Prevalence of Neonatal Jaundice in the Zone Hospital of Suru-Lere at Cotonou (Benin)

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Abstract

Objectives: Summarize the data for better management of jaundice in neonatology

Patients and methods: This was a study on 842 Beninese newborns aged 0 to 7 days hospitalized over the period from June 2014 to June 2015.

Results: On 842 newborns, 170 were neonatal jaundice franc is 20.19%. The ratio is in favor of boys (1.8); jaundice is early in 2.35% of cases. Etiologies are represented by physiological jaundice, infection, maternal-fetal incompatibility erythrocyte. The use of exchange transfusion was required in 5.29% of cases. The rest of the treatment was dominated by intensive phototherapy and / or associated with conventional etiological treatment. Prematurity and infection are the main risk factors identified in our series.

Conclusion: Jaundice is a common condition of course, but we draw attention to the importance of the rate of neonatal jaundice in our context related primarily to the non-monitoring of pregnancies, early discharge of maternity and consultations late.

Keywords: Jaundice, Prevalence, Newborn, Spectrophotometer, Bilirubin.
1 | INTRODUCTION

Jaundice, a symptom particularly present in newborns, is expressed by the yellow coloration of the skin and mucous membranes due to an increase in the blood level of bilirubin. Intense hyperbilirubinemia can be responsible for neurological complications. Approximately 60% of healthy newborns develop jaundice during the first days of life. The difficulty lies in distinguishing the few newborns with severe hyperbilirubinemia with risk of bilirubin encephalopathy from the much larger number of newborns with physiological jaundice. The incidence of jaundice in newborns is poorly known due to definitional difficulties, variability in geographical origins, breastfeeding rates, blood types and early discharge. An incidence rate in the United Kingdom in 2001 was 5.5 ictères (bilirubinemia 350 mol/L) per 1000 live births. In Denmark, in 2000-2001, an incidence of 25 per 100,000 births was noted for severe ictères above 385 mol/L. In the USA, in 1995-1996, rates of 20 per 1000 births were reported for bilirubinemia > 350 mol/L, 1.5 per 1000 for bilirubinemia > 430 mol/L and 10 per 100,000 for bilirubinemia > 500 mol/L in 1995-1996. In France, this incidence is not known. (1). In addition, several reports mention an increase in bilirubin encephalopathy in recent years. This increase is mainly due to a lack of clinical surveillance in maternity wards or during premature departure at home, as well as an underestimation or trivialization of the toxic effects of bilirubin on the central nervous system. The reports in question emphasize the importance of official recommendations, such as the present recommendations. In 1984 and 1993, the Swiss Neonatology Group published recommendations concerning the treatment of hyperbilirubinemia in the newborn. (2).

As these numerous field studies confirm this trend, we thought it would be interesting to summarize the data for a better management of this disease in neonatology.

2 | PATIENTS AND METHOD

The study was conducted over a one-year period (from June 2014 to June 2015). It was carried out on a population of 842 newborns of 0 to 7 days old hospitalized at the HZSL in Cotonou (Benin).

The method used for this bilirubin assay is based on the reaction between bilirubin and diazotized sulfanilic acid solutions. In aqueous solutions, only direct (conjugated) bilirubin will react in this way. Therefore, to estimate total bilirubin, unconjugated bilirubin must be released from its binding to albumin and made water-soluble. This is accomplished by the addition of a gas pedal or solvent. The reagent used is the commercially available BIO-LABO reagent.

3 | RESULTS

Among 842 newborns hospitalized, 170 of them presented a frank jaundice sign, which represents a percentage of 20.19% of hospitalizations. Analysis of these 170 cases showed that the ratio was 1.8 in favour of boys. Premature babies represented 14% of this population. The most frequent type of jaundice is pathological jaundice with a rate of 68.24%, it is early in 2.35% of cases. Pregnancies were not followed up in 32% of the cases and 19% of the women did not know their Rhesus blood group. The etiologies are dominated by physiological jaundice, followed by fetal-maternal infection, and erythrocyte incompatibility. Exchange transfusion was required in 5.29% of newborns. Conventional and/or intensive phototherapy was the main therapy used. Newborns weighing more than 2500g represent 81.18% of the icteric population.

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DISCUSSIONS

Jaundice remains a frequent pathology of the neonatal period since it is reported in the medical literature in about two thirds of newborns and our study found it in more than one fifth of hospitalized patients. Indeed, due to its physiological particularities, the newborn is exposed to high levels of bilirubin, in particular non-conjugated extracellular bilirubin, also known as free or indirect bilirubin. This is mainly due to the following factors:

- Decreased half-life of fetal red blood cells
- The importance of the globular mass
- The release of the non globular heme
- Lack of free bilirubin uptake and conjugation by the still immature liver.

In addition, there is the possibility of insufficient bilirubin-albumin binding, dystocic deliveries with hematomas and muscle attrition, activation of heme-oxygenase by hypoglycemia and/or hypothermia, and finally an increase in the enterohepatic cycle. All these situations contribute to the accumulation of free bilirubin, a pigment that is all the more toxic when the newborn is preterm, ill and/or subjected to prolonged fasting.

The frequency and potential seriousness of this pathology therefore encourages the adoption of an urgent and rigorous diagnostic approach in order to institute an appropriate therapy aimed at safeguarding the newborn’s quality of life.

The early onset of clinical jaundice, before the 24th hour of life, is immediately pathological. This situation is encountered in 2.35% of our population; hemolysis and infection are the main causes. The search for anamnestic and clinical data makes it possible to distinguish between pathological and physiological jaundice. The paraclinical assessment will therefore be guided by the anamnesis and the clinical examination. Currently, the assessment of jaundice by a transcutaneous bilirubinometer is recommended first because it avoids the need for iterative blood sampling. Our department does not have this device, however, any value at the limit of the pathology must have a bilirubin determination performed. The blood test will be limited initially:

- The determination of total bilirubin, direct bilirubin and indirect bilirubin.
- Hemogram with blood smear for morphological study of red blood cells and reticulocyte level.
- The Rhesus grouping of the newborn with direct coombs test
- To C-reactive protein
- Maternal rhesus grouping (if not yet performed) with search for irregular agglutinins.

The determination of non-albumin-bound bilirubin is not common practice in our country. However, it provides information on the neurotoxic fraction of bilirubin. The ratio of total bilirubin (mg/dl) to albumin (g/l) reflects the critical threshold of unbound bilirubin, which is between 0.8 and 1.2 mg/l.

Diagnosis of elimination, physiological jaundice, called simple jaundice, is defined by a naked, isolated jaundice occurring between the second and third day of life. Of moderate intensity, it disappears around the 5th or 6th day of life. This etiology is the least frequent in our series (31.76%). However, this jaundice can be dangerous and expose to neurotoxicity, especially in sick newborns. Infection is the second cause of jaundice in our series and affects one child in five. It is in all cases a bacterial maternal-fetal infection. Indeed, infection is one of the main etiologies of unconjugated hyperbilirubinemia. Its clinical signs are at the forefront. If we refer to a study carried out in the neonatology department of the Rabat University Hospital in 1981 on 559 cases of icteric preterm infants, we note that about 55% of the cases in which the infection is the most frequent cause (3).

The third aetiology consists of Rhesus and ABO incompatibilities. It is an early jaundice, beginning in the first 24 hours of life. It may be accompanied by pallor, hepatomegaly and splenomegaly. Rhesus erythrocyte incompatibility is still common in our context. We have already reported that about one fifth of mothers are unaware of their Rhesus group and one third of pregnancies are not followed up. In addition, prophylaxis for Rhesus incompatibilities is still not or poorly done. ABO incompatibilities are known to be less severe and less early, but newborns should be reviewed at one month of life,

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when anemia secondary to hemolysis reaches its peak (4).

Congenital hypothyroidism is a diagnosis that we mention in front of any prolonged neonatal jaundice with non-conjugated bilirubin because systematic screening of the disease is not yet practiced in our country. Classically, other clinical signs are associated and jaundice is thought to be secondary to a delay in the maturation of the beta-glycuronyl transferase (5). Despite its frequency, neonatal jaundice still causes controversy regarding its management, the main objective of which is to avoid the development of kernicterus. The critical threshold of 340 mmol/l (200 mg/l) is based on findings from the 1950s (6). The 1994 American Academy of Pediatrics (AAP) policy statement is based on the recommendations of Newman and Maisels for “mild and moderate” treatment of neonatal hyperbilirubinemia. These data were based on healthy, term newborns with no risk factors. In fact, it seems that a resurgence of cases of kernicterus jaundice has since been observed in newborns without hemolytic disease, of near-term gestational age, exclusively breastfed and leaving the maternity ward early (7). These last two factors are particularly found in some of our newborns with neurosensory sequelae. In fact, our newborns leave the maternity ward at 24 hours of life without any detection of the risk of severe jaundice.

In addition, although exchange transfusion was common in the 1950s to 1970s and is still sometimes necessary, phototherapy has become the treatment of choice for hyperbilirubinemia. In our research, the acquisition of two intensive phototherapy machines has reduced the number of exchange transfusions from 67 between 1996 and 1998 to only 19 between 2000 and 2002 (8). This last rate, which is still high compared to the data in the literature, can be explained by the failure to monitor pregnancies, the insufficient or even absence of prophylaxis for Rh-negative parturients, early maternity discharge, non-medicalized deliveries and late consultations.

- The gestational and post-natal age of the newborn as well as its clinical condition,
- The existence of risk factors,
- The growth rate of hyperbilirubinemia,
- The quality of the equipment available (phototherapy equipment),
- The response to the treatment used (under phototherapy, bilirubin should decrease from 17 to 34 mmol/l in 5 hours),
- The quality of the monitoring provided.

Regardless of the reference orienting the therapeutic decision, it is important to be able to predict the risk for a newborn to develop severe hyperbilirubinemia. Several studies have attempted to define this risk as a function of the bilirubin level in the first 24 hours, or the fraction of carbon monoxide exhaled, which is produced equimolarly with bilirubin during heme degradation (9, 10).

The percentage of icteric newborns is 20.19%. Jaundice remains a frequent pathology in the neonatal period. With unconjugated or conjugated bilirubin, jaundice is potentially serious. Indeed, the neurotoxicity of free bilirubin constitutes a real danger. The non-follow-up of pregnancies and the very early discharge from maternity hospital delay the management of jaundice

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5 | CONCLUSION

The adaptation of therapeutic measures to reduce free hyperbilirubinemia depends in fact on:
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