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A Review of Studies on Under Five Incidence of Thrombocytosis

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Abstract
Pneumonia has also become the leading infectious killer of children under the age of five. Every year, it kills more than 8,000 children under the age of five, which is more than 2,000 each day. The study from India shows that 5 out of every 1,000 live births under age five died from pneumonia in 2018. Pneumonia is caused by bacteria, viruses, or fungi, and it makes it hard for children to breathe because pus and fluid fill their lungs. In 2018, pneumonia killed more children under the age of five than any other disease.

1. Introduction
The most prevalent disease in humans that alters respiratory function is a respiratory tract infection. Children under the age of five frequently succumb to and die from respiratory tract infections.

An infection called an acute respiratory tract infection affects how the respiratory system works normally. Common causal agents for acute respiratory disease are typically viruses and bacteria. The entire respiratory tract can be impacted, starting at the nose and ending at the alveoli. Upper respiratory tract infection and lower respiratory tract infection are the two subgroups of acute respiratory tract infection (ARTI).

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A common cold, tonsillitis, laryngitis, epiglottitis, sinusitis, influenza, respiratory distress syndromes, pharyngitis, and otitis media are examples of upper respiratory tract infections (URTIs). If you don't have a history of pneumonia, COPD, emphysema, or chronic bronchitis, you may have an upper respiratory tract infection, which is characterized by irritation and inflammation of the upper airways along with a cough. The major airways, pharynx, larynx, sinuses, and nose are all affected by upper respiratory tract infections.

Definite Risk Factors are:

Malnutrition

Malnutrition affects a large number of people around the world, especially young children who live in developing areas (Stephen Berman, 1991).Malnutrition is one of the biggest worries for children with a weak immune system, because these kids are more likely to get sick. Children who aren't getting enough to eat are more likely to get pneumonia, which is often fatal (Rice, Hyder, Black, 2000).

The trachea, bronchial tube, bronchioles, and alveoli that make up the lower respiratory tract can result in pneumonia, influenza, bronchitis, and bronchiolitis. Compared to URTI, lower respiratory tract infections (LRTI) cause higher fatalities.

Even though acute respiratory illness was caused by a range of bacteria, there is a significant association between nutrition status and death from acute respiratory illness. The study consistently found that children with low nutrition status had a higher risk of mortality. According to the study, malnutrition is a significant contributing factor to acute respiratory infection, which is one of the leading causes of a high mortality rate in children (Chisti, Tebruegge, La Vincente, Graham and Duke, 2009).Another study found that severe malnutrition was linked to 42% of the 509 children who had bacterial pneumonia (Scott and Hall, 1999).

Little children, especially those under the age of 5, were more susceptible to the sickness in a short amount of time. Young infants and young children accounted for a large portion of casesn. Among children that were extremely undernourished, Salmonella aureus and Klebsiella species were the most prevalent causal pathogens. Furthermore, pneumonia in chronically undernourished children was frequently caused by Gram negative bacteria such Escherichia coli and Salmonella species(Padmanabhan, Krishnamoorthi, Vengatesan, Suresh, 2012). Young children are reportedly a risk factor for mortality in impoverished nations (Sehgal, Sethi, Sachdev and Satyanarayana, 1997).

Birth Weight

All around the world, infant mortality is thought to be significantly influenced by birth weight. Low birth weight increases neonatal and postnatal mortality. Furthermore, the impact on mortality may last up to age 1 year or longer. More than 2,000 00 new survivors, according to a US research. High incidence of chronic illnesses linked to low birth weight and an increase in chronic lung disease may result from increased prevalence of low birth weight and improved survival. Infant mortality and birth weight are significantly correlated. Neonatal mortality and birth weight have been linked in a "U"-shaped pattern, according to research by Wilcox AJ et al. (1983).

Consequences of Breast Feeding

For the first year of life, infants exclusively consume breast milk. According to a study about breastfeeding that was done in a select few nations, it boosts intelligence, protects against infections and malocclusion, and may even lower the risk of obesity and diabetes. The effects of breastfeeding on the risk of acute respiratory infection were examined in a number of research carried out in developing nations, and the majority of the studies produced favorable results. Another study, carried out in 1998 by Alice et al, interpreted the pattern of decreased incidence of LRTIs and shorter duration of all respiratory diseases as evidence that breastfeeding lessens the severity of respiratory infections even though incidence is not decreased. Acute respiratory infection is more common in infants who have not been breastfed, according to several studies.

During four to six months, WHO also advised only breastfeeding. In addition, breast milk provides passive immunity to newborns by building a mature, anti-inflammatory, immuno-modulatory, and anti-microbial systemic immune response.

By triggering cytokines like Interlukin-10, INF-Gamma, and TGF-Beta, which are found in breast milk and reduce inflammation while increasing the production of immunoglobulin A,these immune responses help protect against respiratory illnesses.

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Problems that can arise from a lower respiratory infection:

Pneumatocoele

These are cysts with thin walls and air inside that form in the parenchyma. They are most often caused by Staphylococcus aureus and will usually go away on their own over time.

Atelectasis/Lobar collapse

Physiotherapy for the chest (called "airway clearance techniques") may be needed. Follow-up should be set up to make sure the problem is solved, as it could have long-term effects.

Parapneumonic effusion/ Empyema

All children with pneumonia whose fever doesn't go away after taking the right antibiotics for 48 hours should be checked for pleural effusion (examination and chest X-ray).Children with parapneumonic effusions or empyema should be admitted and kept on intravenous antibiotics to cover the likely organisms (Streptococcal species and Staphylococcus aureus, but tuberculosis should also be considered).

Lung abscess

Lung abscess has the same symptoms and signs as pneumonia, which can make it hard to tell the difference between the two. Most of the time, a chest X-ray and a contrast CT chest are used to make a diagnosis.

Chronic bronchitis or bronchiectasis (sequelae)

Children with persistent symptoms and/or signs, such as a productive cough that doesn't go away, crackles that don't go away, clubbing, and/or X-ray findings, should be looked at more closely to see if they might have bronchitis or bronchiectasis.

Lung necrosis

Lung necrosis is a condition in which lung tissue dies and becomes liquid. If a patient doesn't respond well to treatment, like by having a fever that doesn't go away, this could be a red flag. Definitive diagnosis requires contrast chest CT. When kids are treated carefully when they are young, the results are usually good. Carefully following up is needed.

Key ways to prevent and treat pneumonia are:

- Case management with IMCI at all levels
- Vaccination
- Improvement of nutrition and low birth weight
- Handling indoor air pollution

Inroads to Pneumonia Control

Effective case management in the community and in health facilities is a crucial part of preventing and treating pneumonia. Countries with high death rates among children under five should make plans to expand IMCI-based adequate case management of pneumonia at hospital, health facility, and community levels to reach 90% coverage within a set time.

All nations should work to meet the Global Immunization Vision and Strategy (GIVS) targets for the use of measles- and pertussis-containing vaccines; nations that havenot yet done so should incorporate Hib and conjugate pneumococcal vaccines into their national immunization programs, particularly if they have high rates of infant mortality.

One key strategy for preventing pneumonia is to encourage exclusive breastfeeding and proper supplemental nutrition. Pneumonia will be prevented through strategies to lower rates of low birth weight and malnutrition, and these should be supported.

There is a need for more research to prove the health advantages of these measures, although new technology can lower indoor air pollution. The use of indoor air quality control measures should be advocated as they may help avoid pneumonia.

There is an age-dependent pattern in the incidence of reactive thrombocytosis in children. Neonatals and young children (under 2 years old) are more likely to experience it than older children.

The most frequent cause of secondary thrombocytosis in children is infections, both bacterial and viral. Nowadays, infections of the respiratory tract cause 60–80% of instances of secondary thrombocytosis in children, followed by infections of the urinary, gastrointestinal, and bone systems.

With regards to respiratory tract infections, thrombocytosis is a frequent observation in patients who have empyema or pleural effusions, as well as among those who have lower respiratory tract infections. In addition to lobar pneumonia with effusion, lobar pneumonia without effusion can also be accompanied by thrombocytosis, though usually to a lesser extent. In a research, Mycoplasma pneumoniae-related lower respiratory tract infections in children were associated with thrombocytosis in roughly 40% of cases.

Astronger link between platelet counts and the severity of pneumonia. The platelet counts tend to rise as pneumonia severity rises. On days 1, 3, and 5, we noticed a statistically significant decrease in the severity of the pneumonia after treatment.

The average length of time for pneumonia was 5.23 days with a 2.08 day difference, 7.04 days with a 1.71

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day difference, and very severe pneumonia took even longer.

The average length of stay in the hospital was 7.21 days, plus or minus 1.44. In this study, we found that very severe pneumonia required a hospital stay that was noticeably longer than that of pneumonia.

Ahigher positive relationship between illness duration and platelet levels. The platelet counts tend to rise as the severity of the symptoms increases.

2. Conclusion

The mean platelet counts were 5.87 lakhs in patients with symptoms lasting 3 to 5 days, 7.39 lakhs in subjects with symptoms lasting 6 to 7 days, and 8.69 lakhs in subjects with symptoms lasting 8 to 10 days. In this study, we found that participants with higher average platelet counts had longer median hospital stays. The difference was discovered to be statistically significant. (The chi-square value is 14.4114. The p-value is.006091.

In those presenting with pleural effusion and empyema, the mean platelet count was considerably greater. Yet, because mortality was so low, it was not discovered that the mean platelet count varied considerably among the deaths. Hence, 97.80% of the study participants were treated, and 2.20 percent of study participants died. We noted problems including pleural effusion with lobar pneumonia in 6.59% of cases and empyema in 2.20% of cases. Mortality was noted among 2.20%.

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