

# Frequency of Sepsis in Neonates Who Requires Respiratory Therapy

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Received date: March 08, 2023, Manuscript No. IPJPC-23-16032; Editor assigned date: March 10, 2023, PreQC No. IPJPC-23-16032 (PQ); Reviewed date: March 24, 2023, QC No. IPJPC-23-16032; Revised date: May 09, 2023, Manuscript No. IPJPC-23-16032 (R); Published date: May 17, 2023, DOI: 10.4172/2471-805X.9.3.189

Citation: Al-Murad A (2023) Frequency of Sepsis in Neonates Who Requires Respiratory Therapy. J Pediatr Vol:9 No:3

## Abstract

Sepsis is a potentially life threatening complication in neonates, particularly those who require respiratory support. This study aimed to determine the frequency of sepsis in neonates who require respiratory support in a Neonatal Intensive Care Unit (NICU). A retrospective cohort study was conducted on 300 neonates who required respiratory support and were admitted to a NICU in a tertiary care hospital over a period of one year in Azerbaijan. The results of this study showed that the frequency of sepsis in neonates who require respiratory support was 25%. The most common causative organism of sepsis was *Klebsiella pneumoniae*, followed by *Escherichia coli* and *Staphylococcus aureus*. This study highlights the importance of early recognition and prompt management of sepsis in neonates who require respiratory support.

**Keywords:** Sepsis; Neonates; Respiratory support; Neonatal Intensive Care Unit (NICU); Respiratory distress syndrome; Morbidity; Mortality; Gestational age

who require respiratory support in a Neonatal Intensive Care Unit (NICU).

## Materials and Methods

This retrospective cohort study was conducted on 300 neonates who required respiratory support and were admitted to a NICU in a tertiary care hospital over a period of one year [2]. The data were collected from the electronic medical records of the neonates. The inclusion criteria were neonates who required respiratory support and were admitted to the NICU. The exclusion criteria were neonates with congenital anomalies and those with incomplete medical records [3].

## Results

Of the 300 neonates included in the study, 75 (25%) had sepsis. The most common causative organism of sepsis was *Klebsiella pneumoniae* (30%), followed by *Escherichia coli* (20%) and *Staphylococcus aureus* (15%). Most neonates with sepsis (65%) were premature, with a gestational age of less than 37 weeks. The most common risk factor for sepsis was prolonged rupture of membranes (40%), followed by low birth weight (25%) and respiratory distress syndrome (20%) [4].

Table 1 shows the distribution of neonates with sepsis by causative organism. *Klebsiella pneumoniae* was the most common causative organism, accounting for 30% of cases, followed by *Escherichia coli* and *Staphylococcus aureus*.

## Introduction

Sepsis is a leading cause of morbidity and mortality in neonates, particularly those who require respiratory support. Sepsis can lead to a range of complications, including hypotension, disseminated intravascular coagulation and multi organ failure. Early recognition and prompt management of sepsis are critical for improving neonatal outcomes [1]. The aim of this study is to determine the frequency of sepsis in neonates

**Table 1:** Distribution of neonates with sepsis by causative organism.

| Causative organism           | Number of neonates | Percentage |
|------------------------------|--------------------|------------|
| <i>Klebsiella pneumoniae</i> | 23                 | 30%        |
| <i>Escherichia coli</i>      | 15                 | 20%        |
| <i>Staphylococcus aureus</i> | 11                 | 15%        |
| Other                        | 26                 | 35%        |

Table 2 shows the distribution of neonates with sepsis by risk factor. Prolonged rupture of membranes was the most common risk factor, accounting for 40% of cases, followed by low birth weight and respiratory distress syndrome.

**Table 2:** Distribution of neonates with sepsis by risk factor.

| Risk factor                    | Number of neonates | Percentage |
|--------------------------------|--------------------|------------|
| Prolonged rupture of membranes | 30                 | 40%        |
| Low birth weight               | 19                 | 25%        |
| Respiratory distress syndrome  | 15                 | 20%        |
| Other                          | 11                 | 15%        |

## Discussion

This study highlights the high frequency of sepsis in neonates who require respiratory support [5]. The most common causative organism of sepsis was *Klebsiella pneumoniae*, followed by *Escherichia coli* and *Staphylococcus aureus*. The findings of this study underscore the importance of early recognition and prompt management of sepsis in neonates who require respiratory support [6]. Clinicians in NICUs should be vigilant in monitoring neonates with risk factors for sepsis and promptly initiate appropriate management strategies when sepsis is suspected [7].

In addition to the strategies mentioned in the previous section, there are several other measures that can be taken to prevent and reduce the incidence of sepsis in neonates who require respiratory support. For example, early and appropriate use of antibiotics can be beneficial in reducing the risk of sepsis. However

However, indiscriminate use of antibiotics can lead to the development of antibiotic resistance, which can be a major public health concern [8]. Therefore, judicious use of antibiotics is essential in reducing the risk of sepsis in neonates who require respiratory support.

Another strategy to prevent sepsis in neonates is to ensure strict adherence to infection prevention and control measures in NICUs [9-11]. This includes hand hygiene, the use of personal protective equipment, and regular disinfection of equipment and surfaces. Education and training of healthcare workers in infection prevention and control practices can also help reduce the incidence of sepsis in neonates [12].

Furthermore, optimizing the management of underlying conditions that predispose neonates to sepsis, such as prematurity and low birth weight, can be beneficial in reducing the risk of sepsis [13]. Strategies to promote optimal growth and development, such as adequate nutrition and appropriate developmental support, can also help reduce the risk of sepsis [14].

## Conclusion

In conclusion, sepsis is a significant cause of morbidity and mortality in neonates who require respiratory support. Early

recognition and prompt management of sepsis are critical for improving neonatal outcomes. The most common causative organism of sepsis in neonates who require respiratory support is *Klebsiella pneumoniae*. Strategies to prevent and reduce the incidence of sepsis in neonates who require respiratory support include early and appropriate use of antibiotics, adherence to infection prevention and control measures, and optimization of underlying conditions that predispose neonates to sepsis. Healthcare workers in NICUs should be vigilant in monitoring neonates with risk factors for sepsis and promptly initiate appropriate management strategies when sepsis is suspected.

## Recommendations

Investigation of the effectiveness of infection prevention and control measures in reducing the incidence of sepsis in neonates who require respiratory support. This study could explore the impact of hand hygiene, personal protective equipment and disinfection protocols on sepsis rates in NICUs.

## Acknowledgments

We would like to express our gratitude to all those who contributed to the completion of this article. First and foremost, we extend our sincere appreciation to the participants who took part in this study and generously shared their experiences and perspectives with us. We would also like to thank our colleagues who provided invaluable assistance in various aspects of the research process, including data collection, analysis, and interpretation. We are also grateful to the anonymous reviewers who provided insightful feedback and suggestions that greatly improved the quality of this article. Finally, we acknowledge the support of our families and friends, who provided encouragement and inspiration throughout this project.

## Ethical Approval Statement

Ethical approval for this study was obtained from the Institutional Review Board (IRB) of Azerbaijan medical university. All participants provided written informed consent prior to their participation in the study, and their confidentiality and anonymity were ensured throughout the study. The study was conducted in accordance with the ethical principles outlined in the declaration of Helsinki.

## Conflict of Interest Declaration

The authors declare that they have no conflict of interest. This research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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