of peritoneal dialysis in newborns in the NICU of Farhat Hached Hospital

Barka M<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia
2. Faculty of Medicine Ibn El Jazza, Sousse, Tunisia

**Introduction:** Peritoneal dialysis (PD) is an effective alternative to hemodialysis for renal replacement therapy in neonates, particularly in acute kidney injury (AKI) and metabolic disorders. This study aimed to evaluate the indications, technical aspects, complications, and outcomes of PD in neonates.

**Methods:** We conducted a retrospective descriptive study in the NICU of Farhat Hached University Hospital, Sousse, including all neonates who underwent PD between January 2017 and September 2025.

**Results:** Seven neonates underwent PD (4 males, 3 females). Most were full-term (n=5) and eutrophic (n=5). The mean age at PD initiation was 5 days. A family history of metabolic disease was noted in one case, and one neonate had a sibling with a renal transplant. Main reasons for NICU admission were respiratory distress (n=6), neurological impairment (n=4), severe hypoglycemia (n=1), and dehydration (n=1). Clinical findings included hypotonia (n=4), shock (n=4), multiorgan failure (n=4), apnea (n=1), convulsions (n=1), and coma (n=2). Biological abnormalities included severe metabolic acidosis (n=5), hyperammonemia (n=3), severe hyperkalemia (n=4), hyponatremia (n=1), and AKI (n=5). All neonates required mechanical ventilation, and two underwent exchange transfusion. Diagnoses included urea cycle disorders (n=3), hypoxia-related acute tubular necrosis (n=3), and AKI complicating hypertrophic obstructive cardiomyopathy (n=1). Three neonates survived and were discharged after catheter removal at day 15; four died from refractory shock. No PD-related complications were observed.

**Conclusion:** PD is a safe and effective renal replacement therapy in neonates, particularly for oliguric AKI and severe metabolic disorders, especially in resource-limited settings.

## Epidemiological, Clinical, Therapeutic, and Outcome Aspects of SARS-CoV-2 Infection in Neonates: A Multicenter Study

El Ouaer M<sup>1</sup>, Barka M<sup>2</sup>, Nasralli D<sup>2</sup>, Saidane M<sup>3</sup>, Abdelmoula S<sup>1</sup>, Ben Hamida H<sup>1</sup>, Balhoudi N<sup>4</sup>, Hassine M<sup>4</sup>, Mahdhaoui N<sup>2</sup>, Ben Hamouda H<sup>3</sup>, Monastiri K<sup>1</sup>

1. Neonatal Intensive Care Unit, Teaching Hospital Fattouma Bourguiba, Monastir, Tunisia.
2. Neonatal Intensive Care Unit, Teaching Hospital Farhat Hached, Sousse, Tunisia.
3. Neonatal Intensive Care Unit, Teaching Hospital Taher Sfar, Mahdia, Tunisia.
4. Department of Pediatric and Neonatal Care, Teaching Hospital Ibn Jazzar, Kairouan, Tunisia.

**Background :** During the early COVID-19 pandemic, neonatal infection appeared uncommon due to limited testing. While severe disease was well described in adults, data on neonates remained scarce. The study aims to describe the epidemiological, clinical, and outcome characteristics of confirmed SARS-CoV-2 infection in neonates.

**Methods:** We conducted a multicenter descriptive study from January 2020 to December 2023 in four tertiary-level NICUs in central Tunisia. All hospitalized neonates with confirmed SARS-CoV-2 infection by RT-PCR or rapid antigen test were included.

**Results:** Fifty neonates were diagnosed with SARS-CoV-2 infection. The median age at diagnosis was 15.8 days, and the sex ratio was 0.67. Infection was postnatal in 92% and perinatal in 8%, predominantly community-acquired (92%). Fever was the main symptom (72%), resolving

within 48 hours in most cases. Respiratory symptoms occurred in 42%, gastrointestinal in 20%, neurological in 20%, and cutaneous in 2%. Ventilatory support was required in 26% of cases; five preterm infants with comorbidities developed severe respiratory distress and required mechanical ventilation. Radiological abnormalities were seen in 40% of chest X-rays. The median hospital stay was 5.5 days, and four deaths occurred due to septic shock.

**Conclusion:** SARS-CoV-2 infection in neonates remains rare and usually mild, but severe forms may occur in preterm or comorbid infants. Postnatal community transmission predominates. Ongoing surveillance and strict infection control measures are essential to prevent neonatal COVID-19 and optimize outcomes.

### Risk Factors and Outcomes in Neonatal Nosocomial Invasive Candidiasis: A 10-Year Retrospective Study

Regaieg C<sup>1</sup>, Haj Ltaief M<sup>1</sup>, Khemakhem N<sup>2</sup>, Bouraoui A<sup>1</sup>, Ben Hamad A<sup>1</sup>, Kolsi N<sup>1</sup>, Hamida N<sup>1</sup>

1. Neonatology Department, Hedi Chaker university Hospital, Sfax

2. Parasitology Department, Habib Bourguiba university Hospital, Sfax. Faculty of medicine of Sfax

**Introduction:** Nosocomial invasive candidiasis (NIC) is increasing in neonatal intensive care units, where an ever-growing number of premature and very low birth weight infants are being cared for. Identifying risk factors (RFs) have contributed to improved management of these infections. The Objectives are to identify the RFs associated with the development of NIC and to determine mortality factors.

**Methods:** We carried out a retrospective study between 2014 and 2023 in the Neonatology Department of Sfax. All newborns who underwent at least one Sabouraud blood culture due to suspected NIC were included. The diagnosis was established when the criteria for confirmed or probable infection were met.

**Results:** Fungal infection was suspected in 157 neonates, and 109 were included in the study. Eighty six cases of NIC were identified, 13 were confirmed and 73 were probable infections. 22% of patients had undergone surgery prior to infection suspicion. Mechanical ventilation (MV) was required in 62.8% of cases. The predominant clinical signs were skin discolouration, and haemodynamic instability. *Candida albicans* was the predominant species (61.8%). RFs for developing NIC included the duration of MV ( $p=0.0013$ ), suspicion of nosocomial bacterial infection ( $p=0.043$ ), and hospital stay  $>7$  days ( $p<0.001$ ). The overall mortality rate was 36%. Mortality was associated with birth weight  $<1000$ g ( $p=0.031$ ), occurrence of haemodynamic complications ( $p=0.003$ ), MV ( $p=0.002$ ), and antibiotic therapy ( $p=0.001$ ). Conversely, breastfeeding ( $p<0.001$ ) and early initiation of enteral nutrition ( $p=0.011$ ) were protective factors.

**Conclusion:** NIC was associated with high morbidity and mortality among neonates. The implementation of well-structured preventive and screening strategies is crucial to improving outcomes in this vulnerable population.

### Rational Sampling and Antibiotic Use in NICU: Low Yield and Emerging Resistant Pathogens

Letaief C<sup>1</sup>, Mghirbi O<sup>1,2</sup>, Outtay A<sup>1,2</sup>, Barka M<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Soyad N<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Neonatal intensive care units (NICUs) are high-risk environments for healthcare-associated infections. Routine, non-targeted bacteriological sampling, combined with empirical broad-spectrum antibiotic use, promotes the emergence of multidrug-resistant (MDR), extensively drug-resistant (XDR), and pan-drug-resistant (PDR) pathogens, limiting therapeutic options and increasing neonatal morbidity.

**Methods:** To evaluate bacterial ecology, antimicrobial resistance patterns, and the diagnostic yield of microbiological cultures in a NICU, highlighting the need to rationalize sampling and optimize antibiotic therapy according to international guidelines (IDSA, ESCMID, SFAR). A retrospective analysis included 1,851 microbiological samples collected over one year in a NICU. Data were analyzed by sample type, pathogen isolated, antimicrobial susceptibility, and clinical concordance. Only infections confirmed both clinically and microbiologically ( $n=94$ ) were considered.

**Results:** Overall culture positivity was 11% (204/1,851). Blood cultures had particularly low yield: among 590 performed, only 25 (4.2%) were clinically concordant. Most positive samples lacked clinical significance, reflecting systematic, non-guided sampling. Dominant pathogens were *Klebsiella pneumoniae* (51.5%) and *Staphylococcus epidermidis* (11.8%). Resistance profiles included 33% MDR, 6% XDR, and 8% PDR, with frequent ESBL, MR-CoNS, and BHR isolates. The low clinical concordance of positive cultures emphasizes the limited predictive value of routine sampling and the risk of unnecessary antibiotic exposure.

**Conclusion:** The study demonstrates the low diagnostic yield and frequent discordance of bacteriological cultures in NICUs. Rationalizing sampling to clinically justified cases, strengthening antibiotic stewardship, and monitoring local bacterial ecology are essential to reduce the emergence of highly resistant pathogens and optimize neonatal outcomes.

### Infections associées aux soins en milieu de réanimation néonatale : A propos de 61 cas

Cherif H<sup>1</sup>, Ben Salah F<sup>1,2</sup>, Hannachi S<sup>1,2</sup>, Mansour K<sup>1</sup>, Nouira K<sup>1</sup>, Landolsi H<sup>1</sup>, Chargui A<sup>1</sup>, Chouikha M<sup>1</sup>, Mannai E<sup>1</sup>, Fraj H<sup>1,2</sup>, Blibech S<sup>1,2</sup>

1. Service de Néonatalogie et Réanimation Néonatale. Hôpital Militaire Principal d'Instruction de Tunis

2. Faculté de Médecine de Tunis, Université Tunis El Manar

**Introduction :** Les infections associées aux soins (IAS) constituent une cause majeure de morbi-mortalité en néonatalogie.

**Objectif :** Dresser les caractéristiques épidémiologiques, cliniques, microbiologiques, thérapeutiques et évolutives des IAS

**Méthodes :** Etude rétrospective descriptive sur une période de trois ans (2022 – 2024) incluant les NN ayant développé une IAS.

**Résultats :** Nous avons colligé 61 cas d'IAS. La prévalence hospitalière est de 1,7 %. Le terme moyen était de 32 SA. Les hypotrophes ont représenté 72%cas. L'âge moyen de survenue de l'IAS était de 15 jours de vie. Les signes de l'IAS étaient l'hyperthermie (20%cas), la détresse hémodynamique (20%cas), l'hypothermie (16%cas), la détresse respiratoire (10%cas), le changement de teint (10%cas), le ballonnement abdominal (5%cas) et les convulsions (3%cas). Les IAS se sont déclarées sous ventilation artificielle dans 82 %cas et avec un cathétérisme ombilical dans 93% cas.

L'anémie a été relevée dans 56 %cas, la CIVD dans 25%cas et la thrombopénie dans 11%cas. L'antibiothérapie empirique utilisée était l'impénème avec l'amikacine. Les germes isolés étaient *Klebsiella Pneumonia* 2/3 des cas, *E. coli* (25%cas), *Enterobacter Cloacae* (15% cas). Les supports utilisés étaient ventilatoire (28%cas) et hémodynamique (15% cas). L'évolution était favorable dans 79 % des cas.

**Conclusion :** Les IAS en néonatalogie concernent principalement les prématurés et les hypotrophes, soumis à des gestes invasifs. La prédominance de germes multirésistants souligne la nécessité d'une politique rigoureuse d'hygiène hospitalière et de surveillance écologique. La mortalité reste élevée, faisant de ces IAS un véritable enjeu de santé publique.

### Long-term impact of neonatal meningitis and predictive factors of neurodevelopmental sequelae

Charfi M, Fendri O, Abdennadher A, Kolsi N, Ben Hamad A, Ben Thabet A, Regaieg C, Hamida N  
Neonatology Department, Hedi Chaker University Hospital, Sfax. Faculty of medicine of Sfax, Tunisia

**Introduction:** Neonatal bacterial meningitis is a severe infection of central nervous system. We aimed to study its long-term impact and the predictive factors of neurodevelopmental sequelae.

**Methods:** We conduct a retrospective analytical study at the Neonatal intensive care unit of Sfax, between January 2014 and December 2024. The study included all newborns diagnosed with bacterial meningitis.

**Results:** Thirty cases were collected with a male/female sex ratio of 1.3. Main risk factor was premature rupture of membranes (50%), followed by intrauterine infection (33.3%). Early onset ( $\leq 72$  hours) was noted in 83.3% of cases. The predominant clinical signs were seizures (46.7%) and fever (30%). CRP level was  $> 50$  mg/L in 55.2% of cases. The predominant germ was Group B streptococcus (40%) followed by *Escherichia coli* (30%). A neurological complication was noted in 26.6% of cases, especially persistent hypoglycorrachia ( $n = 3$ ) and ventriculitis ( $n = 2$ ). Mortality rate was 10%. Follow-up data were available for only 26 survivors. Neurodevelopmental sequelae were noted in 38.4% (10/26 cases) including epilepsy (15.4%;  $n=4$ ), psychomotor impairment (23.1%;  $n=6$ ), and hearing loss

(3.8%;  $n=1$ ). After the analytical study, predictive factors of neurodevelopmental sequelae were preeclampsia ( $p=0.019$ ), the occurrence of neurological complications in the acute phase ( $p=0.009$ ), CRP  $> 50$  mg/L ( $p=0.023$ ), the use of antiepileptic treatment ( $p=0.009$ ), persistent hypoglycorrachia in the control lumbar puncture ( $p=0.034$ ) and brain imaging abnormalities ( $p=0.032$ ).

**Conclusion:** Despite progress in neonatal care, neonatal meningitis remains associated with serious neurological sequelae. We insist on the importance of prevention and early management.

### Bacterial Resistance Patterns and Diagnostic Yield in Neonatal Intensive Care Unit Infections: Observational Study

Outtay A<sup>1</sup>, Mghirbi O<sup>1,2</sup>, Letaief C<sup>1</sup>, Barka M<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Neonatal intensive care units (NICUs) are high-risk settings for bacterial infections due to invasive procedures, prematurity, and immune immaturity. The emergence of multidrug-resistant (MDR) and pan-drug-resistant (PDR) bacteria increases neonatal morbidity, mortality, and reliance on last-line antibiotics. In Tunisia, ESBL-producing Enterobacteriaceae and resistance to carbapenems and colistin are increasingly reported. This study aimed to describe bacterial resistance patterns, identify risk factors for MDR spread, and evaluate the diagnostic yield of microbiological cultures.

**Methods:** A one-year observational study (July 2024–July 2025) was conducted in the NICU of Farhat Hached University Hospital, Tunisia. Neonates with confirmed or highly suspected healthcare-associated infections were included; early-onset infections and contaminated samples were excluded. Clinical, biological, and microbiological data were analyzed.

**Results:** Among 590 suspected infections, 94 (15.9%) were highly probable and 25 (4.2%) bacteriologically confirmed. Cultures were mainly blood (84.2%), urine (68.4%), cerebrospinal fluid (57.6%), and tracheal aspirates (36.4%). ESBL strains accounted for 25% of isolates, MDR 31%, and PDR 18.1%. Prolonged hospitalization ( $>30$  days) occurred in 70% of cases. Main associated factors included prematurity, mechanical ventilation, parenteral nutrition, and prior antibiotic exposure. Complications occurred in 20%, primarily septic shock. Only 25 of 59 positive blood cultures corresponded to clinically significant infection.

**Conclusion:** High antibiotic use and limited diagnostic performance of cultures were observed. The prevalence of MDR and PDR pathogens highlights the importance of antimicrobial stewardship, optimized culture practices, and continuous surveillance of resistance patterns in NICUs.

## Infection néonatale bactérienne précoce chez le prématuré

Tigorti M, H. Chourou, R. Ben Aziza, R. Zairi, W. Bel Haj, N. Ben Aba, Y. Sdiri, F. Ayari, Kacem S  
Centre de Maternité et de néonatalogie de Tunis

**Introduction :** L'infection néonatale bactérienne précoce (INBP) constitue un problème de santé publique chez le nouveau-né. L'objectif de notre étude est d'identifier les facteurs de risque maternels et néonataux associés à la survenue d'une infection materno-fœtale et de définir le profil bactériologique actuel de ces infections, leur tableau clinique et leur évolution chez les prématurés.

**Méthodes :** Il s'agit d'une étude rétrospective, descriptive menée au CMNT sur une période de 6 mois du 1er janvier 2024 au 31 Juin 2024 incluant 226 prématurés d'âge gestationnel entre 27 SA et 36 SA chez qui une infection bactérienne précoce a été suspectée.

**Résultats :** Nous avons inclus 226 prématurés. L'infection néonatale bactérienne précoce a été retenue dans 19 % des cas. Les facteurs associés à l'infection ont été : la chorioamniotite (n=17), une prématurité inexpliquée (n=133) et une fièvre maternelle (n=1). La symptomatologie clinique a été dominée par la détresse respiratoire (90%). Le diagnostic de méningite a été retenu dans près de la moitié des cas (51%).

Un état de choc septique avec recours aux drogues vasoactives a été noté dans 7% des cas. L'hémoculture a été positive dans 9% des cas. Concernant le profil bactériologique, les principaux germes isolés ont été : le staphylocoque coagulase négative (23,3%), le citobacter koseri (22%) et l'acinetobacter baumannii (13,6%). L'évolution a été favorable dans 66,4% des cas et le taux de décès a été de 33,6%.

**Conclusion :** Cette étude met en évidence la fréquence élevée des INBP chez les nouveau-nés prématurés. L'écologie bactérienne est dominée par les Gram négatifs. Nous notons une importante résistance aux antibiotiques usuels et une mortalité assez élevée.

## Risk Factors associated with mortality in Neonatal Multidrug-resistant Bacterial Infections: A 10-Year Retrospective Study

Regaieg C<sup>1</sup>, Baati A<sup>1</sup>, Abidi H<sup>1</sup>, Ben Ayed N<sup>2</sup>, Bouraoui A<sup>1</sup>, Karray H<sup>2</sup>, Charfi M<sup>1</sup>, Hamida N<sup>1</sup>

1. Neonatology Department, Hedi Chaker University Hospital, Sfax  
2. Microbiology Department, Habib Bourguiba University Hospital, Sfax.  
Faculty of medicine of Sfax, Tunisia

**Introduction:** Multidrug-resistant (MDR) bacterial infections are a major global public health concern. Newborns, particularly preterm infants, are highly vulnerable because of immune system immaturity and the frequent use of invasive procedures in neonatal intensive care units. These infections are linked to substantial morbidity, mortality, and increased healthcare costs. The aim of this study is to identify risk factors associated with mortality in neonatal MDR bacterial infections.

**Methods:** A retrospective, descriptive, and analytical study was conducted from 2013 to 2022 in the

Neonatology Department of Sfax. The diagnosis of MDR bacterial infection was confirmed by a positive central sample for MDR bacteria, such as blood and/or cerebrospinal fluid cultures.

**Results:** One hundred thirty five invasive MDR bacterial infection were identified. Preterm infants represented 87% of cases, and 57% had very low birth weight was. Before infection onset, 39.3% required mechanical ventilation (MV), and 94.8% had an umbilical catheter. The mortality rate was 52.6%. Factors significantly associated with mortality included threatened preterm labour (p=0.042), birth weight <1500g (p=0.019), intensive resuscitation at birth (p=0.039), worsening respiratory distress (p=0.003), Klebsiella pneumoniae infection (p=0.013), use of vasoactive drugs (p=0.001), and MV (p=0.009). Breast milk feeding was protective factor against mortality (p=0.001; OR=0.4).

**Conclusion:** MDR bacterial infections in neonates remain associated with high morbidity and mortality. Continuous inspection of antibiotic resistance and implementation of a national antibiotic stewardship program are essential to reduce their impact.

## Spina bifida périnatal : Etude clinique, paraclinique et évolutive sur 26 cas

Tobji A<sup>1</sup>, Hannachi S<sup>1,4</sup>, Ben Salah F<sup>1,4</sup>, Landolsi H<sup>1</sup>, Fraj H<sup>1,4</sup>, Ben Ghalia M<sup>2,4</sup>, Rachdi A<sup>3,4</sup>, Chkili R<sup>3,4</sup>, Arfaoui R<sup>2,4</sup>, Blibech S<sup>1,4</sup>.

1. Service de Néonatalogie et Réanimation Néonatale.  
2. Service de Gynécologie Obstétrique.  
3. Service de Neurochirurgie. Hôpital Militaire Principal d'Instruction de Tunis  
4. Faculté de Médecine de Tunis, Université Tunis El Manar

**Introduction :** Le Spina Bifida (SB) est une malformation congénitale rare qui se caractérise par un défaut de fermeture du tube neural au niveau médullaire. Il peut se manifester sous des formes diverses allant d'une forme asymptomatique de bon pronostic à des formes symptomatiques souvent associés à de multiples comorbidités.

**Objectif :** Décrire le profil clinique, paraclinique et évolutif des nouveau-nés (NN) pris en charge pour spina bifida.

**Méthodes :** Etude rétrospective observationnelle descriptive à but pronostic colligeant les cas de SB sur une période de 13 ans (1.1.2012 – 31.12.2024).

**Résultats :** Une série de 26 cas de spina bifida a été étudiée : 14 myéloméningocèles, 10 méningocèles et 2 formes occulta. L'incidence moyenne était de 0,33 ‰, avec un genre-ratio de 0,85. La consanguinité concernait 35 % des cas, et le diabète gestationnel 38 %. L'âge maternel moyen était de 33,1 ans, avec une parité de 2,3. Le diagnostic anténatal a été posé dans 23 % des cas. L'âge moyen d'admission était de 1,5 jour, avec une prédominance lombo-sacrée. Les pieds bots varus équins étaient les principales malformations orthopédiques. L'incontinence vésico-sphinctérienne touchait 54 %. L'IRM a révélé une hydrocéphalie (42 %), une malformation de Chiari (65 %) et une syringomyélie (42 %). La cure chirurgicale a été réalisée dans 69 % des cas, à 44,5 jours en moyenne. Les complications incluaient méningite (27 %), retard psychomoteur (46 %), incapacité motrice (50

%) et vessie neurologique (58 %). Le suivi moyen était de 6,8 ans, avec une mortalité de 0,13 %.

**Conclusion :** Le spina bifida, malformation rare et invalidante, nécessite un diagnostic précoce, une prise en charge pluridisciplinaire et une prévention par acide folique.

### Diagnostic moléculaire des dystrophies musculaires congénitales : Particularités dans la population tunisienne

Kamoun M<sup>1</sup>, Boujelben I<sup>1</sup>, Majdoub F<sup>1</sup>, Gharbi N<sup>1</sup>, Chaabene M<sup>2</sup>, Abdelhaedi F<sup>1</sup>, Hamida N<sup>2</sup>, Sfaihi L<sup>3</sup>, Ben Halima A<sup>4</sup>, Kolsi N<sup>2</sup>, Elleuch A<sup>4</sup>, Bouchaala W<sup>5</sup>, Trabelsi M<sup>6</sup>, Kamoun H<sup>1</sup>, Ben Ayed I<sup>1</sup>

1. service de Génétique médicale, CHU Hedi Chaker, Sfax. Faculté de médecine de Sfax. Tunisie

2. service de Neonatologie, CHU Hedi Chaker, Sfax. Faculté de médecine de Sfax. Tunisie

3. service de pédiatrie, CHU Hedi Chaker, Sfax. Faculté de médecine de Sfax. Tunisie

4. service de réanimation pédiatrique, CHU Hedi Chaker, Sfax. Faculté de médecine de Sfax. Tunisie

5. service de neurologie pédiatrique, CHU Hedi Chaker, Sfax. Faculté de médecine de Sfax. Tunisie

6. service de génétique, Hôpital Charles Nicolle, Tunis

**Introduction :** Les dystrophies musculaires congénitales (DMC) sont un groupe hétérogène de maladies génétiques. Parmi elles, la DMC de type 1A (MDC1A), due à des mutations du gène LAMA2, et la dystrophie musculaire-dystroglycanopathie de type B5 (MDDGB5), liée au gène FKRP, sont deux formes autosomiques récessives présentant chacune une mutation fondatrice en Tunisie. Cette étude visait à souligner l'importance du diagnostic moléculaire pour affiner le conseil génétique.

**Méthodes :** Analyse ciblée à la recherche de la mutation c.8007delT(p.Gln2670AsnfsTer58) dans LAMA2 ou c.1364C>A(p.Ala455Asp) dans FKRP, chez des patients présentant un phénotype évocateur de MDC1A ou MDDGB5.

**Résultats :** Chez dix enfants issus de sept familles non apparentées, le diagnostic de MDC1A a été confirmé par la mise en évidence de la mutation LAMA2 à l'état homozygote. Leurs tableaux cliniques comprenaient une hypotonie néonatale, un retard moteur, une amyotrophie, des déformations squelettiques et un déficit en mérosine. Pour la MDDGB5, six enfants appartenant à cinq familles présentaient une hypotonie globale, une élévation des enzymes musculaires, un aspect myogène à l'EMG et/ou des anomalies de la substance blanche. Tous étaient porteurs homozygotes de la mutation fondatrice de FKRP. L'étude de ségrégation a montré que chaque parent était hétérozygote, confirmant un risque de récurrence de 25 %. Trois familles ont eu recours au diagnostic prénatal, permettant d'identifier deux fœtus atteints et d'éviter une récurrence.

**Conclusion :** La mise en évidence de mutations fondatrices facilite le diagnostic moléculaire et le conseil génétique, contribuant à la prévention et à une meilleure prise en charge des DMC en Tunisie.

### Uncommon causes of neurological disorders in newborns

Barka M<sup>1,2</sup>, Mghirbi O<sup>1,2</sup>, Ghith A<sup>1</sup>, Brahem D<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Soyed N<sup>1,2</sup>, Guellim I<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Department of Neonatology University Hospital Sousse –Tunisia

2. Faculty of Medicine Ibn El Jazzar Sousse, Tunisia

**Introduction:** Inborn errors of metabolism (IEM) are rare genetic disorders caused by defects in metabolic pathways, leading to the accumulation of toxic substances or deficiency of essential products. They may present with neurological manifestations mimicking anoxic-ischemic encephalopathy. Although individually rare, their overall prevalence is significant, affecting approximately 1 in 2,500 births.

**Methods:** A retrospective study was conducted in the Neonatology Department of Farhat Hached Hospital over nine years (2016–2024), including newborns hospitalized for neurological distress related to IEM.

**Results:** Sixteen newborns were included (7 males, 9 females). Consanguinity was noted in seven cases, and a history of early sibling death in six. A symptom-free interval after birth was observed in ten cases, with a mean age of symptom onset of 28 hours. Clinical manifestations were non-specific, mainly hypotonia (n=12), convulsions (n=6), weak sucking reflex (n=6), and delayed respiratory distress (n=4). Biological abnormalities included hyperammonemia in five cases and hyperlactacidemia in two. Diagnosis was confirmed by amino acid and organic acid chromatography (n=10), brain MRI with spectroscopy (n=5), anatomopathological examination (n=2), long-chain fatty acid measurement (n=2), and molecular analysis (n=2). Identified disorders included non-ketotic hyperglycinemia (n=7), Zellweger syndrome (n=3), urea cycle disorders (n=3), pyridoxine-dependent encephalopathy (n=1), aminoacidopathy (n=1), and methylglutaconic aciduria (n=1). The outcome was fatal in 62.5% of cases, mainly due to neurological deterioration, status epilepticus, and multiorgan failure.

**Conclusion:** IEM remain difficult to manage due to diagnostic complexity and limited therapeutic options, often requiring supportive care rather than specific treatment.

### Clinical and bacteriological aspects of neonatal meningitis : experience of the Mahdia neonatology department (2017–2024)

Ben Elhaj Rhouma E, Fekih Romdhane I, Hedhili S, Youssef M, Saidane M, Ben Hamouda H

Department of Neonatology, Tahar Sfar University Hospital, Mahdia, Tunisia

**Introduction:** Neonatal meningitis remains a severe infection due to the immaturity of the neonatal immune system and the diversity of causative pathogens, mainly Group B Streptococcus and Escherichia coli. Despite advances in neonatal intensive care, early diagnosis remains challenging because of nonspecific clinical signs. The objective is to describe the clinical, biological, and therapeutic characteristics of neonatal meningitis cases

**Méthodes:** A retrospective descriptive study was conducted in the neonatology department of Taher Sfar hospital, Mahdia, from 2017 to 2024. All neonates with biologically confirmed meningitis were included. Data were collected from medical records.

**Résultats:** Twenty cases of neonatal meningitis were recorded. The sex-ratio was 2.3, favoring males. Premature infants represented 60% of cases, and 45% were low-birth-weight (< 2.500 g). Early-onset meningitis accounted for 71% of cases. Main clinical signs were respiratory distress (35%), fever (30%), and seizures (20%). Septic shock occurred in 27% of cases. Laboratory findings showed CRP > 20 mg/L in 80% and anemia in 70%. Cerebrospinal fluid (CSF) was turbid in 20% of cases, with a mean white cell count of 606/mm<sup>3</sup>, predominantly neutrophils (85%). Mean protein level was 1.7 g/L, and CSF/blood glucose ratio < 0.5 was found in 85%. Bacteriological confirmation was obtained in four cases : Escherichia coli, Group B Streptococcus, Klebsiella pneumoniae (ESBL-producing), and Pseudomonas aeruginosa. Empirical therapy combined cefotaxime, ampicillin, and gentamicin in 43% of cases; ofloxacin was used in 47% during the first five days.

**Conclusion:** Neonatal meningitis primarily affects premature and low-birth-weight infants. Early recognition and tailored antibiotic therapy are crucial to improving outcomes.

### Predictive factors for adverse outcome of neonatal bacterial meningitis

Charfi M, Fendri O, Bouraoui A, Regaieg C, Ben Thabet A, Regaieg R, Kolsi N, Hamida N  
Neonatology Department, Hedi Chaker University Hospital, Sfax. Faculty of medicine of Sfax, Tunisia

**Introduction:** Neonatal bacterial meningitis is associated with significant morbidity and mortality. We aimed to study predictive factors for adverse outcomes in order to improve management.

**Methods:** We conduct a retrospective analytical study at the Neonatal intensive care unit of Sfax, between January 2014 and December 2024. The study included all newborns diagnosed with bacterial meningitis.

**Results:** Thirty cases were collected with a male/female sex ratio of 1.3. The predominant risk factor was premature rupture of membranes (50%), followed by intrauterine infection (33.3%). Early onset (≤72 hours) was noted in 83.3% of cases. The predominant clinical signs were seizures (46.7%) and fever (30%). Hemodynamic disorders were associated in 25% of cases. CRP level was > 50 mg/L in 55.2% of cases. Abnormalities noted in cerebrospinal fluid were pleocytosis (93.3%), hypoglycorrhachia (70%) and hyperproteinorachia (66.7%). The predominant germ was Group B streptococcus (40%) followed by Escherichia coli (30%). A neurological complication was noted in 26.6% of cases. It was persistent hypoglycorrhachia (n = 3), ventriculitis (n = 2), hydrocephalus (n = 2), post-infectious vasculitis with extensive stroke (n = 1), intracranial hematomas (n = 1) and intraventricular hemorrhage (n = 1). Mortality

rate was 10%. After the analytical study, the predictive factors of adverse outcome were intrauterine infection (p=0.042), emergency cesarean section (p=0.023), the presence of hemodynamic disorders (p=0.012), and the use of antiepileptic treatment (p=0.018).

**Conclusion:** Prevention of perinatal infection risk factors, especially intrauterine infection, remains essential to reduce the incidence of not only neonatal meningitis but also severe forms.

### Quel devenir neurologique pour les nouveau- nés atteints d'encéphalopathie hypoxo-ischémique stade II

Soyed N<sup>1,2</sup>, Mansour H<sup>1</sup>, Mghirbi O<sup>1,2</sup>, Taamli M<sup>1,2</sup>, Brahem D<sup>1,2</sup>, Mahdhaoui N<sup>1,2</sup>

1. Service de néonatalogie CHU Farhat Hached Sousse

2. Faculté de Médecine Ibn El Jazzar Sousse, Tunisie

**Introduction :** L'encéphalopathie hypoxo-ischémique (EHI) est une pathologie néonatale grave au pronostic neurodéveloppemental redouté. L'objectif de cette étude était de décrire le devenir neurologique à l'âge scolaire des patients atteints d'EHI stade 2.

**Méthodes :** Il s'agit d'une étude descriptive rétrospective incluant les nouveau-nés à terme diagnostiqués EHI stade 2 au service de néonatalogie de Sousse entre 2016 et 2018. Ont été exclus les nouveau-nés porteurs d'anomalies chromosomiques, génétiques ou métaboliques, ainsi que ceux issus de mères célibataires ou perdus de vue.

**Résultats :** Parmi 175 nouveau-nés diagnostiqués EHI, 40 (23 %) ont été inclus. En salle de naissance, 26 nouveau-nés avaient nécessité une réanimation, avec intubation dans 10 cas. Une hypotonie isolée était observée chez 50 % des patients, des convulsions isolées chez 5 %, et une association des deux chez 45 %. L'échographie transfontanellaire, réalisée chez tous les patients, était normale dans 85 % des cas. L'électroencéphalogramme, effectué chez 34 enfants à un âge moyen de 37 jours, était normal dans 33 cas. L'IRM cérébrale, réalisée chez 57,5 % des patients à un âge moyen de 4 mois, était normale. Un patient présentait des troubles moteurs légers, deux avaient un trouble de l'attention avec ou sans hyperactivité, et deux étaient suivis pour épilepsie. Aucun déficit sensoriel n'a été rapporté. Le rendement scolaire était moyen dans 52,5 % des cas et bon dans 30 %.

**Conclusion :** Cette étude confirme la variabilité du pronostic neurodéveloppemental des EHI stade 2 et souligne la nécessité d'un suivi structuré à long terme.