

Ministry of Higher Education and Scientific Research

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بسم الله الرحمن الرحيم

"والوالدات يرضعن اولدهن حولين كاملين لمن اراد ان يتم الرضاعة"

Review article about

Breast milk Jaundice

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2020-2021

Objective

- + Definition the jaundice and breast milk jaundice.**
- + Describe the causes of breast milk jaundice.**
- + Identify the Theories about causes of breast milk jaundice.**
- + Identify the use of phototherapy in management of infant with breast milk jaundice.**

Introduction:

Hyperbilirubinemia or jaundice has typically been total serum bilirubin (TSB) level within high-risk zone, when TSB level increase, a yellowish discoloration of infant skin and sclera. It is a frequently occur as a clinical problem in neonates. About 60-80% of All term or post-term; also healthy newborn will developed some degree of hyperbilirubinemia. [1]

Breast milk jaundice is type of hyperbilirubinemia that occur in infant due to breastfeeding.

The word "Breast milk jaundice " was first describe in 1963. Arias et al. This type of neonatal jaundice associated with breastfed infants that is characterized by unconjugated hyperbilirubinemia in otherwise healthy that developed after the 1st or 2nd week of life; persists longer than physiological jaundice and usually spontaneously resolves even without discontinuation of breastfeeding. [2][3]

However, may persist for 8-12 weeks of life before resolution. Newborn with breast milk jaundice often have higher serum bilirubin peaks and slower decline, compared to the jaundice trend associated with other etiologies, leading to longer resolution time. [4][7]

Other Pathological causes of unconjugated hyperbilirubinemia should be excluded before a breast milk jaundice diagnosis can be made.

Etiology

The right etiology of breast milk jaundice has not been determined.

Most the majority of the suggested etiologies include the factors present in the human breast milk itself. Other hypotheses probable potential genetic mutations present in the affected neonates. [1][2]

Delayed milk production and poor feeding cause to decrease caloric intake and increase enterohepatic circulation; cause higher serum bilirubin concentration.

The biochemical causes remains under investigation some human breast milk factors that could be linked to breast milk jaundice's etiology involved pregnane-3 α ,20 β -diol, interleukin IL1 β , β -glucuronidase, epidermal growth factor, and alpha-fetoprotein. The presence of pregnane-3 α ,20 β -diol, is thought to inhibit bilirubin's conjugation, which in turn interfere with bilirubin excretion. [1][2][4]

β -glucuronidase has also been found in some breast milk which is an enzyme naturally present in intestinal brush border, leading to increased serum reabsorption instead of excretion.[2][5]

Interleukine IL1 β is thought to have a cholestatic effect that leads to hyperbilirubinemia. The epidermal growth factor is found in higher concentrations in human breast milk and strictly breastfed infants serum. The cause is that this substance enhances intestinal resorption of bilirubin and reduces intestinal motility in the newborn, leading to increased unconjugated bilirubin levels.[2] [3]

an enzyme in breast milk called Lipo-protein product increased concentration of nonesterified free fatty acids that inhibit hepatic glucuronyl transferase, which again leads to decreased conjugation and subsequent excretion of bilirubin.

The serum of babies with breast milk jaundice often has increased levels of alpha-fetoprotein. The mechanism underlying this is not yet understood.[3][4][5]

Many studies have shown that mutations in the coding region of the UGT1A1 gene increase the risk of developing breast milk jaundice. Mutations in this gene's regulatory region are known to cause Crigler-Najjar and Gilbert syndrome, two syndromes known to cause persistent hyperbilirubinemia.[5]

Epidemiology

The frequency of breast milk jaundice within the United States affected about 14% of exclusively breastfed newborn compare to 4% of bottle fed newborn. About 30-40% of breastfed infants are expected to have bilirubin levels more than or equal to 5 mg/dL, and about 2-4% of exclusively breastfed infants having bilirubin levels above 10 mg/dL in week 3 of life.[6]

In Iraq 2010 study shows Compared to formula fed group, breast fed group was reported at higher percentage (35.7%), showed higher rates of bilirubin levels above 20 mg\dl (58.0%), showed higher percentage of weight loss (50.0%) and had higher frequency of kernicterus (34.0%).[8]

International studies in countries such as Turkey and Taiwan found that 20-28% of neonates had breast milk jaundice present at 4 weeks. Total serum bilirubin levels were also noted to be more than or equal to 5 mg/dL. The international frequency of breast milk jaundice is not extensively reported but is thought to be similar to the United States frequency. [5]

No reports exist demonstrated a sex-related higher incidence.

Clinical features:

- yellow discoloration of the skin and the whites of the eyes
- fatigue
- poor weight gain
- high-pitched crying

Breast milk jaundice typically presents within the first 2wks of life in an otherwise healthy infant who is exclusive breastfed. These infants exhibit gain weight with the production sufficient amount of urine and stools.

At this time, total serum bilirubin level of more than 1.5 mg/dL is considered elevated, but most infants will not appear jaundiced until the level is greater than 5 mg/dL. If the infant does appear jaundiced, they may have yellowish discoloration of their skin and/or sclera in the face and then proceeds to the trunk and extremities.[2][8]

difference between breast feed jaundice and breast milk jaundice

breastfeeding jaundice also called Suboptimal intake jaundice, this is most common occurs in the 1st week of life when breastfeeding is being developed. Because Newborns may not receive sufficient milk intake, which resulted elevated bilirubin levels due to increased reabsorption of bilirubin in the intestines. Inadequate milk consumption often delays the passage of meconium, which contains high amounts of bilirubin that is then transferred into the infant's bloodstream. In majority of cases breastfeeding can, and should, continue. More feedings can reduce the risk of jaundice.[7]

Breast milk jaundice most common occurred in the second or later weeks of life and can continue for many weeks. Although the exact mechanism leading to breast milk jaundice is unclear, it is thought that substances in the mother's milk inhibit the ability of the infant's liver to absorb bilirubin.

jaundice is a common treatment with Phototherapy. Other therapeutic solutions include temporary donor human milk with supplementation or infant formula, and rarely, temporary stop of breastfeeding.[1][10]

Risk for Breast Milk Jaundice

Any Breast milk jaundice can occur in breast-fed newborn. Since physician do not yet know the exact cause of the condition, there are few risk factors associated with it breast milk jaundice, on the other hand, may be genetic, so a family history of jaundice in breastfed infants may increase your baby' risk. [1][5][6]

Management:

Treatment is not needed for breast milk jaundice until the infant's total serum bilirubin level exceeds the phototherapy guidelines recommended by the American Academy of Pediatrics (AAP). The first step in management is phototherapy. It acts by using the light to convert bilirubin molecules into water-soluble isomers that can be excreted by the body. If the total serum bilirubin (TSB) level remains below 12 mg/dL, the recommendation is to continue breastfeeding. [5] If the total serum bilirubin level is greater than 12 mg/dL but below the phototherapy level [7]; and further investigation shows no hemolysis evidence, the recommendations are also to continue breastfeeding. When the bilirubin is more than 20, temporary interruption 12-48 hours of breastfeeding with replacement may be beneficial. [7][8][11]

Differential diagnosis of breast milk jaundice includes:

- ❖ Physiological jaundice.
- ❖ Hemolysis hyperbilirubinemia (ABO incompatibility, hereditary spherocytosis, G6PD, others).
- ❖ Genetic causes (Crigler-Najjar syndromes and pyruvate kinase deficiency)
- ❖ Cholestasis (Biliary atresia and choledochal cyst)
- ❖ Inadequate milk intake and dehydration.
- ❖ Neonatal hepatitis.

Prognosis

The prognosis is excellent. Breast milk jaundice normally resolves itself around 12 weeks of age. Babies suffering from breast milk jaundice usually recover with the right medication and proper supervision. When the condition typically goes away after one or two weeks if the child's liver becomes more effective and they continue to consume adequate amounts of milk. In rare cases, jaundice may persist past the sixth week of life, even with proper treatment. This can indicate an underlying medical condition that requires more aggressive treatment. [1][5][12]

Complications

The most serious complication of all neonatal hyperbilirubinemia, including breast milk jaundice, is acute bilirubin encephalopathy acutely and kernicterus as a long term. This complication is due to its potential for permanent neurodevelopmental delay. It is a uncommon complication of breast milk jaundice and occurs in less than 2% of breastfed term babies that have no evidence of hemolytic anemia.[6][10]

Conclusion

From this article review, I concluded that there is a misunderstanding of mother whose had infant with breast milk jaundice about the nature jaundice; This condition is a type of neonatal jaundice associated with breastfeeding that is characterized by unconjugated hyperbilirubinemia in an otherwise healthy breastfeed infant that develops after the first 4-7 days of life, persists longer than physiologic jaundice, and has no other identifiable cause.

Even a healthy term newborn will developed some degree of hyperbilirubinemia and hyperbilirubinemia has a higher frequency in breast infants compared to formula-fed infants; so must be a regular education programs about the nature of the breast milk jaundice, and clinical course of it especially in low socioeconomic group of our society.

Also There is some substance higher in breast milk of mothers whose infants have breast milk jaundice; these substance paly role in enhance intestinal resorption of bilirubin which lead to persist hyperbilirubinemia; better understanding these substance might provide the basis for the future therapeutic strategies for management of breast milk jaundice.

Reassurance the mother about continue breastfeed or temporary interruption (12-48 hours) unless otherwise contraindicated to breastfeeding, Supplementation can mother expressed breast milk; pasteurized donor human milk or infant formula can use.

Contact between all healthcare staff members and the parents is necessary to provide all information, and rule out other pathological cause of hyperbilirubinemia, With routine newborn evaluation time of management, kernicterus, the most severe complication of neonatal hyperbilirubinemia, is preventable, and the successful continuation of breastfeeding is possible.

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