Case Report

Newborn case study - Neonatal hypoglycemia with Jaundice and septicemia in preterm baby
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Abstract

Neonatal hypoglycemia is a common clinical metabolic problem, which can be seen more in preterm infants. The low blood glucose levels in full-term infants or preterm infants were thought to be physiological. Significant neonatal hypoglycemia induces seizures or convulsions with other complications like jaundice, mild respiratory distress and septicemia. A patient case report was presented and effectively treated with phenobarbitone and with other antibiotics in addition to the phototherapy.

Keywords: - Neonatal jaundice; seizures; hypoglycemia; preterm baby; septicemia; phototherapy.

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Introduction

Neonatal hypoglycemia is a common complication among preterm infants, small-for-gestational-age infants, and infants of diabetic mothers. Currently, there has been in-depth understanding of diagnosis and clinical intervention of neonatal hypoglycemia, but the glycemic threshold and time threshold values of neonatal hypoglycemic brain injury (NHBI) remain undefined. Persistent or recurrent hypoglycemia can result in neonatal permanent brain injury, leaving cognitive impairment, vision disturbance, occipital lobe epilepsy, cerebral palsy and other sequelae. NHBI has not yet been well understood by some clinicians, no diagnostic criteria have been available for NHBI due to the lack of specific clinical manifestations, although brain imaging studies are now an important diagnostic and prognostic tool, so it is also of necessity to establish criteria for its diagnosis [1]. Neonatal hypoglycemia is a common clinical metabolic problem, which was reported over 100 years ago. In the 1920s, low blood glucose levels in full-term infants or preterm infants were thought to be physiological. Significant neonatal hypoglycemia was first reported in 1937 [2]. In reported 8 cases of “symptomatic neonatal hypoglycemia” [3]. Data have shown that if the neonatal hypoglycemia is not timely and properly treated, the infants may develop permanent brain injury, namely, neonatal hypoglycemic encephalopathy [4]. This Case Report is an example of such hypoglycemia induced convulsions in newborn babies, suggesting that Medical attention is necessary.

Case Report

A 2 days old baby boy admitted into a Neonatal Intensive Care Unit (NICU) of a local hospital with convulsions and hyperbilirubinemia.
The symptoms clearly indicated the convulsions and mild respiratory distress. The biochemistry reports showed the presence of hyperbilirubinemia with Serum bilirubin total -19.9 gm/dl. Reduced platelet count & elevated prothrombine time indicates the baby is suffering with thrombocytopenia. The reduced blood glucose levels indicate the hypoglycemia. The CSF analysis showed the septicemia.

Therapeutic Plan
The initial treatment was initiated with Injection Phenobarbital 20 mg (Gardenal injection) for treatment of convulsions and phototherapy was employed for the treatment of Jaundice. Symptoms of GI tract infection/bleeding & Mild respiratory distress was effectively treated with Injection Piptaz (Piperacillin Na + Tazobactam Na 4 g/0.5 g Powder for Solution for Infusion which is used to treat lower respiratory tract pneumonia and also serious abdominal infection) along with aeration with oxygen. A supportive measurement like aspiration of blood from GIT was continued. To improvise the platelet count Platelet rich plasma (PRP) along with Taxim (Cefotaxime-500 mg injection) was used.

The continuous infusion of saline with dextrose was used to maintain the normal glycemia. Additionally, Injection Forcan (flucanzole-200mg) was used to treat CSF infection. The patient was continuously monitored for 12 days with continuous examination of above all symptoms. The patient was stable and signs & symptoms were improved form 10th day of post admission of the baby. The patient was discharged on 14th day.

Discussion

Phototherapy is the most common treatment for reducing high bilirubin levels that cause jaundice in a newborn. Jaundice refers to the yellow appearance of the skin that occurs with the deposition of bilirubin in the dermal and subcutaneous tissue. Normally in the body, bilirubin is processed through the liver, where it is conjugated to glucuronic acid by the enzyme uridine diphosphate glucuronyl transferase (UGT) 1A1. This conjugated form of bilirubin is then excreted into the bile and removed from the body via the gut. When this excretion process is low following birth, does not work efficiently, or is overwhelmed by the amount of endogenously produced bilirubin, the amount of bilirubin in the body increases, resulting in hyperbilirubinemia and jaundice. Jaundice occurs in as many as 60% of all normal newborns within the first week of life. [1] Jaundice in the newborn can occur from an underlying pathological condition, such as isoimmune hemolysis or an RBC enzyme deficiency. However, it is more commonly due to the normal physiological inability of the newborn infant to process bilirubin adequately due to the combined effects of increased RBC turnover and a transient deficit in bilirubin conjugation in the liver [5]. This type of nonpathologic jaundice is referred to as physiologic jaundice of the newborn [6]. A Special blue fluorescent light at a wavelength of 425–475 nm has been shown to be most effective phototherapy for the treatment of jaundice. Light at this wavelength converts bilirubin to a water-soluble form that can be excreted in the bile or urine. The intensity of light delivered is inversely related to the distance between the light source and the skin surface. Since phototherapy acts by altering the bilirubin that is deposited in the tissue, the area of the skin exposed to phototherapy should be maximized.

Hypoglycemia is a frequent problem in the newborn. Serious hypoglycemia can lead to optic and mental disorders, epilepsy, and brain damage. Hypoglycemia causes convulsions by increasing glutamate, the main excitatory neurotransmitter of the brain [7] In hypoglycemia, the main excitatory amino acid glutamate is poorly reabsorbed due to its extreme secretion in the synaptic area and insufficiency of energy-dependent channels and thus leads to increased amounts of secondary extracellular glutamate which in turn induces convulsions [8] Phenobarbital was effectively proved to be most useful anticonvulsant agent in the treatment of generalized convulsions in the newborn babies [9]. The hypoglycemia was reversed my continuous infusion of dextrose saline. Slow infusion of platelet rich plasma at different intervals, in addition to the Treatment with various antibiotics effectively treated sepsis.

Conclusion

The convulsions induced with hypoglycemia and jaundice and other complications were effectively treated with various drugs and found the patient as stable. However the patient has to undergo regular checkups for evaluation of his vision

References