Section: Pathology

Original Research Article

THROMBOCYTOSIS IN PEDIATRIC PNEUMONIA –A TERTIARY CARE CENTER EXPERIENCE

Buddaiahgari Swathi[1], Siva Chaithanya Bangi[2], Pavuluri Divya[3], G.J. Vani Padmaja[4]

[1]*Assistant Professor, GMC Siddipet, Telangana, India*
[2]*Associate Professor, GMC Wanaparthy Telangana, India*
[3]*Assistant Professor, GMC Wanaparthy Telangana, India*
[4]*Professor and HOD, GMC Medak, Telangana, India*

Received *: 07/11/2025*
Received in revised form *: 20/12/2025*
Accepted *: 09/01/2026*

Corresponding Author:
Dr. Siva Chaithanya Bangi,
Associate Professor, GMC Wanaparthy Telangana, India.
Email: chinnababub30@gmail.com

DOI: 10.70034/ijmedph.2026.1.101

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (1); 574-576

ABSTRACT

Background: Despite advances in its management over the last few decades, severe pneumonia (SP) remains a primary cause of death from infection across the globe, with a mortality rate ranging from 20% to more than 50%.[1,2] Revised guidelines of WHO classified pneumonia into two categories A) pneumonia which can be treated at home with the oral dose of amoxicillin and, B) severe pneumonia is treated with injectable antibiotics.[3] Platelets are conventionally considered to have a role in haemostasis and thrombosis, but have received increasing attention for their role in inflammation and immune responses.[4-7]

Materials and Methods: A prospective case control study was conducted in the Upgraded Department of Pathology, Osmania government general hospital, Hyderabad during July 2020 to July 2022. In present study 100 patients were evaluated fulfilling the criteria of pneumonia in paediatric age group. Detailed history, thorough clinical examination, complete hemogram through automated Haematology analyzer and peripheral smear examination was performed in all the 100 patients and controls. Platelet indices have been evaluated.

Results: A total of 100 cases were studied and compared to 100 controls with same mean age. All cases admitted with pneumonia were included. The age range was 1 to 15 years with mean age being 2.8 years. Male preponderance was noted with a male: female= 2.4: 1. The mean Platelet count was found to be higher 4,21,000 in cases when compared to controls 3,29,000 respectively.

Conclusion: Thrombocytosis was commonly associated with pneumonia in children. Degree of thrombocytosis directly correlated with severity of illness and subsequent complications children with pneumonia associate with thrombocytopenia must be monitored carefully and may required extended hospital stay compared to the others. Along with serial evaluation of total leukocyte count and inflammatory markers done for assessment in routine to gauge the recovery and underlying inflammatory process the platelet parameters can also be complementary for clinical decision making.

Keywords: Pneumonia, Platelet, Mean platelet count.

INTRODUCTION

Secondary thrombocytosis is a common finding in paediatric patients with infections.[8-10]

Thrombocytosis is more common in bone, joint and pleural cavity infections, and although it is known to occur more often in bacterial infections with a more severe clinical progression, elevated platelet counts are also reported in bronchiolitis with viral etiology, as well as pneumonia.[11-13]

Mirsaeidi et al. reported a significant correlation between thrombocytopenia and thrombocytosis and mortality, and thrombocytosis was shown to be independently correlated with the length of hospital stay in patients with community acquired pneumonia (CAP).[14]

MATERIALS AND METHODS

The present study was conducted in the Upgraded Department of pathology, Osmania Medical College and Niloufer Hospital, Hyderabad.

Study design: Case control Prospective study.

Study period: The present study was conducted during July 2020 to July 2022.

Method of collection of data

Source of Data: Clinically diagnosed cases of pneumonia in paediatric age group in the Niloufer hospital, Hyderabad.

Sample size: 100 Paediatric cases of pneumonia

Sampling procedure: Data collected from the records of Niloufer hospital, Hyderabad.

Number of groups to be studied: Two groups. (cases -group I and controls -group II)

Inclusion Criteria

All children admitted with Pneumonia for cases.

Exclusion Criteria:

Children who were admitted to the hospital for other reasons and were believed to have Pneumonia as a hospital-acquired infection at least 48 hours after admission were excluded from the study

Procedure: The study was approved by the Ethical committee of Niloufer Hospital, Hyderabad. During the study period, all paediatric cases of pneumonia fulfilling the inclusion criterion were included in this study after obtaining informed written consent.

All patients underwent complete hemogram. These patients were subjected to routine haematological investigations.

The peripheral smear was studied after staining with Leishman's stain. The samples of both cases and controls were analyzed through automated haematology analyzer and results tabulated in excel sheet.

RESULTS

Total data collected had been classified in to study group (group I) and control (group II).

Group I comprised 100 children with pneumonia and group II comprised 100 children without pneumonia. Of total 100 cases studied 42% of cases are below the age of 1.5 years.

Of total 100 cases studied the minimum cases reported were in the age group between 8 to 12 years – 5%.

Group I (patient group) comprised 100 patients with pneumonia, of which 32 (32%) were female and 68(68%) were male. Mean age among patient group is 2.77. Group II (control group) comprised 100 children without pneumonia of which 31(31%) were female and 69(69%) were male.

The minimum platelet count in patient group was found to be $95x10^3$ with maximum value of $1711x10^3$ with mean of $421x10^3$ and standard deviation of 207. The minimum platelet count in control group was found to be $200x10^3$ with maximum value of 534x103 with mean of $329x10^3$ and standard deviation of 79. The P value is 0.00005 (P value is significant).

In our present study 2% of cases were with complications. On Comparison of mean platelet count in cases with and without complications was $1367x10^3$ and $402.27x10^3$ respectively. P value was 0.0001 and found to be significant.

DISCUSSION

Various studies were made in this perspective to evaluate the significance of platelet parameters in acute inflammatory conditions.

Anubha Jain et al in 2018 studied about the low platelet count as a predictor of mortality in severe community acquired pneumonia in under five children.[15]

The present study aims to correlate platelet count with paediatric patients admitted in to the hospital versus control population of similar age group attending the vaccination centre.

Platelet Count (PLT): The minimum and maximum value of Platelet count for the age group of 1 to 15 years is 150000 and 450000. In our study Group I which constitutes patients the Platelet count is found to be 95000 and 1711000 as the minimum and maximum range with a mean of 421000.

In our study Group II which constitutes controls the Platelet count is found to be 200000 and 534000 as the minimum and maximum range with a mean of 329000.

The incidence of Thrombocytopenia (<150000) in Group I is 3% and increased platelet count of >450000 is 30% when compared to controls – Group II 0% and 6% respectively indicating the incidence of increased platelet count in children with pneumonia, correlated with significant P value of 0.00005.

The incidence of thrombocytopenia and with increased platelet count (>4.5 lakhs) in patients staying < 14 days in hospital was 3.3% and 33.7% respectively.

Mirsaeidi et al. reported a significant correlation between thrombocytopenia, thrombocytosis and mortality. Thrombocytosis was shown to be independently correlated with the length of hospital stay in patients with community acquired pneumonia (CAP)[14] which correlated with our present study.

CONCLUSION

Platelets play a major role in antimicrobial host defence, the induction of inflammation and tissue repair. Thrombocytosis was commonly associated with pneumonia in children. Children with thrombocytosis usually develop severe illness and complications resulting in prolonged hospital stay. Degree of thrombocytosis directly correlated with severity of illness.

Hence along with serial evaluation of total leukocyte count and inflammatory markers done for assessment in routine to gauge the recovery and underlying inflammatory process the platelet parameters can also be complementary for clinical decision making.

REFERENCES

1. O. Sibila, C. Agusti, and A. Torres, "Corticosteroids in severe pneumonia, " European Respiratory Journal, vol. 32, no. 2,pp. 259–264, 2008.
2. R. D. Pechous, "With friends like these: the complex role of neutrophils in the progression of severe pneumonia," Frontiers in Cellular and Infection Microbiology, vol. 7, 2017.
3. WHO. classification and treatment of childhood at health facilities. Evidence World Health Organization; 2014 Availableat:http://apps.who.int/iris/bitstream/10665/137319/1/9789241507813_eng.pdf (Accessed December 1, 2017).
4. Kamath S, Blann AD, Lip GY. Platelet activation: assessment and quantification. Eur Heart J. 2001;22:1561–71.
5. Ware J, Corken A, Khetpal R. Platelet function beyond hemostasis and thrombosis. Curr Opin Hematol. 2013;20:451–6.
6. Morrell CN, Aggrey AA, Chapman LM, Modjeski KL. Emerging roles for platelets as immune and inflammatory cells. Blood. 2014; 123: 2759–2767.100
7. Semple JW, Italiano JE Jr, Freedman J. Platelets and the immune continuum. Nat Rev Immunol. 2011;11: 264–274.
8. Chen HL, Chiou SS, Sheen JM, Jang RC, Lu CC, Chang TT. Thrombocytosis in children at one medical center of southern Taiwan. Acta Paediatr Taiwan 1999;40:309e
9. Indolfi G, Catania P, Bartolini E, et al. Incidence and clinical significance of reactive thrombocytosis in children aged 1 to 24 months, hospitalized for community-acquired infections. Platelets 2008;19:409-14.
10. Wang JL, Huang LT, Wu KH, Lin HW, Ho MY, Liu HE. Associations of reactive thrombocytosis with clinical characteristics in pediatric diseases. Pediatr Neonatol 2011;52:261-6.
11. Wolach B, Morag H, Drucker M, Sadan N. Thrombocytosis after pneumonia with empyema and other bacterial infections in children. Pediatr Infect Dis J 1990;9:718-21.
12. Zheng SY, Xiao QY, Xie XH, et al. Association between secondary thrombocytosis and viral respiratory tract infections in children. Sci Rep 2016;6:22964.
13. Kim JK, Jeon JS, Kim JW, Kim GY. Correlation between abnormal platelet count and respiratory viral infection in patients from Cheonan, Korea. J Clin Lab Anal 2016;30:185-9.
14. Mirsaeidi M, Peyrani P, Aliberti S, et al. Thrombocytopenia and thrombocytosis at time of hospitalization predict mortality in patients with community-acquired pneumonia. Chest 2010;137:416-20.
15. Low platelet counts predict mortality in severe community acquired pneumonia in children under five years of age: A hospital based observational study – Anubha Jain et al, clinical epidemiology and global health 6 (2018)188-191.