ORIGINAL ARTICLE

The effect of surgery on neonatal hepatitis

by

E.M. HALIMUN

(From the Department of Surgery Medical School, University of Indonesia, Jakarta)

Abstract

A review of nine neonatal hepatitis cases, which underwent exploratory laporatomy in the course of the disease, gave the conclusion that surgical intervention did not give unfavourable effect to the patients. Irrigation of the bile trees provoked bile flow and produced a normal serum bilirubine 3 months after surgery. However, this procedure did not suggest that insidious progression of cirrhosis could be arrested.

Received 16th June 1983.

Introduction.

There is still controversial attitude towards the outcome of neonatal hepatitis cases whether or not to undergo surgical intervention in the course of the disease. Exploratory laparotomy and operative cholangiogram were the only reliable findings if the various established methods (serum, urine and faces studies followed by X-Ray, scintigram and liver biopsy) could not distinguish this syndrome from biliary atresia (Chiba and Kasai, 1975; Hashimoto et al., 1978). Pediatricians as well as other physicians were concerned with the increase of morbidity and mortality after such procedures (Thaler and Gellis, 1968).

This review will give a clinical evaluation of neonatal hepatitis syndrome cases with preoperative diagnosis of biliary atresia which have to be operated upon.

Material and methods.

This is a review of nine cases of neonatal hepatitis treated in the Pediatric Surgical Department, Kobe Children's Hospital between 1972 and 1982. The range of duration of follow-up studies was from 8 months to 11 years. The indication of surgical intervention was biliary atresia based on the negative findings of the excretion function tests such as 131 Rose Bengal, Te 90m Scintigram, PTC and Kobe duodenal tubing.

The exploratory laparotomy was done as a routine procedure, such as macroscopic evaluation of the hepatobiliary system, operative cholangiogram followed by irrigation and liver biopsy. Diagnosis of neonatal hepatitis syndrome was made after the visualization of intra and extrahepatic bile trees, smooth irrigation by normal saline and confirmed by histologic finding of the liver biopsy.

The evaluation was mainly on the clinical findings such as jaundice, weight gain, liver and spleen enlargement, ascites or esophageal varices and laboratory findings such as bilirubin, GOT, GPT, LDH and Alk. Phosphatase. Post-operative percutaneous liver biopsy was not performed.

Result

Sex, age at admission and duration of follow-up period are listed in table 1. Seven out of the nine patients were examined by the author. Information of the remaining two cases (ES and IF) was obtained from another hospital. The evidence of bile flow in most cases was noted by the greenish stool present soon after surgery except in JM. In this case prednison 2mg/Kg.Bw. was given for 3 weeks, which gradually improved the bile flow.

Table 1. *Sex, age of operation and duration of follow-up period in nine neonatal hepatitis cases.*

Nos. :	Cases :	Sex :	Age of operation day :	Follow-up period year	Associate anomalies
1.	CN	M	90	10,5	—
2.	JM	M	94	9,5	—
3.	ES	M	428	9 died	
4.	KS	M	72	6	LBW
5.	MT	F	93	5,5	—
6.	KSA	F	64	3,5	—
7.	IF	F	1	3,5	duodenal atr.
8.	KH	F	1 70	2	jejunal atresia LBW, CHD, Lip/ cleft plate
9.	II	F	67	8/12	—

Hypoplastic bile trees as shown in the operative cholangiogram were found in four infants (CN, KS, KSA and KH). KS and KSA showed bile flow 2 and 3 days after operation, respectively. In CN a cholecystostomy tube was applied, through which daily flushing of urografin under fluoroscopy was done, giving an immediate bile flow (Fig. 1). The tube was removed on the 8th day. KH with multiple anomalies as LBW, jejunal atresia, web neck, cleft palate and lip and CHD died on the third day of admission because of severe pneumonia and heart failure. Her liver function test prior to her expiry was within normal limits. In two cases (IF and KH) emergency surgery had to be done after birth due to intestinal atresia. Jaundice and acholic stool were noted when they were 6 and 8 weeks old, respectively. On IF the diagnosis of neonatal hepatitis was made by PTC and prednison therapy.

One case (ES) died when she was 9 years old due to hepatic failure in another hospital. She was operated on at the age of 428 days (Chiba and Kasai, 1975) when hepatosplenomegaly was already observed and fibrosis of the liver was seen on the biopsy specimen during operation. The liver function test was followed regularly (serum bilirubin, GOT, GPT, Total protein, LDH and Alk. Phosphatase).

All cases showed worsening figures in the first week after operation but gradually improved and reached normal range after 3 months.

Discussion.

The surgical intervention on neonatal biliary tree malformation would be successful if it was done before irreversible liver damage occured (Hays and Snyder, 1963; Lilly 1980). Time consuming examination must be avoided. However, surgery is not the only treatment of choice for neonatal hepatitis. Since the results above mentioned gave figures as follows : bile flow occurred after surgery in 8 out of 9 infants (90 %). All liver function tests reached normal range after 3 months of operation. In one case irrigation of the bile tree could not terminate the process of the development of cirrhosis but might be able to decrease the speed of the process. And this patient died of hepatic failure at the age of 9 years. One patient with multiple congenital anomalies died positively not due to the surgical intervention but to the severity of respiratory problem and cyanotic heart disease.

Neonatal hepatitis syndrome developed after birth was revealed from the history of case IF and KH. Surgery on the first day of life showed the presence of bilious excretion in the intestines. Four out of nine (44 %) cases showed small intra and extra hepatic biliary trees, which would then gradually enlarge in caliber by repeated flushing of urografine or normal saline. From those findings the term "hypoplasic" biliary tree is not recommended but rather "disused" ducts, due to the low pressure of the bile flow from the hepatic beds.

The diagnosis of neonatal hepatitis in this series was made by the findings of : 1. improvement of bile flow after irrigation and 2. the finding of giant cell transformation and bile stasis in the liver specimen.

Acknowledgement.

The author would like to express his gratitude to Dr. Ken Kimura and Dr. Chikara Tsugawa of the Kobe Children's Hospital for giving him the opportunity to analize all their cases of neonatal hepatitis.

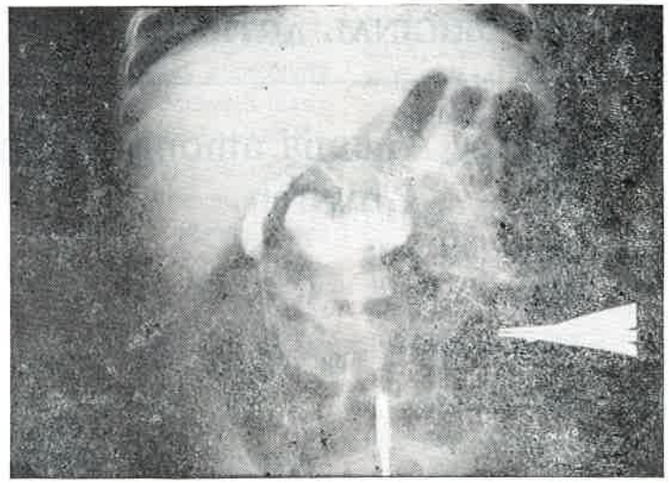

FIG 1. *Urografin flushing through a cholecystostomy tube in case C.N.*

REFERENCES :

1. CHIBA, T.;KASAI, M. : Differentiation of Biliary Atresia from Neonatal Hepatitis by Routine Clinical Examinations. Tohoku J. Exp. Med. 115 : 727 (1975).
2. HASHIMOTO, S.; TSUGAWA, C.; MATSUMOTO, Y.; MORIHANA, U.; ARAKI, M.; TAKEMINE, H.; NISHIYAMA, S. : Naso Duodenal tube insertion Technique for rapid diagnosis of Congenital Biliary Atresia. Jap. J. Pediatr. Surgery 14 : 889 (1978).
3. HAYS, D.M.; SNYDER, W.H. : Life span in untreated biliary atresia. Surgery 54 : 373 (19623).
4. LILLY, J.R. : The Surgery of biliary hypoplasia. Annual Meeting of the American Association of Pediatric Surgeon Los Angelos, 1980.
5. THALER, M.M.; GELLIS, S.S. : Studies in neonatal hepatitis and Biliary Atresia. I. Long term prognosis in neonatal hepatitis, II. The effect of diagnostic laparotomy in long term prognostic of neonatal hepatitis. III. Progression and regression of cirrhosis in biliary atresia. IV. Diagnosis. Am. J. Dis. Child 116 : 257 (1968).