ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Intracranial Bleed - A Late Complication of Biliary Atresia.

Ramyaa Rajendiran* and Shafath Ahmed.

Department of Pediatrics, Sree Balaji Medical College and Hospital, Chrompet, Chennai. 44, Tamil Nadu, India.

ABSTRACT

Hemorrhagic (HDN) disease of newborn is the commonest cause of acquired hemostatic disorder of early infancy. HDN are of three types. Early onset HDN which occurs within 24hrs of life , Classical HDN occurs within 1-7days of life and late onset occurs between 7days to 6months. HDN occurs due to vitamin K deficiency, which is necessary for the synthesis of factor II, VII, IX, X in the liver. Late HDN may be also present in certain liver diseases such as biliary atresia, neonatal hepatitis, alpha 1 anti-trypsin deficiency and cystic fibrosis also associated with abnormal liver functions . Biliary atresia (BA) is a rare cholangio destructive disease in the world. The incidence of BA is higher in South Asia , Japan and China around 1 in 9,600 than in Europe and the UK which is around 1 in 16,000. BA are of two types fetal or embryonic and perinatal which is not evident until 2 to 4 weeks . Early diagnosis by means of ultrasound, intra operative cholangiography, liver biopsy confirms the diagnosis. Kasai's hepatoporto-enterostomy appear to have the best outcome in children younger than 60 – 80 days of age.

Keywords: Biliary atresia, Intraoperative Cholangiography, Intracranial bleed, Kasai hepatoporto enterostomy

**Corresponding author*

ISSN: 0975-8585

INTRODUCTION

Hemorrhagic (HDN) disease of newborn is the most commonest cause of acquired hemostatic disorder of early infancy. HDN are of three types .Early onset HDN which occurs within 24hrs of birth, classical HDN occurs within 1-7days of birth and late onset HDN occurs between 7days to 6months. HDN occurs due to vitamin K deficiency. Vitamin K, fat soluble vitamin necessary for the synthesis of Factor II, VII, IX, X in the liver. Vitamin K is present in negligible amount in human milk. Hence exclusively breast fed infants receive less amount of vitamin K. The gut flora also produces less amount of vitamin K. The risk factors associated with HDN include breast feeding and failure to give vitamin K at birth. Late HDN is also associated with abnormalities in the liver function. Abnormal liver function can be also associated with other liver diseases such as biliary atresia , neonatal hepatitis, alpha 1 anti-trypsin deficiency, cystic fibrosis . These liver diseases may be also responsible for late onset of HDN. Biliary atresia is a rare cholangiodestructive disease in the world. Females are more affected than males. It affects both intrahepatic and extrahepatic biliary tract ultimately leading to cirrhosis and liver cell failure. Timely liver transplant may save the child if not leads to death [1]. The incidence of BA is higher in South Asia, Japan and China ,around 1 in 9,600 compared to Europe and the UK whose incidence is around 1 in 16,000. BA may be associated with "Biliary Atresia Splenic Malformation syndrome"(BASM), characterized by polysplenia, situs invertus, cardiovascular anomalies such as an absence of inferior vena cava and a pre- duodenal portal vein. Bezerra et al [2] described the causes of biliary atresia, viral infection (cytomegalovirus, rotavirus, reovirus), impaired immune response due to increased frequency of HLA – B12 , B8, DR3 alleles, predominant T-cell ,Th-1 like cytokines response in the hepatic profile. This study also enumerates other causes of BA such as defective perinatal circulation resulting in extrahepatic bile duct stricture, defect in the remodeling of the ductal plate, gene mutation in CFC1 and JAG1, defective gene expression resulting in situs inversus and bile duct obstruction and the exposure to toxic substances.

Case Report

55 days old male child presented with sudden unresponsiveness, vomiting, lethargy, seizures (in the form of uprolling of eyes) and abdominal distension. History of voiding high coloured urine and passing acholic stools of 1 week duration. No significant history in the past. Physical examination revealed icterus, abdominal distension, hepatosplenomegaly, bulging anterior fontanelle Laboratory investigations showed raised PT/PTT levels, elevated serum bilirubin and GGT levels. CT Brain showed left frontal intracranial hemorrhage with left parieto occipital hemorrhage and subdural hemorrhage with midline shift for which intravenous vitamin K was given and decompression craniotomy was done. USG abdomen showed gall bladder atresia with hepatosplenomegaly.. Hepatobiliary study done with TC-99m mebrofenin showed reduced uptake and late images suggestive of severe cholestasis. Cholangiography being the golden standard test for the diagnosis of biliary atresia. Liver biopsy showed extra hepatic biliary atresia with atretic biliary tract and reactive hyperplasia of lymphnode. Direct and indirect coombs test was negative. Elevated G6PD and alpha feto protein levels. Normal thyroid function test and renal function test.

Fig 1A

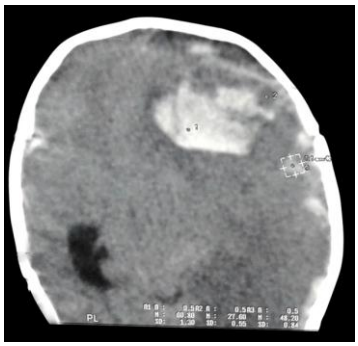

Fig 1B

Fig 1A– shows the clinical picture of the patient.

Fig1B—CT brain showing extensive infarct in entire left cerebral hemisphere involving temporal, frontal, parietal, occipital cortex, putamen, corona radiata with haemorrhage within with mass effect and midline shift .

Serum electrolytes levels and serum calcium levels were also within normal limits. Torch screening test was negative. Sweat chloride test was not suggestive of cystic fibrosis. VDRL was negative. Kasai's hepatoporto- enterostomy was done. Post operatively child was passing pigmented and intermittent pale stools. Initially child was started on steroids and vitamin K oral supplements tapered and stopped. Child is on ursodeoxycholic acid, fat supplements anti convulsant and oral trimethoprim- sulfamethoxazole . At present child is 8 months old passing pigmented stools with intermittent pale stools. Parents have been counseled about the nature of the disease, complication of biliary cirrhosis and the need for liver transplantation in future.

DISCUSSION

Cholestatic jaundice may present with late onset of intracranial hemorrhage. Late onset of HDN has significant morbidity and mortality. The incidence of late onset HDN ranges from 4.4- 72/ 100,00 births. Vitamin K prophylaxis at birth reduces the incidence of HDN in developed countries. Cholestatic jaundice in children resulting in late onset HDN is due to vitamin K deficiency following fat malabsorption and inadequate dietary intake (4). The commonest cause of late onset HDN is due to vitamin K deficiency bleeding (VKDB) resulting in high mortality and poor neurological outcome (5). Surgical treatment by 2months improves the prognosis and prevent the development of irreversible biliary cirrhosis.

In a study , ICH had occurred at 47-76 days of birth before Kasai's hepatoporto enterostomy was done. This study throws light on VKDB a cause of late onset HDN even though vitamin K prophylaxis had been given during the neonatal period (6) .The management of biliary atresia is Kasai hepatoporto-enterostomy , introduced in 1957 by Kasai for non correctable biliary atresia .The aim of surgery is to restore bile flow and recovery of liver function. The outcome is good with good quality of life when Kasai hepatoporto-enterostomy was done before the onset of cirrhosis. From a study from Japan outcome in infants operated between 30-90 days, does not show much difference than infants operated later than 90days (7). Hence this study emphasis the need of Kasai procedure even though the infant presents to us in a later age .

Liver transplantation is the ultimate choice even though it has its own complications. Extrahepatic biliary atresia itself an indication for pediatric liver transplantation (8). Also assessing the roles of interferon-gamma and other cytokines for therapeutic intervention in future is mandatory . Post surgical prognosis differs depending upon age group , younger the age group better the prognosis. But Kasai surgery after 3months of age is justified but prognosis is poor (9). Also the success rate differs with different centers. Patients who undergo Kasai's hepatoporto enterostomy may require liver transplantation later. Children with extrahepatic biliary atresia may require liver transplantation later.

Indications of liver transplantation

- Progressive cholestasis
- Recurrent cholangitis.
- Hepatic failure.
- 4. Poorly controlled portal hypertension.
- Intractable ascites.
- 6. Decreased hepatic function such as hypoalbuminemia, coagulopathy unresponsive
- to vitamin k.

CONCLUSION

Children with late onset of HDN should be always evaluated for cholestatic liver disease eg biliary atresia. Life threatening complications like intracranial hemorrhage may even lead to disability and death. Hence vitamin K prophylaxis is of great importance in children with cholestatic jaundice. Although vitamin K prophylaxis given during neonatal period chances of late onset HDN is high in children with biliary atresia. Late onset of HDN results in ICH secondary to vitamin K deficiency. Extrahepatic biliary atresia usually ends up in liver transplantation which improves the prognosis at pediatric age group. The prognosis of liver transplantation depends upon the expertise and differs at different centers.

ISSN: 0975-8585

REFERENCES

[1] Mark Davenport. Indian J Pediatrics 2006; 73, 9:825-828.
[2] Bezerra JA, Balistreri WF. Semin Gastro intest Dis .2001 Apr; 12,2:54-65.
[3] McKiernan PJ, Baker AJ, Kelly DA. Lancet 2000; 355: 25-29.
[4] Huseyin Per, Duran Arsian, Hakan Gumus, Abdulhakim Coskun, Sefer Kumandas. Neural Sci 2013;34:51-56.
[5] Desiree Y, Visser et al. 2011; 37(6): 1014-1020.
[6] Alatas FS, Hayashida M, Matsuura T, Saekil, Yanagi Y el al. J Pediatr Gastro Enterol Nutr 2012; 54.4: 552-7.
[7] Nio M. Ohio R, Miyano T, Saeki M, Shiraki K, Tanaka K. J Pediatr Surg 2003; 38:997-1000.
[8] Elisa de Carvalho et al. J Pediatr (Rio J) 2007;83(2): 105-120.
[9] Chardot C, Carton M, Spire-Bendelac N, Le Pommelet C, Golmard J. J Pediatr 2001; 138(2):224-8.