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Relationship between Maternal Factors and Exaggerated Physiological Jaundice - A Prospective Study

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Abstract:
Background: *Various maternal factors are found to be associated with neonatal jaundice which is a normal benign phenomena that affects 60% of the term and 80% of the preterm babies. But role of these factors in its causation has not been proved completely. Hence this study was done to evaluate the relationship between maternal factors and exaggerated physiological jaundice.*
Materials and Methods*: Retrospective study done on 50 newborns born in Department of Pediatrics VMMC Karaikal during the period of July to September 2019.Full term singleton babies born with no congenital anomalies and other complications irrespective of their birthweight were included. Babies with risk factors for pathological jaundice were excluded. Serum bilirubin analysis was done, data regarding maternal age, obstetric status, Hemoglobin level etc at delivery and gestational age were collected and statistically analysed using software SPSS16.*
Results: *Out of 50 deliveries, 31 were clinically jaundiced on day 3 of life (62%). Newborns of mothers with anemia showed significantly higher bilirubin level (p=0.0001). Babies born to primigravida are at more risk of exaggerated jaundice (p=0.0001). It was found that babies born to young mothers (< 30 years) have significantly higher risk of developing jaundice (p=0.014). There was no significant relation between gestational age and exaggerated jaundice .*
Conclusion*: Present study shows that newborns born to primigravida, anemic and young mothers are at risk of developing exaggerated physiological jaundice*
Keywords: *newborn , jaundice , serum bilirubin*

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I. Introduction

Neonatal hyperbilirubinemia is one of the most frequent problems of neonatal period [1].It involves about 60% of term and 80% of preterm babies, which can be both physiological or pathological [2].Although jaundice is benign phenomenon ,newborns should be assessed in order to prevent further progression into severe hyperbilirubinemia and acute encephalopathy[3]. Jaundice is the most common cause of readmission to hospital.[2, 3 ,4.] Most of the studies were done in the purview of pathological jaundice more than physiological jaundice [5.]This study was done in an attempt to find out maternal factors associated with exaggerated physiological jaundice in a tertiary care hospital in the coastal region of Karaikal

II. Materials And Methods

This was a prospective study done in the department of Pediatrics , Vinayaka missions Medical College , Karaikal UT of Puducherry during the period of July to September 2019(3 months).The sample size was taken was 50 newborns during the study period .Written informed consent was obtained from the mothers before the onset of the study .Institutional ethical committee approved the research .

Study Design: Prospective study
Study Location: Department of Pediatrics , Vinayaka missions Medical College , Karaikal, UT of Puducherry
Study Duration: July to September 2019(3 months).
Sample Size: 50 newborns
Subject and Selection Method : The study population was drawn from the consequtive babies whowere delivered in the Department of Pediatrics ,VMMC with respect to the inclusion and exclusion criteria .
Inclusion criteria:
1 . Singleton pregnancies
2. Willing to consent

Exclusion criteria:

1. Risk of Pathological Jaundice like ABO , Rh Incompatibility
2. Complications at birth
3. Congenital anomalies
4. Failure to consent

METHODOLOGY:

A venous blood sample is drawn from the mother at least one hour before delivery for estimation of hemoglobin. Data regarding obstetric status ,parity are collectedThe babies after birth are assessed using New Ballards scoring system .TSB (Total Serum Bilirubin) values are assessed in those babies who are clinically jaundiced (Physiological Jaundice) from the dorsum of hand or foot) Serum bilirubin is estimated using Diazo reagent method and quantitative analysis was done by spectrophotometry. Statistical Analysis was done by SPSS version 16 . Chi square test was applied to study the association between the various factors**.** p value of < 0.05 was taken as significant

III. Results

Out of the 50 deliveries 31 babies were jaundiced at day 3 of life(62%). Babies born to young mothers (< 30 years) have a significantly higher risk of developing exaggerated physiological jaundice .Babies born to primi gravida are at more risk of developing exaggerated physiological jaundice . Anemic mothers have more chance to have newborns prone to develop exaggerated physiological jaundice.

Table no.1: RELATIONSHIP BETWEEN MATERNALAGE AND JAUNDICE

Babies born to young mothers (less than 30 years) have significantly higher risk of developing Jaundice

Age Distribution	Jaundice				Total (%)
	Yes	%	No	%	
≤20	5	0%	0	0%	5 (10.0%)
21 – 25	13	26.0%	3	6.0%	16 (32.0%)
26 – 30	10	20.0%	9	18.0%	19 (38.0%)
>30	3	6.0%	7	14.0%	10 (20.0%)
Total	**31**	**62.0%**	**19**	**38.0%**	**50 (100%)**
Chi Square Test Value		**10.635**	**P Value**		**0.014 (Significant)**

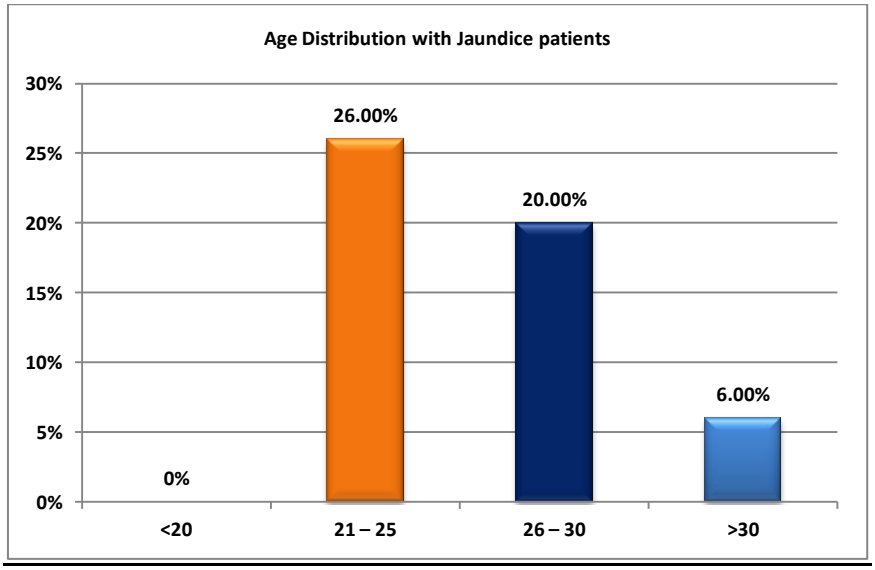
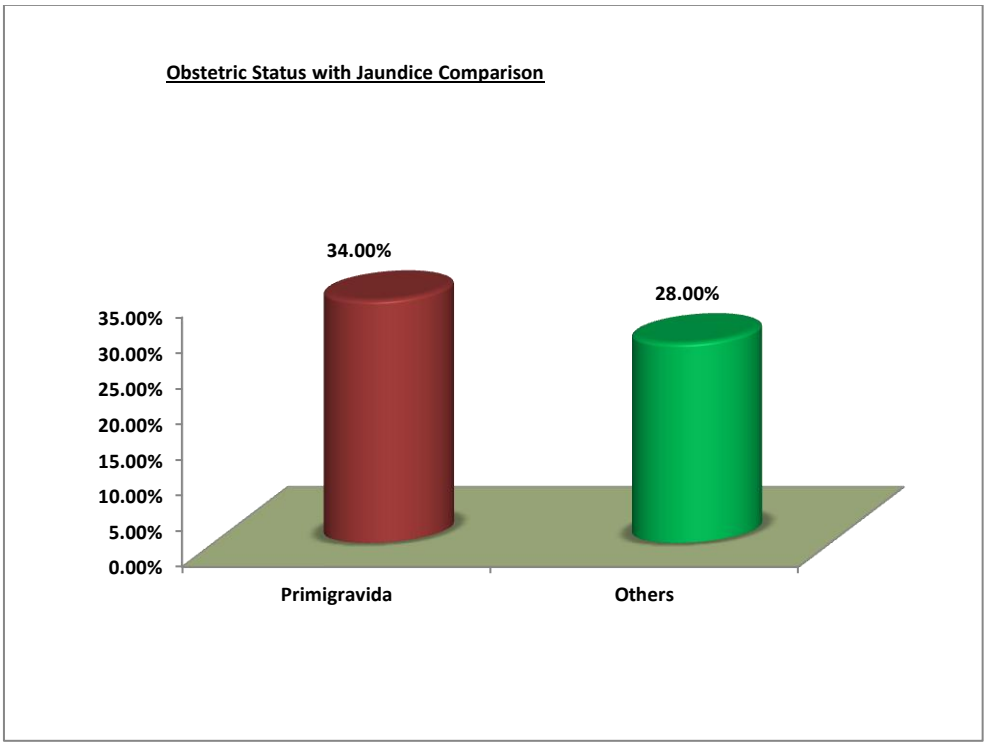


Table no 2 OBSTETRIC STATUS WITH JAUNDICE COMPARISON

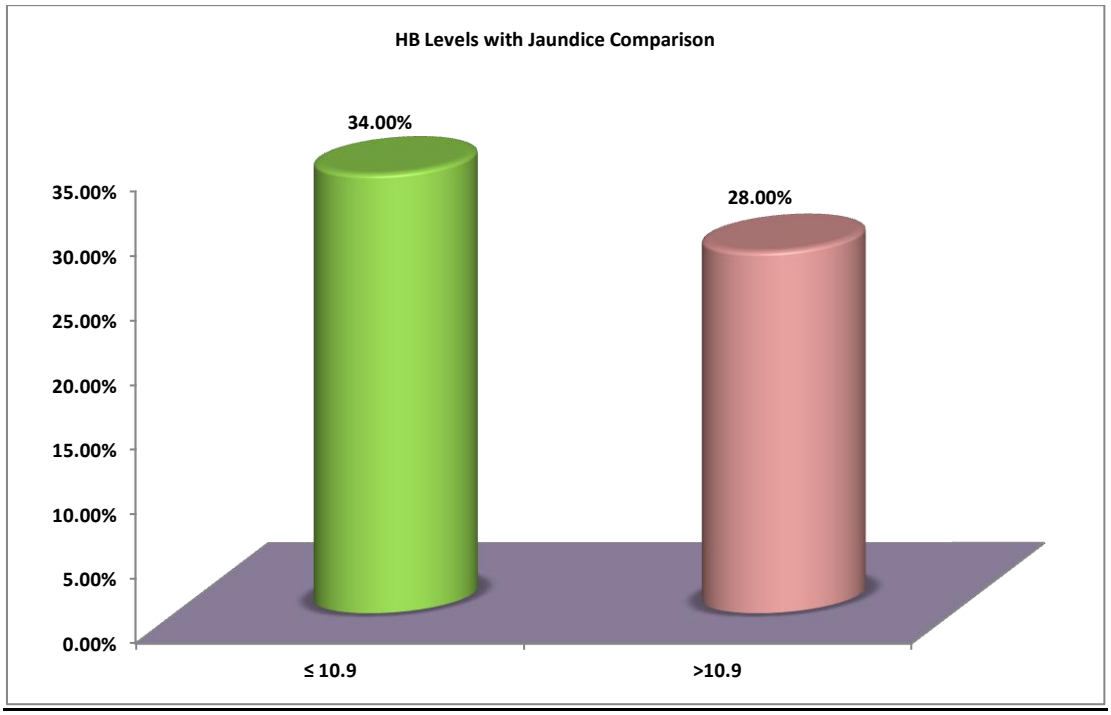
Obstetric Status	Jaundice				Total (%)
	Yes	%	No	%	
Primi gravida	17	34.0%	0	0%	17 (34.0%)
Others	14	28.0%	19	38.0%	33 (66.0%)
Total	31	62.0%	19	38.0%	50 (100%)
Fisher's Exact Test			**P Value**	**0.0001 (Significant)**	



Primi gravida are more risk as per the above table

Table no: 3 Hemoglobin levels and jaundice comparison

HB Levels	Jaundice				Total (%)
	Yes	%	No	%	
≤ 10.9	17	34.0%	13	26.0%	30 (60.0%)
>10.9	14	28.0%	6	12.0%	20 (40.0%)
Total	31	62.0%	19	38.0%	50 (100%)
Chi Square Test Value		**2.698**	**P Value**	**0.0001 (Significant)**	



Babies born to anemic mothers are prone to develop exaggerated physiological jaundice

IV. Discussion

This study shows that babies born to young mothers (< 30 yrs) are at higher risk of developing exaggerated physiological jaundice . In this study the mean age of the mothers was found to be 26.6 years. This was consistent with certain studies done in northern India and in middle east countries [8,10]

According to this study , babies born to primigravida are at more risk , consistent with the findings of an Indian study done in the western coast . Simliarly high bilirubin levels were found in newborns born with lower birth order in certain ethnic communities . [7 , 8, 9]

On the contrary no relationship was observed in many other studies. So literature is equivocal on this finding [6 ,11]This finding is our study might be due to racial climatic or dietary influences which are different in Indian and western population

Our study shows anemia as an associated factor with exaggerated physiological jaundice . This may be due to the dietary factors per se , or due to intake of iron supplements. [,8] .

Many studies have shown an association with anemia and exaggerated physiological jaundice but with less statistical significance. [6]

The limitation of the study lies in the fact that sample size was very small.

More studies need to be done on a larger cohort to accurately make the association. As per this study , newborns born to young mothers (age < 30 yrs), primi gravid and anemic are at risk of developing exaggerated physiological jaundice…

V. Conclusion

There exists a relationship between maternal factors like age , parity and Hemoglobin levels and exaggerated physiological jaundice.

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