CLINICAL AND BIOCHEMICAL CHARACTERISTICS OF INFANTS WITH PROLONGED NEONATAL JAUNDICE

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Abstract

The yield from screening has not been evaluated, and different protocols are used to investigate newborn persistent jaundice. However, complete liver function is often assessed atthe initial visit to the newborn jaundice clinic in hospitals governed by the Hospital Authority. Weconducted a retrospective analysis of all newborns admitted for persistent jaundice at CommunityHealth Centre Kralgund (Medical block Langate) to examine the diagnostic yield of this technique.

INTRODUCTION

Around the world, 80% of preterm and 50% of term newborns get neonatal jaundice. One of the most frequent reasons for newborn readmission to the hospital, particularly in the first two weeks following delivery, is jaundice. The icteric colour seen in the majority of babies may be a result ofpostnatal adaptation, but it might also be a sign of a pathological buildup of serum bilirubin. Particularly noteworthy are jaundices with a protracted duration, which persist clinically in term neonates after 14 days postpartum or after 21 days in preterm newborns. For the first three to fourweeks of life, up to 30 to 40 percent of breastfed neonates experience jaundice. Breast milk jaundice is the most frequent cause and is characterised by neonates being in a good state, havinga normal physical development, and seldom needing medical attention. Excluding other pathological disorders and a variety of disease processes, such as haemolysis, sepsis,

hypothyroidism, cystic fibrosis, metabolic illness, and liver disease (mostly congenital hepatitis B/C or biliary atresia), is how this form of jaundice is identified.Since neonates are released fromthe hospital at the height of physiological jaundice, it is vital to estimate the risk of the developmentof indirect hyperbilirubinemia of extended origin. Additional research is necessary for prolongedhyperbilirubinemia lasting longer than 2 to 3 weeks. Acute and chronic bilirubin encephalopathy (kernicterus), or long-term consequences including cerebral palsy or auditory nerve neuropathy, may result from an excessive buildup of unconjugated bilirubin in the blood.

There is evidence that an excessive buildup of unconjugated bilirubin in the blood can result in disturbances of intestinal microbiocynosis. This is because newborns' digestive tracts lack certainmicroflora that would normally contribute to the conversion of indirect bilirubin to sterkobilin andare connected to the hepatobiliary system (enterohepatic circulation). According to a review of foreign medical literature, the aetiology and pathogenetic characteristics of indirect hyperbilirubinemia determine its severity and duration. This necessitates a differentiated approachto neonatal jaundice diagnosis and treatment as well as optimisation of the prevention of harmful factors that can reduce the frequency of this pathology. Alpha-fetoprotein (AFP) blood levels andthe progression of protracted jaundice in infants have been the subject of conflicting research in several countries. By virtue of its physical and chemical makeup, AFP resembles albumin, the primary protein found in blood serum. For the identification of developing foetal problems duringprenatal diagnosis and as a cancer marker in malignant neoplasms, AFP has long been utilised as a marker. Although the causes of a postnatal rise in AFP are still unknown, several hypotheses include an accelerated rate of liver production or an extended half-life brought on by alterations inblood clearance. After the first year of life, the liver progressively stops producing AFP, and by theage of two, the child's body has totally stopped producing it. A 95.0% rise in the amount of AFP or a protracted retention of its production after delivery are signs of liver injury. Determining the AFP content would enable the early identification of the mechanisms underlying prolonged jaundice and expand the perspective of paediatricians, neonatologists, and family physicians on the unique characteristics of the development of prolonged jaundice in newborns. Therefore, the goal of this study was to ascertain how blood AFP levels relate to babies who have persistent jaundice.

Jaundice in full-term newborns that lasts longer than 14 days is referred to as prolonged neonatal jaundice. It is useful to differentiate between jaundice caused by conjugated hyperbilirubinemia and that caused by unconjugated hyperbilirubinemia (indirect). Breastfeeding or certain clinical disorders, such as hemolytic illnesses (caused by Rh or AB0 incompatibility, or G6PD deficiency), congenital hypothyroidism, urinary infection, Crigler-Najjar or Gilbert syndromes, may be linked to prolonged unconjugated hyperbilirubinemia. Cholestatic jaundice, or conjugated hyperbilirubinemia, is never physiological. All newborns who are jaundiced

and have light stools and black urine should be checked for the condition, which affects 1/2500 live births. The delayed referral of cholestatic neonates continues to be a serious issue. Any newborn who continues to be yellow over the age of two to three weeks (for breastfed infants who can be observed and who otherwise have a normal history and physical examination) should have the serum bilirubin level fractionated in order to aid in the early detection of cholestasis.

Cholestasis has a wide range of differential diagnoses, so early detection is crucial for prompt treatment and the best prognosis. The ability to identify causal genes thanks to advancements in molecular genetic methods has increased the accuracy of patient diagnoses. In cases of neonatal cholestasis, the first step should be the evaluation of coagulation, urgent parenteral vitamin K administration in cases of coagulopathy, and the exclusion of life-threatening conditions or disorders requiring urgent specific medical treatment (e.g., NTBC in cases of tyrosinemia, elimination diet in cases of galactosemia, and treatment for ereditary fructose intolerance). The most common single cause of newborn cholestasis is biliary atresia, and afflicted infants seem generally healthy and develop normally. To get the best results, a hepatoportoenterostomy should be performed as soon as possible, ideally during the first 45 days of life, to restore bile flow and prevent future liver damage. Cholestasis is more common in newborns admitted to NICUs than it is in the general population of live births; in most cases, cholestasis is linked to a number of risk factors and has a positive prognosis. Long-term cholestasis causes immunodeficiency, impaired psychomotor development, and malnutrition. Therefore, newborns with cholestasis benefit from early medical intervention and dietary assistance for malabsorption and vitamin shortage even when specialised therapy is not available.

Long-lasting jaundice is often not harmful, although occasionally it can be brought on by more significanthealth issues. Babies with persistent jaundice will often have further blood testing to rule out any underlying medical conditions. In certain regions, a community midwife may perform this at your house instead of a hospitalclinic.

MATERIAL AND METHODS

Methods: The clinical management system, electronic patient records, and attendance records from the newborn jaundice clinic at the Community Health Centre Kralgund (Medical block Langate) were utilised to obtain epidemiological, clinical, and laboratory data as well as patients'clinical progress.

During the initial NBSU Community Health Centre Kralgund Medical Block Langate visit, 23 babies showed increased ALT levels. The ALT level reference range is 5 U/L to 33 U/L. According to the data published, the percentage of newborns who were monitored rose as the ALT level rose. One newborn had biliary atresia, another had hepatic congestion brought on by congestive heart failure, and five infants had CMV as the specific reason

of their increased ALT levels. The remaining 22 newborns had raised ALT levels, of which 16 had non-specific elevated ALT levels and 6 had neonatal hepatitis syndrome.

Five newborns with increased ALT levels had urine tests that showed CMV infection; CMV infection was thought to have been acquired postnatally. All of these newborns were born at full term, with normal birth weights, and without any symptoms. Two of the five infants were nursed entirely, while one had a combination of breastmilk and formula. Three babies with increased ALT levels were released from the NBSU CHC Kralgund when they normalised, while the other two were observed for coincidental observations (one with developmental concerns and the other with a familial tiny head), not because CMV infection was a worry. These five newborns and the 22 infants with non-specific increased ALT levels all had good weight growth, were healthy, asymptomatic, and had elevated ALT levels that went down on their own.

Neonatal hepatitis syndrome was used in this study to describe early-onset liver inflammation that could not be linked to a particular aetiology of liver disease. the highest ALT levels and the length of time that ALT levels were elevated in two newborns with neonatal hepatitis syndrome. Only four newborns had increased ALT levels for less than 28 weeks throughout a period of 13 to 69 weeks. Neonatal hepatitis syndrome infants were monitored until their ALT levels stabilised and then for an additional month on average. Non-specific high ALT levels in five apparently healthy newborns were within twice the typical upper limit. These infants either received no further care or had their liver function evaluated occasionally (time intervals in months were decided on a case-by-case basis). Low phosphate level and elevated alkaline phosphatase level ALP levels were shown to be impacted by gestational age, birth weight, and feeding method. Seven of the 17 preterm or low birth weight infants exhibited increased ALP, as opposed to just three of the 23 full-term and healthy newborns

RESULTS

From the 20th of December 2022 to the 25th of April 2023, 45 newborns were sent to the neonatal jaundice clinic for persistent jaundice. One of them had conjugated hyperbilirubinaemia. Biliary atresia (n=1), cytomegalovirus (CMV) infection (n=3), newborn hepatitis syndrome (n=2), and transitory cholestasis (n=10) were among the diagnoses. Alanine transaminase values were high in 22 babies in total. Biliary atresia (n=1), hepatic congestion dueto congestive heart failure (n=1), CMV infection (n=5), newborn hepatitis syndrome (n=16), and non-specific increased alanine transaminase (n=75) were among the diagnoses. Alkaline phosphatase levels were high in 22 newborns in total.

Conclusion

A gradual approach is advised, in which whole liver function is evaluated and the underlying cause of jaundice is explored only after cholestasis has been confirmed.

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