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Research Article

Factors Responsible For Neonatal Hyperbilirubinemia and Their Clinical Determination at Third-Tier of Healthcare

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ABSTRACT

Objective: The research paper aims at the analysis of risk factor interms of involved factors and reasons in the patients of neonatal hyperbilirubinemia at the third-tier of healthcare in hospitals.
Study Design: Cross-sectional research design has been adopted in this research.
Place and Duration: In hand research project extends from January – December, 2013 (almost one year). This resect was held in Liaquat University Hospital, Jamshoro (Hyderabad).
Methodology: In the hospital in the time span of twenty-eight days a total of 114 cases were brought and admitted of Hyperbilirubinemia, all those cases formed the sample of the research study. Post-admission formalities were made and routine prescribed clinical investigations were carried out including jaundice duration and history, direct and indirect serum Bilirubin, ultrasound of abdomen, urine C/S andchest X-ray. All the tests and clinical findings were aimed at the diagnosis of Hyperbilirubinemia through proper documentation of all the clinical features and characteristics on a prescribed and pre-designed Performa.
Results: Majority of the males formed the sample of the study with a proportion of 67.54 percent. Preterm and term cases were present with the respective proportions of 34.22 and 65.78 percent. Most common sign was yellow discoloration of jaundice with a percentage of seventy-five percent, feed refusal and fever cases were 21.42 and 25.43 percent in total. Risk factor of sepsis was common with a percentage of 46.69 percent in addition unknown factors, hypoalbuminemia, hypothermia, hypoglycemia and birth asphyxia were also present with the proportions of 9.64%, 0.87%, 7.89%, 11.40% and 11.40% respectively.
Conclusion: In the current research paper it is concluded that the dominance of males is evident as the most affected gender by neonatal sepsis, hyperbilirubinemia, clinical representation of skin (yellow discoloration) and jaundice as the frequent repeated factors of rick.

Keywords: Risk factors, Clinical features, Yellow discoloration and Neonatal hyperbilirubinemia.

INTRODUCTION

In the period of neonatal the principal and repeated event is hyperbilirubinemia. [1] Ninety-five percent increase of bilirubin is observed in the eight to eleven percent of the patients. There is a possibility of two percent children severe hyperbilirubinemia due to premature delay in neuro-development and kernicterus that means chronic bilirubin in two percent of infants can possibly happen because if the total level of the bilirubin serum is more than twenty milligrams [2]. Shrill cries, extremities, unusual movements of the face, bulging fontanels, occasional opisthodomos, distress in respiration, decreased reflexes, severe weakness in infants, reduced Moro reflexes, poor feeding, and lethargy are the symptoms of kernicterus in infants [3]. Severe damages and early deaths are reported in the infants showing such symptoms. If the infant is

able to survive the complexities are difficult to handle and result in extreme damages to infant. At the age of two to three months patients become normal in the case of kernicterus. On the other hand, in very first year of infant's life recurrent seizures, movements of abnormal nature, rigid muscles and opisthodomos are observed later. [2] Under developed countries and less privileged societies suffer a lot because of neonatal hyperbilirubinemia. It also attributes to higher proportions of abnormalities of neuro-development, mortality and morbidity. The comparison between developed and under developed countries and societies shows a huge difference when compares for neonatal hyperbilirubinemia case occurrences [5]. Sitting and standing is absent in 4.3 percent of children with jaundice. Even in the developed countries almost three newborns per week are transfused with fresh blood, even in the presence of decreased rate of complications of neonatal hyperbilirubinemia [6]. It is also an admitted fact that rapid and immediate treatment and diagnosis is not performed in the presence of wide-spread complexities of jaundice. [2] Mortality rate of neonates is also significantly associated with the kernicterus or progressive acute bilirubin encephalopathy. If the infant is able to survive than it will have the effects like delayed development, cognitive difficulties, hearing loss, and cerebral palsy [7]. Guidelines are recommended in the clinical investigations for timely detection of neonatal hyperbilirubinemia for appropriate treatment and management by the experts. This timely detection will help in the avoidance of related treatment burdens. This research study evaluates the risk factors and clinical presence and presentation about neonatal hyperbilirubinemia at the tertiary level of healthcare in hospitals.

METHODOLOGY

With an aim of assessment and evaluation of risk factors and clinical presentation of the cases of neonatal hyperbilirubinemia nature at tertiary tier of healthcare in pediatrics department. The nature of the research study was cross-sectional. The current research study was completed at the departments of pediatrics of Hyderabad, Liaquat University Hospital, Jamshoro. The research study commenced from January, 2013 and it was completed in December of the same year. It took almost one year for its completion. In the hospital in the time span of twenty-eight days a total of 114 out of a total of 588 cases were brought and admitted of Hyperbilirubinemia, all those cases formed the sample of the research study. Post-admission formalities were made and routine prescribed clinical investigations were carried out including jaundice duration and history, direct and indirect serum Bilirubin, ultrasound of abdomen, urine C/S and chest X-ray. Every neonate delivered at the said hospital was referred by LSCS and NVD and few other hospitals as well. Clinics of the suburbs of Hyderabad were also made the part of the research study. Few infants were excluded from the research study as they were showing the level of SB less than 12 mg/dl and jaundice. These infants were not able to survive and expired before the commencement of treatment. Full testing was completed after a detailed historical finding. Factors of dehydration and temperature of the body was also monitored in these infants throughout the course of study. Regular phototherapy was done on the infants with hypothermic findings, they were placed in incubators. Post-admission detailed clinical tests were conducted and blood group and R.H. factors of mother's blood was also taken in addition to that Blood CP, including jaundice duration and history, direct and indirect serum Bilirubin, ultrasound of abdomen, urine C/S and chest X-ray were also verified for their present state. Data analysis was done with the help of SPSS V-20 and for the procurement of qualitative data mean was also calculate in addition to the calculation of percentage and frequency.

RESULTS

Majority of the cases included in the sample of the research study were male. The percentage of the males in the sample was 67.54 percent. Female

neonates were 32.45 percent. The ratio female to male was (1: 2.08). The proportions of pre-term and term birth rate was 34.22 and 65.78 percent as reflected in the Table-I.

Table I: Maturity and Gender Wise Neonatal Distribution (n=114)

Gender	Frequency	Percentage
Male	77	67.54
Female	37	32.45

Maturity	Frequency	Percentage
Term	77	65.78
Preterm	39	34.22

Male to female ratio =2.08:1

Delivery of the babies was carried out by instrumental vaginal, normal vaginal and caesarean deliveries with the proportions of 3.38%, 30.50% and 66% respectively.

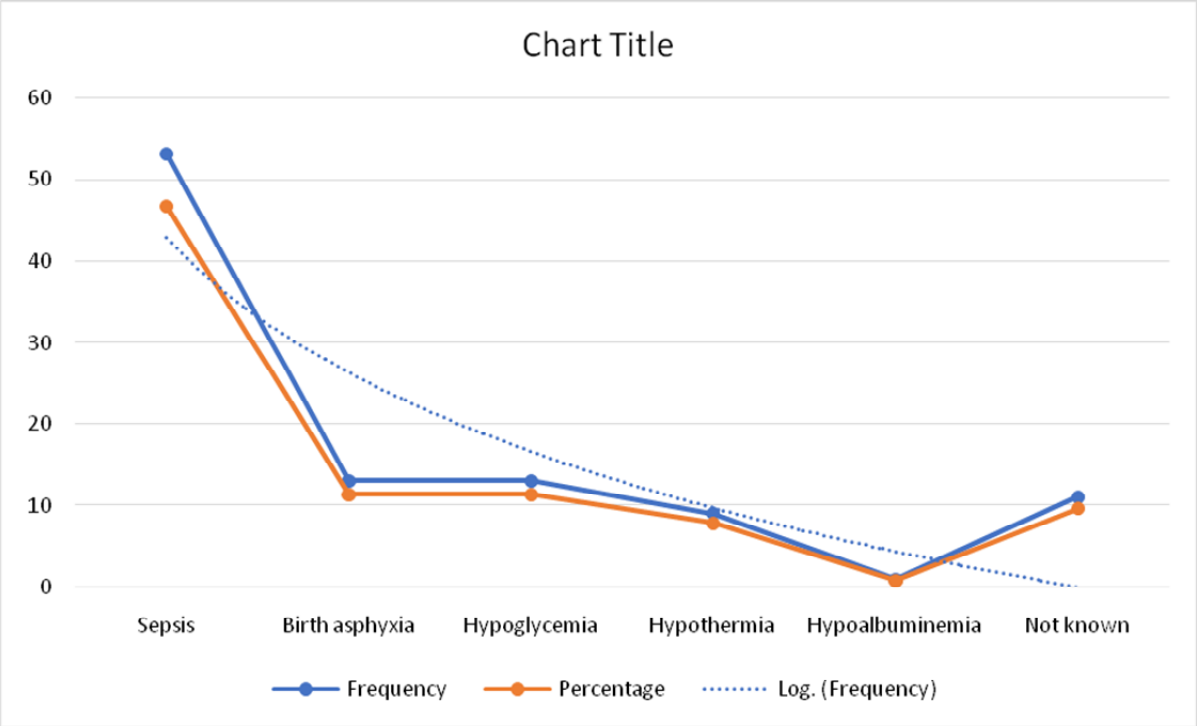
In the current research study as per the clinical presentation Jaundice / yellow discoloration of skin, fever, refusal to feed, difficulty in breathing, fits, distention and vomiting of Abdomen, not passing stool & urine, not cried after birth, bluish discoloration hand feet & lips and loose motion were observed. Their values in number and percentage are mentioned against each in Table II. Whereas, Table-II depicts the values of various risk factors involved in neonatal hyperbilirubinemia such as sepsis, birth asphyxia, hypoglycemia, hypothermia and hypoalbuminemia.

Table II: Neonatal HyperbilirubinemiaClinical Presentation (n=114)

Clinical Presentation	Frequency	Percentage
Jaundice/ yellow discoloration of skin	86	75
Fever	29	25.43
Refusal to feed Not feeding well	25	21.42
Difficulty in breathing	10	8.77
Fits	9	7.89
Not cried after birth	7	6.14
Vomiting & distention of Abdomen	6	5.26
Not passing stool & urine	4	3.5
Bluish discoloration hand feet & lips	3	2.63
Loose motion	3	2.63

Table III: Contributing Risk Factors toHyperbilirubinemia(n-114)

Risk factors	Frequency	Percentage
Sepsis	53	46.69
Birth asphyxia	13	11.4
Hypoglycemia	13	11.4
Hypothermia	9	7.89
Hypoalbuminemia	1	0.87
Not known	11	9.64



DISCUSSIONS

In the period of neonatal the principal and repeated event is hyperbilirubinemia. [1] Ninety-five percent increase of bilirubin is observed in the eight to eleven percent of the patients. There is a possibility of two percent children severe hyperbilirubinemia due to premature delay in neuro-development and kernicterus that means chronic bilirubin in two percent of infants can possibly happen because if the total level of the bilirubin serum is more than twenty milligrams [2]. Shrill cries, extremities, unusual movements of the face, bulging fontanels, occasional opisthodomos, distress in respiration, decreased reflexes, severe weakness in infants, reduced Moro reflexes, poor feeding, and lethargy are the symptoms of kernicterus in infants [3]. Severe damages and early deaths are reported in the infants showing such symptoms. If the infant is able to survive the complexities are difficult to handle and result in extreme damages to infant. At the age of two to three months patients become normal in the case of kernicterus. On the other hand, in very first year of infant's life recurrent seizures, movements of abnormal nature, rigid muscles and opisthodomos are observed later. Hyperbilirubinemia in the infants is defined by the TSB greater than nine-ty five percent. Majority of the cases included in the sample of the research study were male. The percentage of the males in the sample was 67.54 percent. Female neonates were 32.45 percent. The ratio female to male was (1: 2.08). The proportions of pre-term and term birth rate was 34.22 and 65.78 percent. Under developed countries and less privileged societies suffer a lot because of neonatal hyperbilirubinemia. It also attributes to higher proportions of abnormalities of neuro-development, mortality and morbidity. According to the reports of Devi DS dominance of males is over females, same is the finding of our research study. Whereas, Shetty also reports the same observation out of the total 753 neonates in respect of male to female proportion.

Delivery of the babies was carried out by instrumental vaginal, normal vaginal and caesarean deliveries with the proportions of 3.38%, 30.50% and 66% respectively.

In the current research study as per the clinical presentation Jaundice / yellow discoloration of skin, fever, refusal to feed, difficulty in breathing, fits, distention and vomiting of Abdomen, not

passing stool & urine, not cried after birth, bluish discoloration hand feet & lips and loose motion were observed. Their values in number and percentage are mentioned against each in Table II. Whereas, Table-II depicts the values of various risk factors involved in neonatal hyperbilirubinemia such as sepsis, birth asphyxia, hypoglycemia, hypothermia and hypoalbuminemia. [14] Porter, in his research study also assess the events of weight loss, dehydration, enlargement of spleen and liver, increased bruising, extravasated blood, petechiae, and pallor. [15] Mamouri also supports the reporting of shrill cries, extremities, unusual movements of the face, bulging fontanels, occasional opisthodomos, distress in respiration, decreased reflexes, severe weakness in infants, reduced Moro reflexes, poor feeding, and lethargy in his research studies [16, 17].Najeebet al [18, 19, 20] reports that there is reported concept of herbal medication is noted instead of visiting and consulting to the experts and specialists in the cases of extreme neonatal hyperbilirubinemia in males as linked concept of breast feeding, early discharge and NVD also prevail. A visible percentage of 9.64% cases were because of unknown reasons, in the case of Canadian researches on the same subject there are reports of un-identified reasons in neonatal hyperbilirubinemia [21].

CONCLUSION

It is concluded in at the end of this research venture, majority of the males formed the sample of the study with a proportion of 67.54 percent. Preterm and term cases were present with the respective proportions of 34.22 and 65.78 percent. Most common sign was yellow discoloration of jaundice with a percentage of seventy-five percent, feed refusal and fever cases were 21.42 and 25.43 percent in total. Risk factor of sepsis was common with a percentage of 46.69 percent in addition unknown factors, hypoalbuminemia, hypothermia, hypoglycemia and birth asphyxia were also present with the proportions of 9.64%, 0.87%, 7.89%, 11.40% and 11.40% respectively. In addition to that dominance of males is evident as the most affected gender by neonatal sepsis, hyperbilirubinemia, clinical representation of skin (yellow discoloration) and jaundice as the frequent repeated factors of rick.

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