

## Jaundice in Neonatology: About a Moroccan Nicu

Soufiane El Moussaoui<sup>1,2\*</sup>, F Bennaoui<sup>1,2</sup>, N El Idrissi Slitine<sup>1,2</sup> and FMR Maoulainine<sup>1,2</sup>

<sup>1</sup>Neonatal Intensive Care Unit, Mother and Child Hospital, Mohammed VI Marrakech University Hospital, Morocco

<sup>2</sup>Childhood Health and Development Research Team, Marrakech Medical School, Cadi Ayyad University, Morocco

**\*Corresponding Author:** Soufiane El Moussaoui, Neonatal Intensive Care Unit, Mother and Child Hospital, Mohammed VI Marrakech University Hospital and Childhood Health and Development Research Team, Marrakech Medical School, Cadi Ayyad University, Morocco.

**Received:** February 20, 2019; **Published:** December 26, 2019

### Abstract

**Introduction:** Jaundice is one of the most common causes of hospitalization in newborns. The association with urinary tract infection is the subject of several controversies. Jaundice may be the only telltale sign of a urinary tract infection.

**Objectives:** This study aims to study the grouping, epidemiological and clinical features of urinary tract infection in jaundiced newborns.

**Materials and Methods:** We have retrospectively studied the medical records of newborns, admitted to the neonatology department, Mohamed VI Hospital of Marrakech; between January and December 2016 with urinary tract infection revealed by jaundice.

**Results:** A total of 139 neonates were admitted for neonatal jaundice. Of these, 41 cases (29.4%) had a urinary tract infection, with a male predominance (61%). The average age of admission was 8.5 days. The most common germ was *Escherichia coli*. Rh incompatibility was associated in 12.2% and ABO incompatibility in 22%. O + grouping was the most common (40.6%) and rhesus positive was predominant (87.5%). A malformation uropathy was found in 5%.

**Conclusion:** We recommend screening for urinary tract infection for jaundice infants even at an early age.

**Keywords:** Groupage; Jaundice; Urinary Tract Infection; New Born

### Introduction

Neonatal jaundice occupies a preponderant place in neonatal pathology since it affects 60% of newborns [1]. Its etiological diagnosis sometimes necessitates rather varied para-clinical investigations: the assay of total bilirubin and ABO grouping Rhesus, and in the mother of the indirect coombs test as well as grouping ABO Rhesus [1]. On the other hand, neonatal urinary tract infection, which accounts for 19% of neonatal infections [2,3], is characterized by its clinical polymorphism, the difficulty of its diagnosis, the frequency of the underlying uropathies, its potential complications, and its therapeutic peculiarities. It is asymptomatic in 0.7% to 1.4% of cases [4,5] and its association with neonatal jaundice is differently appreciated.

Indeed, of all jaundice newborns, 8% have urinary tract infections [6,7]. Jaundice may be the only telltale sign or sign that occurs in the newborn before other signs become evident [8]. The associated symptomatology is often non-specific such as fever, vomiting, refusal to suck, poor weight gain, or sepsis.

If the symptomatic treatment of neonatal jaundice makes it possible to avoid progression to nuclear jaundice and other neurological complications, the treatment of the urinary infection aims at the sterilization of the urine and the conservation of the renal parenchyma of the consequences of the urinary tract infection as well as lowering the level of bilirubin.

### Aim of the Study

This study aims to study the grouping, epidemiological and clinical features of urinary tract infection in jaundiced newborns.

### Patients and Methods

This is a retrospective case-control study of 41 cases of neonatal neonates hospitalized at Mohammed VI CHU in Marrakesh from January to December 2016.

Inclusion criteria are all neonates with neonatal jaundice during urinary tract infection with bacteriuria greater than or equal to  $10^5$  germs/ml and/or leukocyturia greater than or equal to  $10^4$  elements/ml.

All the anamnestic, clinical and biological data were collected on an exploitation sheet and entered on Excel files. The descriptive analysis used the Epi Info 6 program and the statistical analysis used the chi 2 ( $\chi^2$ ) test or the Fischer or Student's test or analysis of variance.

### Results

A total of 139 newborns were admitted for neonatal jaundice. Of these, 41 cases (29.4%) had a urinary infection, with a male predominance (sex ratio: 1.56). The average age of admission was 8.5 days. Urinary tract infection has 77% of infectious jaundice (Figure 1). The most common germ was *Escherichia coli* (38%) followed by *Klebsiella pneumoniae* (24%) and *Enterobacter cloacae* (14%) (Figure 2). A malformation uropathy was found in 5%. The rhesus incompatibility was associated in 12.2% ABO incompatibility in 22% and rhesus incompatibility in 12% (Figure 3). O + grouping was the most common (40.6%) followed by A+ grouping (31%) and B+ grouping (12%) (Figure 4). Positive Rhesus was predominant (87.5%) (Figure 5). A malformative uropathy was found in 5% with ultrasonography dilated pyelocaliceal.

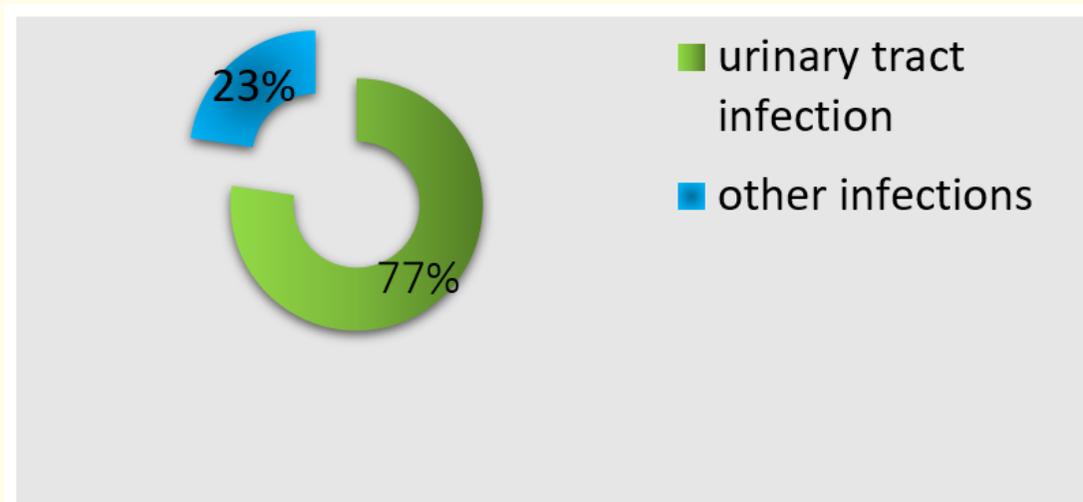


Figure 1: Proportion of urinary tract infection in infectious jaundice.

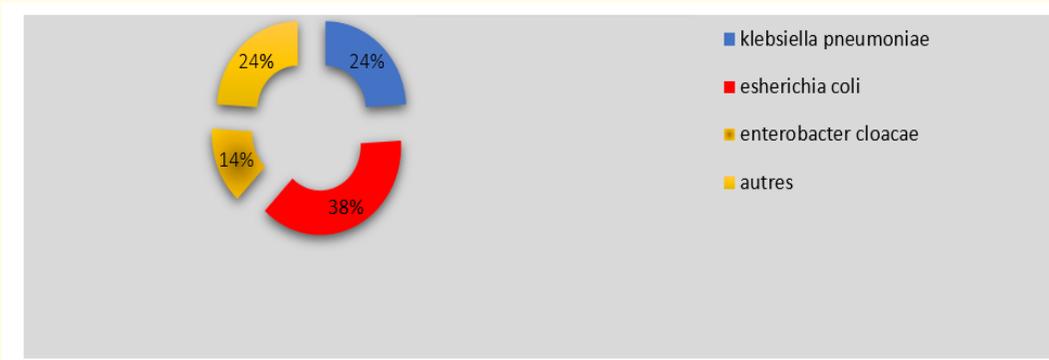


Figure 2: Germs of urinary tract infection.

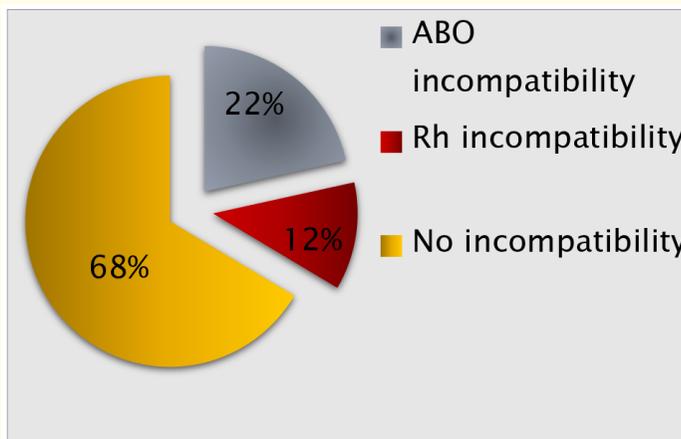


Figure 3: Blood grouping in jaundice on urinary tract infection.

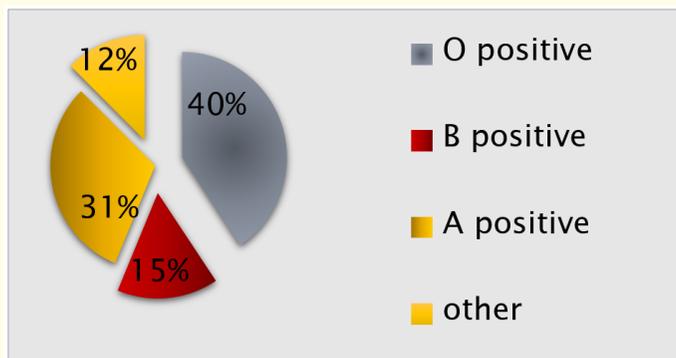
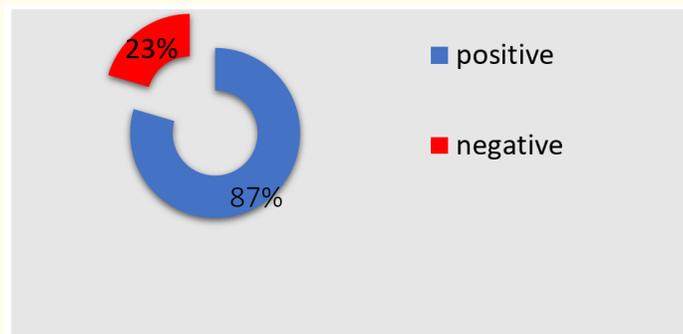


Figure 4: Incompatibility in jaundice by urinary tract infection.



**Figure 5:** Rhesus in jaundice on urinary tract infection.

## Discussion

The prevalence of urinary tract infection (UTI) in jaundiced newborns varies between 1 to 11% [1-3]. The increase in prevalence in our study can be explained by the recruitment of infected patients. The most common germs are *Escherichia coli* (38%) followed by *Klebsiella pneumoniae*. This joins the results of the literature [9-12].

We found some peculiarities concerning the association jaundice and UTI, the newborns were mainly boys, having in their antecedents a maternal UTI or a premature rupture of the membranes. Several studies have shown acute or recurrent UTI predispositions for some blood-group antigens, including positive rhesus and *E. coli* IU [9-12].

In our study, 40% of neonates in whom blood grouping was performed were group O versus 60% for group B positive in a study in Fez [12].

Positive Rhesus were objectified in 87% of cases. In our study, jaundice was most often early, with 63% of newborns admitted during the first week of life. This study joins the results of the literature [13].

## Conclusion

Jaundice is a fairly common symptom during the neonatal period. It can, among other things, reveal a neonatal urinary infection. In a group made of 41 neonates with jaundice + urinary tract infection, male predominance, symptomatic rarity and polymorphism, with emphasis on early onset of jaundice, naked, haemolytic and short-term character as well as the preponderance of *E. coli* as an isolated seed in cytobacteriological examination of the urine. Bilirubinemia is predominantly unconjugated and evolves favourably after the initiation of symptomatic treatment (conventional or intensive phototherapy) and etiological treatment (ceftriaxone + gentamycin). Renal ultrasound showed pelvic-calyx dilation in 5% of patients.

Thus, it was concluded that male jaundice newborns, mean age 8 days, O blood group and whose onset of jaundice around the fourth day of life with bilirubinemia around 170 mg/L to free predominance; mothers who are about 33 years old and have had a urinary tract infection during pregnancy or premature rupture of the membranes are more prone to neonatal urinary tract infection than newborns who are jaundiced and do not have these criteria. We recommend screening for urinary tract infection for jaundiced newborns even at an early age. The limitation of our study lie in the size of the sample and the recruitment of infected patients.

## Bibliography

1. American Academy of Pediatrics, Provisional Committee for Quality Improvement and Subcommittee on Hyperbilirubinemia. "Practice parameter: management of hyperbilirubinemia in the healthy term newborn". *Pediatrics* 94 (1994): 558-565.

2. Gorter E and Lignac GOE. "Neonatal urinary tract infection". *Archives of Disease in Childhood* 3 (1928): 232.
3. Bernestein J and Brown AK. "Jaundice and bacterial infections". *Archives of Disease in Childhood* 29 (1962): 873.
4. Edelmann CM Jr., *et al.* "The prevalence of bacteriuria in full-term and premature newborn infants". *Journal of Pediatrics* 82.1 (1973): 125-132.
5. Wettergren B., *et al.* "Epidemiology of bacteriuria during the first year of life". *Acta Paediatrica Scandinavica* 74 (1985): 925-933.
6. Krober MS., *et al.* "Bacterial and viral pathogens causing fever in infants less than 3 months old". *American Journal of Diseases of Children* 139 (1985): 889-892.
7. Hoberman A and Wald ER. "Urinary tract infections in young febrile children". *Pediatric Infectious Disease Journal* 16 (1997): 11-17.
8. Garcia FJ., *et al.* "Jaundice as an Early Diagnostic Sign of Urinary Tract Infection in Infancy". *Pediatrics* 109 (2002): 846-851.
9. Yasser K Rashed., *et al.* "Hyperbilirubinemia with urinary tract infection in infants younger Than eight weeks old". *Journal of Pediatrics and Neonatal Care* 1.6 (2014): 00036.
10. Garcia FJ and Nager AL. "Jaundice as an early diagnostic sign of urinary tract infection in infancy". *Pediatrics* 109 (2002): 846-851.
11. Bilgen H., *et al.* "Urinary tract infection hyperbilirubinemia". *Turkish Journal of Pediatrics* 48 (2006): 51-55.
12. S Abourazzaka., *et al.* "Jaundice and urinary tract infection in neonates: Simple coincidence or real consequence?" *Archives de Pédiatrie* 20.9 (2013).
13. Lee HC., *et al.* "Urinary tract infections in infants: comparison between those with conjugated vs unconjugated hyperbilirubinaemia". *Annals of Tropical Paediatrics* 25.4 (2005): 277-282.

**Volume 9 Issue 1 January 2020**

**© All rights reserved by Soufiane El Moussaoui., *et al.***