

NEONATAL JAUNDICE - ETIOLOGY AND INCIDENCE

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Abstract

Jaundice usually appears in newborns approximately 24 hours after birth, as a result of the imbalance between bilirubin production and excretion. Normally the jaundice disappears or its intensity decreases spontaneously in one or two weeks, with no treatment and living no sequels. Children having dangerously high levels of blood bilirubin need treatment, as it causes cerebral lesions, situation referred to as nuclear jaundice.

The aim of this paper was to perform a clinical and statistical study of the neonatal jaundice and to establish the extent to which the treatment and care of newborns influences neonatal jaundice evolution.

Key words: jaundice, newborn, cerebral lesions

Introduction

Jaundice appears as a result of the imbalance between bilirubin production and excretion (4). This is eliminated from the human organism by urine and faeces. During pregnancy, mother's body discards foetus's bilirubin through the placenta. After birth, the newborn has to discard blood bilirubin by itself. The bilirubin may have elevated values in newborns, up to concentrations causing the yellow coloration of skin and mucosae, because of organs immaturity unable to cope with the rhythm needed for the bilirubin to be excreted from the organism. Dehydration occurs easily in infants and leads to the slowing of urine and faeces formation, which results in the increase of bilirubin excretion time (7). Bilirubin metabolism is also influenced by some substances in breast milk. Hyperbilirubinemia may rarely be caused by other conditions or diseases, such as digestive system diseases, infections or blood groups incompatibilities (6).

Jaundice usually appears in newborns approximately 24 hours after birth. In case of healthy breast fed newborns, a certain degree of yellow skin coloration appears approximately 2-4 days after birth. Jaundice disappears or its intensity decreases spontaneously in one or two weeks, with no treatment and living no sequels (2).

In case of breast fed newborns, mild jaundice may remain 10-14 days after birth or may reoccur during breast feeding period. As long as the infant receives enough milk and is correctly and frequently fed (8 to 10 or more times within 24 hours), the jaundice is not a problem. Even though, the baby must be monitored. Very large amounts of bilirubin are rarely accumulating in the blood and cause cerebral lesions, situation known as nuclear jaundice. These lesions

may be followed by hearing loss, mental retardation and behavioural disorders.

No treatment of jaundice (hyperbilirubinemia) in newborns is required in most cases. However, follow-up of babies is required to monitor the possible changes in skin colour and behaviour. Infants with high levels of blood bilirubin need treatment (1,3,5).

Aim of the paper

The aim of this paper was to a clinical and statistical study of the neonatal jaundice and to establish the extent to which the treatment and care of newborns influences neonatal jaundice evolution.

Material and method

This study was conducted on a group of 35 newborns out of the 2035 births in the years 2008 and 2009 within neonatology department of Louis Turcanu Children Clinical Emergency Hospital in Timisoara.

The study has been performed by statistical analysis and graphic illustration of the cases depending on the reference of the study group to the total of births between 2009-2009, newborn's gestational age, gender, origin, age, type of jaundice, treatment, mortality index and clinical case presentations.

Study protocol included:

- detailed anamnesis intended to acquire as much data as possible
- complete clinical examination on a daily basis monitoring the clinical signs specific to the newborns and each case's evolution
- paraclinical investigation and establishment of diagnostic value on the studied group
- application of therapeutic conduct and assessment of the treatment on newborns studied group
- anatomopathologic examination of all the deceased newborns, in which anatomical samples harvesting and bacteriological inseminations from organs.

Results and discussions

Out of the 2035 births (100%) in the years 2008-2009, a group of 35 cases was studied (1.71%) with neonatal jaundice.

According on the gestational age, it was concluded that 25 newborns (71.42%) were full-term and 10 newborns (28.57%) were premature (Fig 1).

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Out of the 35 cases studied, depending on newborn's gender, it was concluded that 20 newborns were girls and 15 newborns were boys. Prevalence of female newborns was determined at 57.14%.

Depending on the newborn's origin, it was established that 12 newborns came from rural areas and 23 newborns originated in urban environment. Overweight of newborns from urban area was ascertained: 65.71%

Out of the 35 cases studied, depending on newborn's age, it was concluded that 5 newborns (14.28%) had 24 hours, 5 newborns (14.28%) had 48 hours, 10 newborns (28.57%) had between 60 hours and 7 days and 15 newborns (48.85%) had between 7 and 28 days. Prevalence of newborns aged between 7 and 28 days was seen: 48.85%. (Fig. 2)

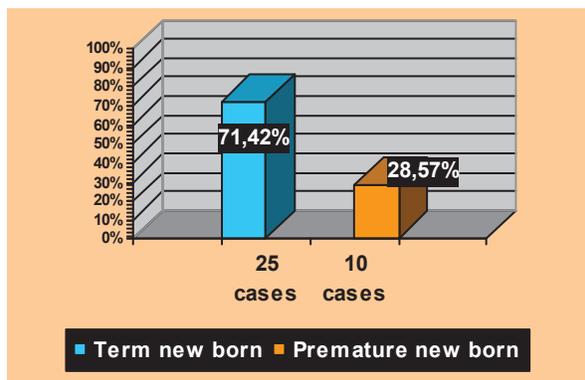


Fig. 1. Case distribution according to gestational age.

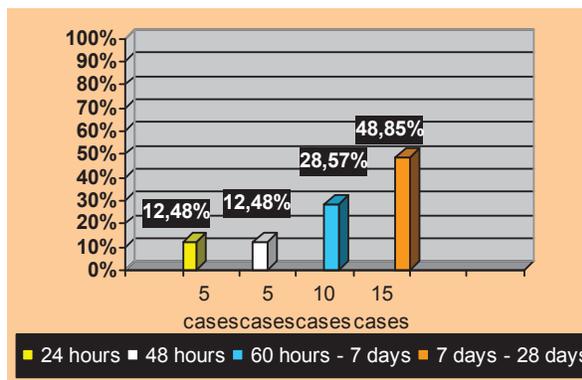


Fig. 2. Distribution of cases according to age newborn.

Out of the 35 cases studied, depending on the newborn's type of jaundice, it was concluded that 25 newborns had physiological jaundice and 10 newborns had pathological jaundice. Preponderance of newborns with physiological jaundice was established at 71.42%. (Fig. 3)

Depending on the treatment, it was determined that 20 newborns (57.14%) underwent phototherapy, 5 newborns (14.28%) required exchange transfusion, while in 10

newborns (28.57%) treatment of hepatic disease or other causes was performed. Overweight of phototherapy was seen: 57.14%. (Fig. 4)

Out of the 35 cases studied (100%), depending on mortality, it was concluded that 0 deaths (0%) occurred.

It was established that the treatment and the techniques of newborns' care reduced to 0% the deaths.

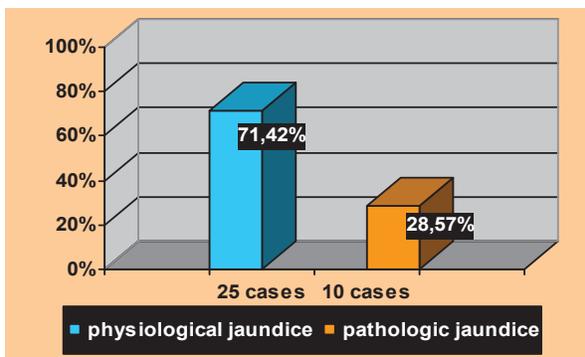


Fig. 3. Distribution of cases according to the type of jaundice.

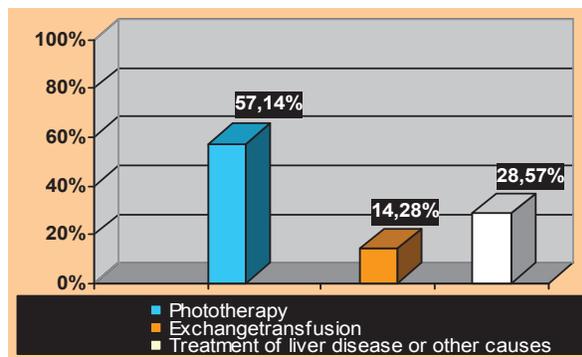


Fig. 4. Distribution of cases according to established treatment.

Conclusions

1. Physiological jaundice: benign and transient, appears in newborns after an interval of 2-3 days; clinical signs of alert lack (hepatosplenomegaly), traces are obvious, hepatic functional tests are normal, Bi values are 70-100 umol/l. It last up to 14-21 days. Bilirubin values rarely exceed 250 umol/l, when there are different associated

factors: prolonged labour, hypoxia, shortage of antioxidants (E vitamin). Usually they require no treatment.

2. Pathological jaundice: it starts earlier than 36 hours or in the second week of life, persistent clinical jaundice over 8-10 days in full-term newborns and over 21 days in premature newborns, hepatosplenomegaly, bilirubin serum concentration increases more than 8.5 umol/l hour or 85

umol/day and may exceed 320 umol/l. Associated clinical signs: lethargy, feeding disturbances, neurological disturbances of variable intensity (skin and mucosae jaundice increases), the dynamic of bilirubin increase is higher than 171 umol/l in the second day, maximum values of indirect bilirubin in the next days exceed 205-222 umol/l, maximum level of bilirubin diglucuronide – higher than 25 umol/l.

3. Doctor's care and follow-up will focus on:
- ensuring environmental conditions
 - general clinical surveillance of the newborn
 - measurement of vital and vegetative functions
 - care of newborn's skin
 - assuring the hygiene of newborn's clothes
 - newborn's feeding
 - recognition of transient physiological changes
 - tracking of pathological signs and symptoms
 - application of treatment

4. Out of total births - 2035 newborns (100%) between 2008-2009 a group of 35 cases (1.71%) with neonatal jaundice was studied.

5. Depending on gestational age, it was concluded that 25 newborns (71.42%) were full-term and 10 newborns (28.57%) were premature. Prevalence of full-term newborns was ascertained: 71.42%.

6. Depending on the newborn's type of jaundice, it was concluded that 25 newborns (71.42%) had physiological jaundice and 10 newborns (28.57%) had pathological jaundice. Preponderance of newborns with physiological jaundice was established: 71.42%.

7. Depending on the treatment, it was determined that 20 newborns (57.14%) underwent phototherapy, 5 newborns (14.28%) required exchange transfusion, while in 10 newborns (28.57%) treatment of hepatic disease or other causes was performed. Overweight of phototherapy was seen: 57.14%.

8. Depending on mortality, out of the 35 cases studied (100%), it was concluded that 0 deaths occurred.

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