Epidemiological study investigating the main biochemical profile related to Neonatal Jaundice in Department of Pediatric in Zaliten teaching hospital in Libya

Embarka A. Aqila[4]*, Mahmud EL. Abushhewa[3], Ryad MO. Alati[1], Abdulati El Salem[2], Waleed RA. Abusittah[3], Ramzi W. Mohsen [3], Ahlaam M. Amteer[4]

[1]. Faculty of Pharmacy, Alasmarya Islamic University, Libya [2]. Faculty of Medicine, Alasmarya Islamic University, Libya [3]. Faculty of Medicine, Azzaytuna University, Libya [4]. Faculty of Technology, Azzaytuna University, Libya

الملخص:

يعد اليرقان الناجم عن فرط بيليروبين الدم غير المباشر لحديثي الولادة سببًا شائعًا ومتكررًا لحالات حديثي الولادة التي يتم إدخالها إلى مرافق الرعاية الصحية في جميع أنحاء العالم. الهدف الرئيسى من هذه الدراسة المقطعية الوصفية هو تحديد العلاقة بين الملامح البيوكيميائية مع فرط بيليروبين الدم لحديثي الولادة. قمنا بفحص الأطفال الذين تم قبولهم في قسم طب الأطفال في مستشفى زاليتن للكشف عن اليرقان. أستخدم أخذ العينات العشوائي البسيط لتقييم المتغيرات المتعلقة بالملف البيوكيميائي الرئيسي للأم والوليد المرتبط باليرقان لحديثي الولادة بناءً على الملفات السريرية. وجدت الدراسة علاقة بين الوزن وفصيلة الدم والهيموجلوبين مع الهيماتوكريت ومستوى البيليروبين الكلي.

الكلمات الدالة: اليرقان لحديثي الولادة، فرط بيليروبين الدم ، الملف البيوكيميائي ، البيليروبين.

Abstract

Jaundice due to indirect hyperbilirubinemia of the newborn is a common and frequent cause of neonatal admissions to healthcare facilities worldwide. The

main objective of this descriptive cross-sectional study was to determine the association of biochemical profiles with neonatal hyperbilirubinemia. We screened children admitted to the Pediatric Department of Zaliten Hospital for jaundice. I use simple random sampling to assess variables related to the main maternal and neonatal biochemical profile associated with neonatal jaundice based on clinical profiles. The study found a relationship between weight, blood type, hemoglobin with hematocrit, and total bilirubin level.

Key words: neonatal jaundice, hyperbilirubinemia, biochemical profile, bilirubin.

Introduction:

Jaundice caused by indirect neonatal hyperbilirubinemia (INH) is a common and a frequent cause of neonatal admission to health care facilities all around the world.

The main aim of this descriptive cross-sectional study is to determine the relationship between biochemical profiles with neonatal hyperbilirubinemia.

The term ‘jaundice’ is used to describe the yellow-orange discoloration of the skin and sclera because of excessive bilirubin in the skin and mucous membranes.[1,2] Jaundice itself is not a disease but rather a symptom or sign of a disease. Bilirubin is mainly formed when the hem component of red blood cells are broken down in the spleen to biliverdin and then unconjugated bilirubin.[3] Bilirubin is not water soluble, so that it is transferred via the bloodstream from the spleen to the liver and finally bound to the plasma

protein, albumin. This form is known as conjugated bilirubin, that is then secreted into the gall. In the gut it is further metabolized to other gall pigments and then excreted in the faeces.[3]

The mechanism of neonatal jaundice is the imbalance between bilirubin production and conjugation, which results in increased bilirubin levels.[4] This imbalance is mainly because of the immature liver of the neonate and the rapid breakdown of red blood cells, which may be multifactorial.[3,4,5,6] Based on the present evidence, 80% of premature infants have clinical symptoms, including yellowish skin and sclera, caused by serum bilirubin levels.[7,8]

It usually occurs on the second day of birth, is not harmful and a self-limiting disease. It mostly improves without the need to medical interference after reaching the normal amount of bilirubin.[6,7]

Materials and Methods:

A total of 27 infants admitted to the in Department of Pediatrics at Zaliten hospital for jaundice were enrolled in the current study. Random sampling is used to evaluate variables related to maternal and neonatal main biochemical profile including full blood count, Liver function test, blood group and balancer for weight measurement.

Results:

The study found that there is converse correlation between body weight and total bilirubin. As the body weight increases, the total bilirubin decreases

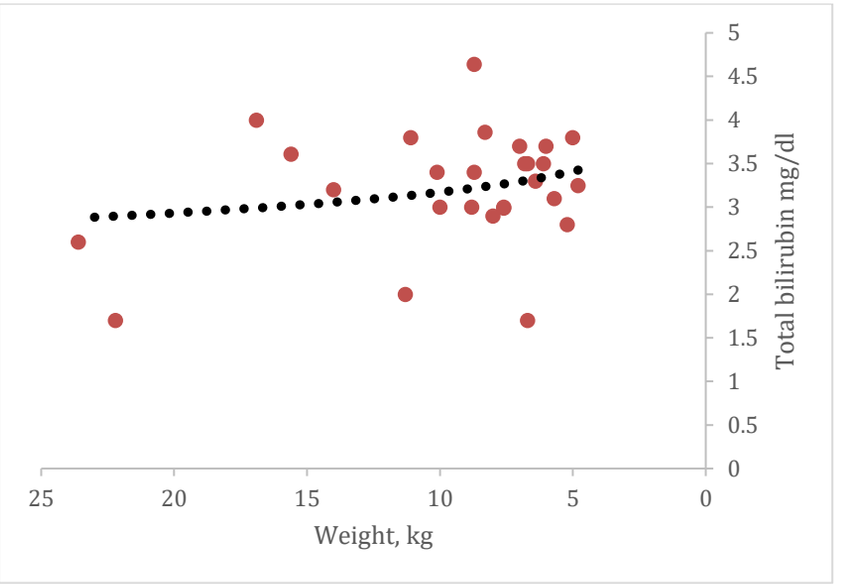
(Fig.1). Additionally, a positive correlation was recoded between hemoglobin with total bilirubin, as the hemoglobin increases the total bilirubin increases(Fig.2). The study found positive correlation between hematocrit and total bilirubin, as the hemoglobin increases the total bilirubin increases (Fig.3). The study showed that then is strong correlation between Blood group A negative and Total bilirubin in comparison with other blood groups in the study (Fig.4, Tab1).

Conclusions and recommendations:

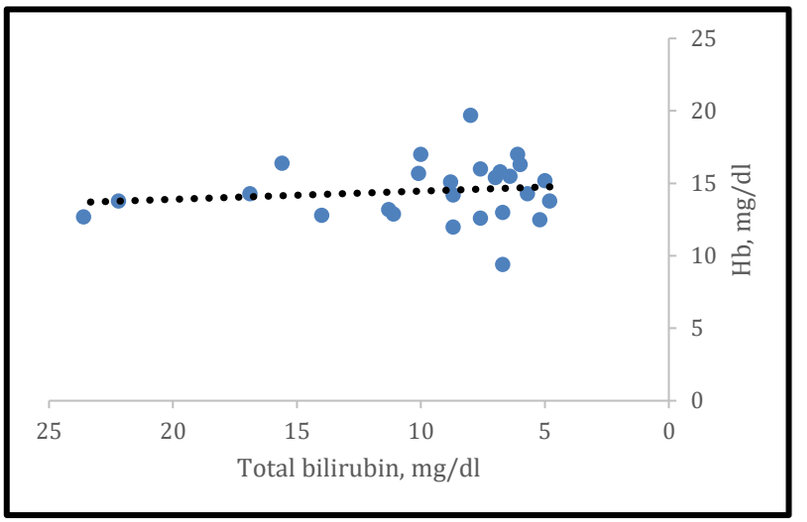
The study found correlations between body weight, blood groups, hemoglobin and hematocrit with total bilirubin level. Diagnosis, treatment prevention of neonatal jaundice should be considered as the main policy in all health care settings of the country. Therefore, identification of factors affecting the incidence of jaundice can be effective in preventing susceptible predisposing factors in newborns and high-risk mothers. Therefore, we recommend that this study is expanded to include other Libyan cities and increase the sample size.

Blood groups	A-	AB-	O+	B+
Total bilirubin	17.68	5.8	7.7375	6.5
Std deviation	5.4283515	1.414214	2.10165751	1.609348

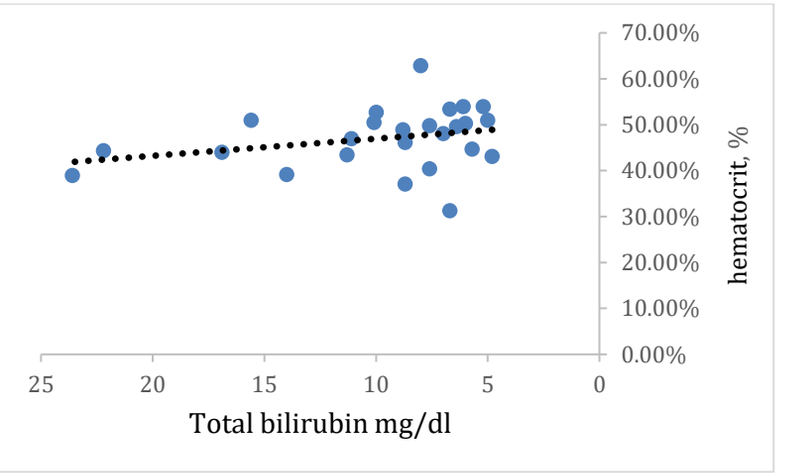
(Tab1)


5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Total bilirubin mg/dl
25
20
15
10
5
0
Weight, kg

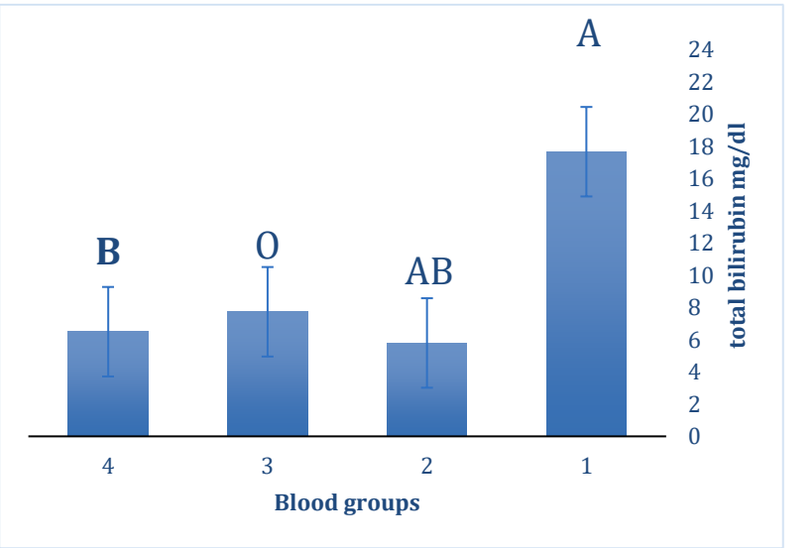
(Fig. 1)


25
20
15
10
5
0
Hb, mg/dl
25
20
15
10
5
0
Total bilirubin, mg/dl

(Fig.2)



(Fig.3)



(Fig.4

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