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Short Report

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Neglected discharge in a newborn with hyperbilirubinemia: Case report

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Introduction

Neonatal jaundice is a very common condition, occurring in 60-80% of all healthy term births. It is the most common clinical diagnosis in newborns primarily due to elevated Unconjugated Bilirubin (UCB). In the majority of infants, jaundice resolves spontaneously and without harm; [1] however, in some infants, hyperbilirubinemia with signs of encephalopathy should be considered a neurological emergency and treated promptly, as the outcome is partly related to the duration of exposure to excessive free UCB. Importantly, lipophilic UCB is neurotoxic and can cause damage to the basal ganglia and various brainstem nuclei [2-4]. Although neonatal jaundice is considered benign, because of the potential toxicity of bilirubin to the developing brain, infants with elevated levels must be monitored to identify those who may develop severe hyperbilirubinemia and, in rare cases, acute bilirubin encephalopathy (ABE) or kernicterus. Transcutaneous bilirubinometry (TcB) has been used for universal screening and monitoring of bilirubin levels in birth centres and outpatient clinics due to its non-invasive nature and ease of use. The use of an hourly-based nomogram to stratify risk zones is regarded as a safe management. Approach to manage infants with hyperbilirubinemia who require follow-up after discharge from hospital. In infants 35 weeks of gestation combined with specific risk factors: specially GA (gestational age), bruising, family history, and rapid rise in TSB (total serum bilirubin), the need for repeated monitoring is quite clear [5,6]. However, current guidelines often do not adequately consider an infant's ability to breastfeed effectively, a key factor in bilirubin reduction. In fact, poor feeding, lactation difficulties, and the absence of effective breastfeeding support are not explicitly accounted for as individualised risk factors. Consequently, newborns may be discharged without appropriate follow-up recommendations despite unresolved feeding issues.

Case report

We present a case of a baby born by caesarean section for dynamic dystocia at 41.2 weeks. The birth weight was 3,400 grams, cranial circumference 35 cm, length 51 cm. Apgar 9-10. The mother was treated preoperatively with the antibiotic ceftriaxone, which is known to reduce the neonatal albumin-binding capacity for bilirubin. Normally, 1 gram of albumin binds ap-

proximately 8 milligrams of bilirubin, corresponding to a near 1:1 molar ratio. The bilirubin level at birth was 2.5 mg/dL. The baby started to breastfeed, but with difficulty. The mother also expressed concern about the newborn's drowsiness and blood tests were carried out which showed low glucose (50 mg/dl) and calcaemia 1,26 mmol/L

No breastfeeding support was provided, and formula feeding was initiated. Although the mother reported hypothermia, no temperature measurements were recorded on the 3rd day of life, the baby was discharged with a weight of 3,130 grams in good general condition, but with a TCB that showed 11.4 mg/ dL of bilirubin. After discharge, the baby's feed intake decreased and after 80 hours he was admitted as an emergency to a sub-intensive neonatal unit in very critical condition. With an accepted diagnosis of hypothermia, bradycardia, jaundice, alkalosis with hypernatremia (serum sodium 150 mmol/L150) and hyperbilirubinemia (max 21.7 mg/dL), he was intubated. In the following months, the child remained in hospital due to ongoing chronic respiratory failure requiring mechanical ventilation. He also experienced persistent apnoea (particularly during sleep), severe generalised hypotonia, bradycardia, and marked psychomotor delay. He underwent tracheostomy and was fed via nasogastric tube. Extensive investigations were conducted to exclude various metabolic, genetic, and neurological conditions. These included glycogen storage disease type 1a, lysosomal storage disorders, congenital disorders of glycosylation, and mitochondrial diseases. Neurotransmitter defects were also considered, and a trial of levodopa yielded minimal clinical benefit. Central hypoventilation syndrome (Ondine syndrome) was ruled out based on genetic and enzymatic studies from a muscle biopsy. Isoelectric focusing (IEF) of transferrin was also normal. None of these investigations yielded a conclusive diagnosis. The child was discharged with a diagnosis of chronic acute respiratory failure, encephalopathy, psychomotor retardation, kernicterus, severe dehydration, hypotonia.

At 13 months of age, an MR scan showed the typical pattern of kernicterus (Figure 1).

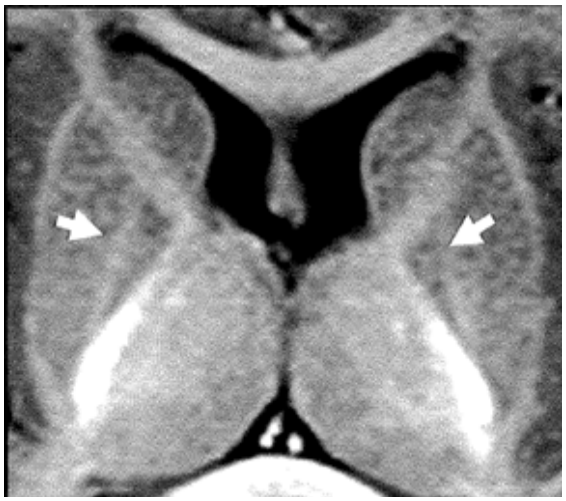

Figure 1: Magnetic resonance imaging plays an important diagnostic role, as bilateral hyperintensity of globus pallidus in T2-weighed images is detectable at 13 months as in this case [7].

Discussion and conclusion

Early discharge policies in hospitals have prompted the development of percentile-based bilirubin guidelines to ensure neonatal safety. However, these guidelines often fail to account for factors such as the infant's breastfeeding capability. The guidelines issued by UNICEF [7] and various international scientific societies favour the adoption of measures aimed at preserving the exclusivity of breastfeeding, reserving the use of supplements for cases where the mother is unavailable for various reasons, and in these cases special precautions and follow-up measures should be adopted. In this case, the absence of breastfeeding support likely contributed to sustained hyperbilirubinemia and inadequate weight gain. Reliance on nomogram values without considering feeding issues resulted in the absence of post-discharge bilirubin monitoring, culminating in the development of acute bilirubin encephalopathy. It is likely that the integration of artificial intelligence (AI) into neonatal care presents a valuable opportunity to improve the early identification and management of severe hyperbilirubinemia. By synthesising a wide range of clinical inputs (such as gestational age, bilirubin dynamics, feeding effectiveness, maternal concerns, and risk modifiers like antibiotic exposure), AI systems can move beyond static thresholds to provide individualised, data-driven follow-up plans. Future platforms may operate within a continuous feedback loop, triangulating observations from the mother, biometric data from the newborn, and clinical oversight by the primary consultant. Such a system could flag early deviations from expected recovery, prompt timely intervention, and support breastfeeding practices - ultimately reducing the incidence of bilirubin encephalopathy and improving neonatal outcomes.

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