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A Study on the Profile of Neonatal Hyperbilirubinemia in a Tertiary Health Care Centre In Chennai

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ABSTRACT

A retrospective Hospital based study was done to find out the profile of Neonatal Hyperbilirubinaemia. Neonatal jaundice during May 2015 to April 2016 in the Neonatal unit and OBG Ward of ACSMCH were studied. Among the jaundiced neonates, pathological Jaundice (56%) was more than physiological Jaundice (44%). There was a statically significant association between sepsis and pathological Jaundice (P value =0.03). Pathological Jaundice was 1.6 times more common among the female neonates when compared to male neonates and 1.6 times more common among neonates who had caput when compared to neonates who didn't have caput, however these associations were not statistically significant

KEYWORDS : Neonates, Hyperbilirubinaemia, Sepsis

INTRODUCTION

Hyperbilirubinaemia is one of the most common problems that occur in the neonate. Although most of jaundiced infants are otherwise perfectly healthy, they make us anxious because bilirubin is potentially toxic to the central nervous system and if the serum bilirubin levels are very high kernicterus (bilirubin encephalopathy) can develop (Avery et al., 1999)[1]. Neonates may not appear jaundiced until the serum bilirubin concentration exceeds 5 to 7 mg% (Taeush et al., 2005)[2]. Jaundice is the commonest abnormal physical finding in the neonates (Anand et al., 1978)[3]. The overall incidence of neonatal jaundice as reported by various Indian workers varies from 54.6% to 77% (Sharma et al., 1994)[4].

In term babies, physiological jaundice appears between 30-72hrs of age, maximum intensity of jaundice is seen on the fourth day, and jaundice disappears by 10th day of life. Serum bilirubin does not exceed 15mg%. Among preterm babies age of onset of physiological jaundice is similar to the term babies, the maximum intensity of jaundice is reached on the 5th-6th day and it may persists up to 14 days. Serum bilirubin may go up to 15mg% (Singh, 2004)[5]. Assessment of jaundice should be done in the natural light.

The pulp of finger or thumb is pressed on baby's skin, preferably, over a bony part till it blanches and underlying skin is noted for yellow colour. Clinical jaundice manifests on face at 4-8mg%, upper trunk at 5-12mg%, lower trunk and thigh at 8-16mg%, arms and lower legs at 11-18mg%.In addition staining of soles and palms occur at serum bilirubin level more than 15mg% (Ramesh Agarwal et al., 2002)[6] (Misra and Govil, 1994)[7].

Overproduction of bilirubin combined with immature mechanisms for conjugation and enhanced enterohepatic circulation of bilirubin contribute to the absorption and development of jaundice, which in most infants, is mild enough to be considered physiological and non-toxic (Taeush et al., 2005). Jaundice occurs when the liver cannot clear a sufficient amount of bilirubin from the plasma (Behrmann et al.,)[8]

MATERIALS AND METHODS

STUDY DESIGN

This was a retrospective study of neonatal hyperbilirubinaemia. All the patients were admitted either with jaundice or developed jaundice subsequently during their stay in hospital.

INCLUSION CRITERIA

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

EXCLUSION CRITERIA

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

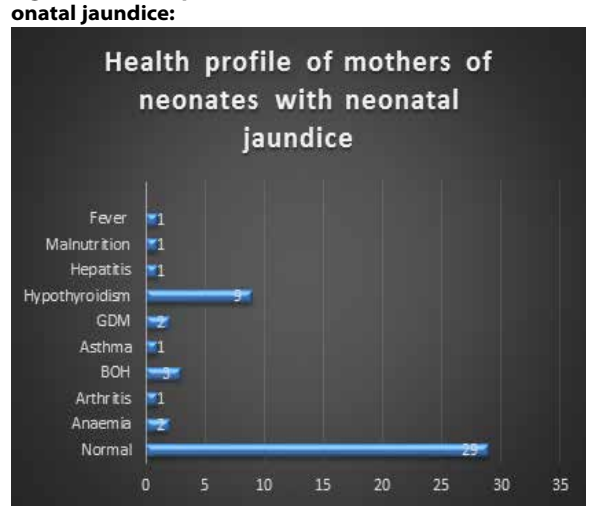
DATA COLLECTION AND INVESTIGATION:

Data was collected by tailor made interview schedule. The information needed was extracted from the medical record department. The following investigations details were noted: - serum bilirubin / cord bilirubin (total, direct, indirect), Hb content, blood grouping and Rh typing, CBC, reticulocyte count, blood for culture and sensitivity, radiological survey, urine and stool for R/E USG, C/S from materials like umbilical swab were done.

RESULTS

Among the mothers of neonatal jaundice the following were noticed. Hypothyroidism (18%), GDM (4%), Asthma (2%), malnutrition (2%), hepatitis (2%), BOH (6%), Anemia (4%), Arthritis (2%).

Figure 1: Health profile of mothers of neonates with neonatal jaundice:



76% of Jaundice neonates belonged to birth order of ≥ 2. 52% were male, 76% were term and 26% were low birth weight. Details can be seen in

Table 1: Birth Profile of the Neonates with Jaundice:

Variable	Number	Percentage
Birth order:		
First born	12	24
Second born or above	38	76
Gender of the baby:		
Male	26	52
Female	24	48
Rh status of the baby:		
Positive	49	98
Negative	1	2
Mode of birth:		
Normal vaginal delivery	25	50
Caesarean section	25	50
Maturity:		
Pre-term	8	16
Term	38	76
Post term	4	8
Birth weight:		
Low birth weight	13	26
Normal	37	74

Appearance and disappearance of Jaundice were variable with mean 3.64 and 6.76 .

Table 2: Average days of appearance and disappearance of Jaundice among the Jaundiced Neonates:

Variable in days	Range	Mean	95% C.I
Appearance of Jaundice	2 to 6	3.64	3.42 to 3.86
Disappearance of Jaundice	5 to 10	6.76	6.45 to 7.07

44% were physiological Jaundice, 56% were pathological Jaundice, 14% Sepsis,Caput in 52% neonates and 10% Cephelohaematoma in neonates were found. Out of Jaundiced neonates 52% of Male and 48% of female, 24% were 1st born, 76% were 2nd born or above. Etiological factors incriminated are summarized in Table 3: Health Profile of Neonates with Neonatal Jaundice:

Table 3: Health Profile of Neonates with Neonatal Jaundice:

Variable	Number	Percentage	95% C.I
Physiological jaundice	22	44	30.24 – 57.76
Pathological jaundice	28	56	42.24 – 69.76
Sepsis	7	14	4.38 – 23.62
Caput	26	52	38.15 – 65.85
Cephelohaematoma	5	10	1.68 – 18.32

52% are male and 48% are Female with chi-Square value 0.66 P-Value 0.41

Table 4: Association between pathological jaundice and certain suspected risk factors:

Variable	Classification of variable (number of people in the group out of 50)	Number of neonates with pathological jaundice (out of 28)	Odds ratio (95%C.I Of odds ratio)	Chi-square value	P – value
Gender	Female (26)	16	1.6 (0.52 – 4.93)	0.66	0.41
	Male (24)	12	1		
Sepsis	Present (7)	7	Undefined (as one cell is 0)	4.49	0.03 *
	Absent (43)	21			
Caput	Present (26)	16	1.6 (0.52 – 4.93)	0.66	0.41
	Absent (24)	12	1		

DISCUSSION

In the present study there was a statistically significant association between sepsis and pathological Jaundice. Similar findings were seen in a study close on neonates by Ahmed et al., in Zaire[9] and Lalitha Bahl et, al[10]. Other studies done by Merchant RH[11], Verma Maninam[12], Narang[13] showed pathological jaundice was 7.6 times more common with caput which was similar to the findings of our study.

CONCLUSION

The higher the bilirubin level rises, the more justified are additional efforts to determine its cause. This will prevent mental retardation and cerebral palsy due to neonatal hyperbilirubinemia.

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