

Aetiological Study of Neonatal Hyperbilirubinaemia-A Hospital Based Prospective Study

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Abstract

A prospective Hospital based study was done to find out the aetiology of neonatal hyperbilirubinaemia. One hundred cases were studied during a period from January to December 2003 on the neonatal unit of CMCH and different clinics of chittagong city. Among them 69% were male and 31% were female. Neonatal septicemia was the commonest cause of neonatal hyperbilirubinaemia found in 28% case followed by blood group incompatibility (27%).

Introduction

Jaundice in the newborn is commonly encountered in clinical practice. It is observed during the first week of life in approximately 60% in term and 80% in preterm¹. The overall incidence of neonatal jaundice in our country is about 33%^{2,3} and reported by various Indian workers varies from 4.6% to 77%⁴. Through neonatal hyperbilirubinaemia is not a major cause of neonatal mortality in our country but its morbidity during the neonatal period and subsequently is sufficiently severe enough to make its early recognition and adequate management which is an important aspect of preventive paediatrics. Hyperbilirubinaemia in the newborn has been defined in this study as a condition in which the serum bilirubin is > 10mg/dl in the preterm and > 12mg/dl in the full term babies⁵ and cord bilirubin \geq 2mg by 1st day in both term and preterm.

Materials and Methods

This was a prospective study of neonatal hyperbilirubinaemia. A total of One hundred cases were studied during a period from January to December 2003 in the neonatal unit of CMCH and different clinics of Chittagong city. All these patients were admitted either with jaundice or developed it subsequently during their stay in hospital.

Inclusion criteria

1. Age within 28 days
2. Total serum bilirubin \geq 10mg/dl in preterm and \geq 12mg/dl in term
3. Cord bilirubin level \geq 2mg/dl in first day in both term and preterm

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Exclusion criteria

1. Age > 28 days.
2. Total serum bilirubin \leq 10mg/dl in preterm and \leq 12mg/dl in term.
3. Cord bilirubin level \leq 2mg/dl in first day in both term and preterm.

Investigation and Evaluation

A detailed and thoughtful history and clinical examination were done. The gestational age of the newborn was determined by the Dubowitz method.

The following investigations were done: - serum bilirubin/cord bilirubin (total, direct, indirect), Hb content, blood grouping and Rh typing with genotype study, CBC with comment on PBF, reticulocyte count, coombs test, blood for culture and sensitivity, enzyme assay (ALT, ALP, phosphatase), radiological survey, urine and stool for R/E, USG of HBS, C/S from materials like umbilical swab, liver biopsy.

Data collection

Data was collected by semi-structured questionnaires.

Analysis

Analysis was done manually uni-variates and bi-variate tables were made.

Results

Among the studied 100 cases of neonatal hyperbilirubinaemia the age and sex distributions are shown in table-1. Majority of the cases (88%) were in 0-7 days age group and 10% in 8-15 days age group. Male excess was observed in this series. Male to female ratio was 2.33:1.

Table-1: Age and Sex Distribution (n = 100)

| Sex | 0-7 days | 8-15 days | 16-21 days | 22-28 days | Total |
|--------|----------|-----------|------------|------------|-----------|
| Male | 59 (59) | 8 (8) | 1 (1) | 1 (1) | 69 (69) |
| Female | 29 (29) | 2 (2) | | | 31 (31) |
| Total | 88 (88) | 10 (10) | 1 (1) | 1 (1) | 100 (100) |

□ Figures in parentheses indicate percentage

Table-II shows the aetiological factors responsible for neonatal jaundice. Out of 100 clinically jaundiced neonates neonatal septicemia was seen in 28% cases. Blood group incompatibility was seen in 27% cases. Idiopathic/un-diagnosed cases were seen in 4% Infants of diabetic mothers and large cephalhaematoma 3% (each). Neonatal

hepatitis and breast milk jaundice were seen in 2% each. Biliary atresia, Ileal atresia, drug induced hyperbilirubinaemia comprised 1% each.

Table 2: Aetiology of Neonatal Jaundice (n=100)

| Aetiology | Number of Patients | Percentage |
|---|--------------------|------------|
| Neonatal Septicaemia | 28 | 28 |
| Physiological | 15 | 15 |
| Prematurity | 12 | 12 |
| Rh-incompatibility | 13 | 13 |
| ABO-incompatibility | 11 | 11 |
| Combined ABO+Rh incompatibility | 03 | 03 |
| Undiagnosed/Idiopathic | 04 | 04 |
| Infant of diabetic mother | 03 | 03 |
| Large cephalhaematoma | 03 | 03 |
| Neonatal hepatitis | 02 | 02 |
| Breast milk Jaundice | 02 | 02 |
| Congenital biliary atresia | 01 | 01 |
| Ileal atresia | 01 | 01 |
| Drugs and combined bl.gr. incompatibility + Septicaemia | 01 (each) | 01 (each) |

Discussions

The prevalence and aetiology of neonatal hyperbilirubinaemia varies from country to country, even in different areas of same country. Several studies in this field have been conducted in different countries^{6,7}. Majority (88%) of the cases in this study were within 7 days of age. Male to female ratio 2.33:1 in the present study is fairly similar to the study done among the hospitalized newborn in Nigeria and Ibadan⁸. Neonatal jaundice is quite common in septicemic patient. Maximum number of cases in our study was due to neonatal septicemia (28%) and this finding is quite consistent with the observation made by Ahmed et al in Zaire⁶ and inconsistent with the findings of other workers⁷⁻⁹. In the study done by Talukdar³ ABO incompatibility was the highest cause of neonatal hyperbilirubinaemia. Merchant¹⁰ showed that among 75 cases of neonatal jaundice, physiological jaundice was the

highest. Blood culture and sensitivity was done in all patients of septicemia. 17 patients (60.71%) showed culture positivity, rest (39.29%) was culture negative. In the culture positive group E. coli was the highest (52.94%) one followed by Staph. Aureus (41.70%) and GBS (5.88%). This finding is consistent with other observation¹¹.

Neonatal septicemia was the commonest cause of neonatal hyperbilirubinaemia in this study followed by physiological jaundice. Long-term follow-up study in the country would evaluate the morbidity and mortality of these cases.

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