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A PROSPECTIVE STUDY ON RESPIRATORY DISTRESS SYNDROME AMONG NEONATES IN NICU IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Neonatal health is an area that needs primary and optimal care. Respiratory Distress Syndrome (RDS) is a major cause of neonatal respiratory failure and death. The aim of our study is to assess the risk factors and prescription pattern for Respiratory Distress Syndrome in neonates. Our study was conducted in 125 patients admitted in NICU with respiratory distress syndrome whose parents who were willing to participate their baby in the study. The study excluded patients with congenital abnormalities. The data was collected and recorded in specially designed preform. The data analysis revealed that male patients (72%) were mostly reported with RDS. The mostly occurred risk factor for RDS is prematurity (88%). Supplemental oxygen, CPAP therapy, antibiotics & surfactant therapy were given to respective patients. The antibiotics given were categorized into Ampicillin+Gentamycin (1st line agent), Piperacillin+Tazobactam (2nd line agent), Meropenem+Colistin (3rd line agent). Preventive measures of risk factors for RDS on expectant mothers could be implemented to improve neonatal health.

KEYWORDS: Respiratory distress syndrome, NICU, Risk factors, prescribing pattern.

INTRODUCTION

Respiratory distress syndrome is a syndrome of respiratory difficulty in new born caused by a deficiency of a molecule called surfactant.

The primary cause of respiratory distress syndrome (RDS), formerly known as hyaline membrane disease is inadequate pulmonary surfactant.The manifestations of the disease are caused by the resultant diffuse alveolar atelectasis, oedema and cell injury. Subsequently, serum proteins that inhibit surfactant function leak in to alveoli. The increased water content, immature mechanisms of clearance of lung liquid, lack of alveolar-capillary apposition and low surface area of gas exchange typical of the immature lung also contribute to the disease. Prenatal diagnosis to identify infant at risk, prevention of the disease by antenatal administration of glucocorticoids, improvements in perinatal and neonatal care, advances in respiratory support and surfactant therapy have reduced mortality from RDS. However, RDS remains an important contributing cause of the neonatal mortality and morbidity especially among the most immature infants.Thus the risk factors for RDS are a serious matter to be addressed.[4]

MATERIALS AND METHODS

The study was conducted for a period of 6 months in 125 neonatal patients admitted in NICU with respiratory distress syndrome after getting clearance of institutional ethics committee in Cosmopolitian hospital, Trivandrum (kerala).The study included the patients diagnosed with respiratory distress syndrome in NICU whose parents are willing to participate their baby in the study. The study excluded Neonatal patients with congenital abnormalities and patients whose parents are not willing to participate their baby in the study. The objective of our study is to assess the risk factors and prescribing pattern for respiratory distress syndrome in neonates.

A written informed consent was taken in prescribed format from the parents of patients diagnosed with respiratory distress syndrome. All information relevant to the study was collected from the case records. The demographic characters, clinical features and other details were documented in the proforma. The extent of contribution of different risk factors for the respiratory distress syndrome along with the prescribing pattern was notted and plotted statistically.

The collected data where recorded in Microsoft excel sheet and workload is entered as numeric code. For the analysis we had used SPSS (Statistical Package for Social Science) software.

RESULTS

Our study was conducted in neonatology department for 6 months in a tertiary care multispecialty hospital. During our study period 125 cases of neonatal patients in NICU with respiratory distress syndrome were analyzed.

Gender distribution of patients

Out of the total patients enrolled in the study 88 (70.4%) were male patients and 37 (29.6%) were female patients.

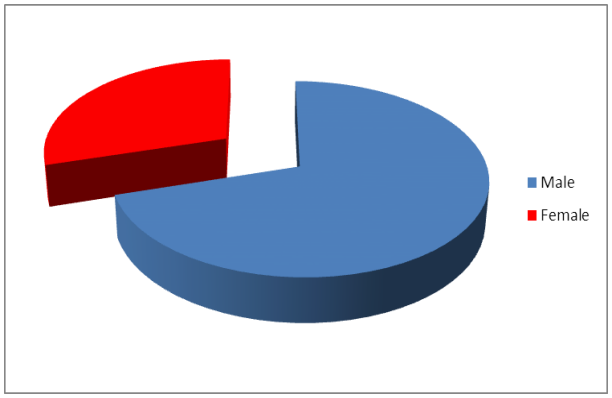

Fig. 1: Distribution According to Sex

Assessment of risk factors

The distributions of known risk factors for respiratory distress syndrome were assessed. It included pregnancy induced hypertension in 80 patients (64%), gestational diabetes mellitus in 100 patients (80%), intra uterine growth restriction in 70 patients (56%), maternal fever in 25 patients (20%), leaking per vaginal in 65 patients (52%), oligohydramniosis in 68 patients (54.4%), prematurity in 110 patients (80%), general anesthesia in 30 patients (24%) and sepsis in 32 patients (25.6%). The most commonly occurred risk factor is prematurity (88%) and maternal fever (20%) were least occurred.

Table1: Distribution according to risk factors.

Risk factor	Count	Percent
PIH	80	64.0
GDM	100	80.0
IUGR	70	56.0
Maternal fever	25	20.0
Leaking PV	65	52.0
Oligohydramniosis	68	54.4
Prematurity	110	88.0
General anesthesia	30	24.0
Sepsis	32	25.6

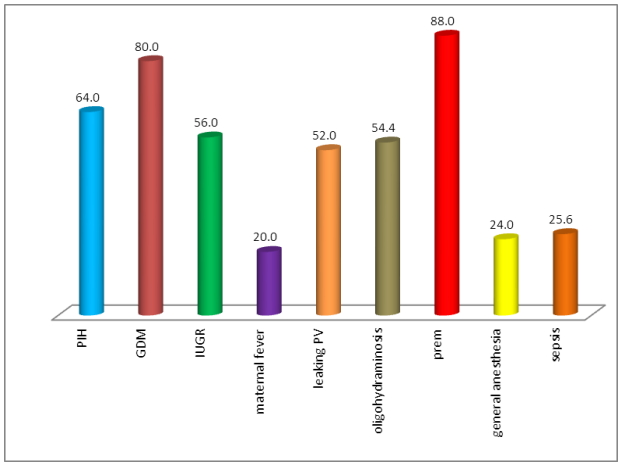

Fig. 2: Distribution According to Risk Factors.

Prescription Pattern Analysis

The prescription pattern analysis for RDS shows 125 patients (100%) of population were given supplemental oxygen therapy. CPAP therapy was given for 110 patients (88%), surfactant in 19 patients (15.2%) and antibiotic therapy in 100 patients (80%) patients.

Table 2: Distribution according to treatment options.

Treatment options	Count	Percent
Supplemental Oxygen Therapy	125	100.0
CPAP Therapy	110	88.0
Surfactant Therapy	19	15.2
Antibiotic Therapy	100	80.0

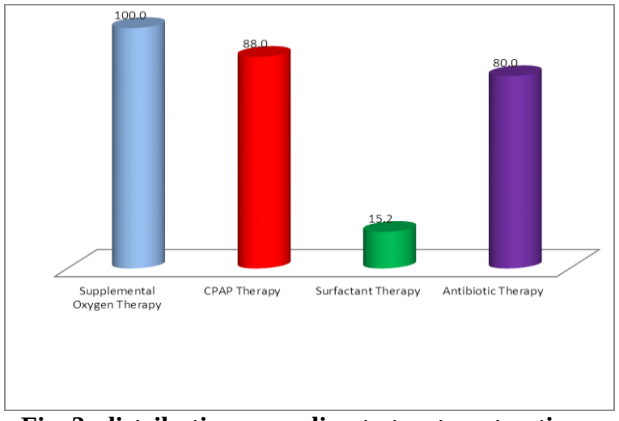

Fig. 3: distribution according to treatment options.

Antibiotic Therapy

Three combinations of antibiotics were given that is Ampicillin + Gentamicin, Piperacillin + Tazobactam and Meropenem + Colistin. Out of the total patients treated with antibiotics, 70 patients (70%) were treated with Ampicillin + Gentamicin combination. 20 patients (20%) were given the first two combinations (Ampicillin + Gentamicin and Piperacillin + Tazobactam). 10 patients (10%) were given all the three combinations (Ampicillin + Gentamicin, Piperacillin + Tazobactam and Meropenem + Colistin).

Table 3: Distribution according to antibiotics.

Antibiotics	Count	Percent
Ampicillin + Gentamicin	70	70.0
Ampicillin + Gentamicin and Piperacillin + Tazobactam	20	20.0
Ampicillin + Gentamicin, Piperacillin + Tazobactam and Meropenem+Colistin	10	10.0

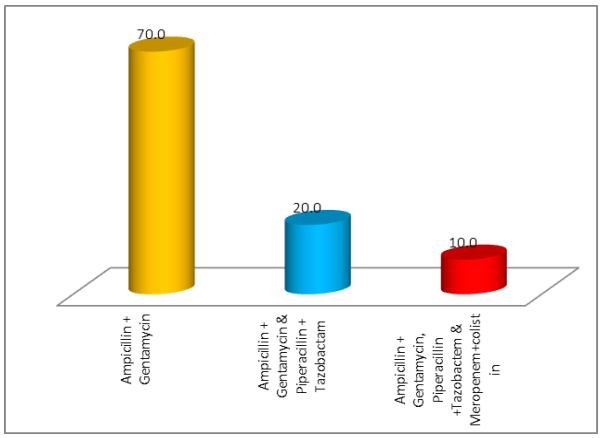

Fig. 4: distribution according to antibiotics.

DISCUSSION

From the study of 125 patients during a period of 6 months in a tertiary care hospital, it was found that the most commonly affected population with respiratory distress syndrome is male patients (70.4%). The results were in concordance with the study done by Jing Liu etal.[3]

In our study we had assessed the degree of occurrence of risk factors for RDS- pregnancy induced hypertension, gestational diabetes mellitus, intra uterine growth restriction, maternal fever, leaking per vaginal, oligohydramniosis, prematurity, general anesthesia and sepsis. Similar to the finding of Matthias-Roth Kleiner etal[2], prematurity is found to be the main risk factor for respiratory distress syndrome among neonates. In our study 110 patients (88%) were premature. The least occurred risk factor is maternal fever (20%).

While considering the treatment options supplemental oxygen therapy is the primary and most important treatment option for these patients. CPAP therapy, antibiotics and surfactant therapy is given if necessary along with oxygen therapy.

CONCLUSION

From this study we conclude that RDS is a common disease that is usually seen babies whose mothers having different physical condition. The mothers of these infants are usually having risk factors such as pregnancy induced hypertension, gestational diabetes mellitus, intra uterine growth restriction, maternal fever, leaking PV, oligohydramniosis, prematurity, general anesthesia, sepsis. The most common risk factors is prematurity of newborn. To reduce the incidence of risk factors, we could take preventive measures in expectant mothers and avoid it to an extent. By minimizing the risk factors, we can reduce the occurrence of RDS and further studies can be conducted to find more on this topic.

The oxygen therapy is primarily commenced in all patients with RDS. Antibiotic therapy should be given if necessary to prevent infection. Surfactant therapy should be done only if the patient had severe RDS ie, if it could be fatal to the baby.

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