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Original Research

Assessment of cases of pneumonia in general medicine ward

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ABSTRACT:

Background: In underdeveloped nations, where half of pneumonia-related deaths occur in children under one year of age, pneumonia is a leading cause of morbidity and mortality globally. The present study was conducted to assess cases of pneumonia. **Materials & Methods:** 60 cases of clinically suspected pneumonia as per the WHO criteria of both genders were selected. Parameters such as chest radiographs, serum C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), total leucocyte count (TLC) and blood cultures were performed. **Results:** Out of 60 cases, 32 were males and 28 were females. The mean respiratory rate in age group 10-20 years was 45.2 cycles/min and 20-30 years was 34.1 cycles/min. ESR was 36.1 mm/hr and 35.7 mm/hr and TLC was 15124.6 /cumm and 16110.2 /cumm in age group 10-20 years and 20-30 years respectively. Sensitivity of chest radiographwas 92%, CRP was 90%, ESR>30 was 74% and TLC >15000 was 56%. The difference was significant (P< 0.05). **Conclusion:** CRP can be used as an alternative to the chest radiographs in the diagnosis of pneumonia cases.

Keywords: pneumonia, erythrocyte sedimentation rate, total leucocyte count

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INTRODUCTION

In underdeveloped nations, where half of pneumonia-related deaths occur in children under one year of age, pneumonia is a leading cause of morbidity and mortality globally.

More than 2 million children die from pneumonia each year, accounting for nearly one in five fatalities in children under five worldwide.[1] Pneumonia is the disease that kills more children than any other. In order to achieve Millennium Development Goal 4, which calls for a two-thirds reduction in the child death rate between 1990 and 2015, it is imperative that nations combat this disease. The majority of children who die from pneumonia reside in underdeveloped nations, where issues including lack of access, overcrowding, and starvation are prevalent.[2] A lower respiratory tract infection (LRTI) that strikes a kid who has not been hospitalized to a hospital or other healthcare facility during the previous 14 days is known as community-acquired pneumonia (CAP).[3] Gram-negative bacilli and group B streptococci are the main pathogens that cause pneumonia in infants as young as three months.[4]Infants infected with Chlamydia trachomatis between the ages of three weeks and three months may have an insidious afebrile pneumonitis syndrome. However, up to 40–50% of pneumonia occurrences during the first five years of life are caused by viruses, making them the most common cause overall.[5] The most prevalent viruses that cause illness are the respiratorysyncytial virus, followed by the parainfluenza virus types 1, 2, and3, the influenza virus types A and B, adenoviruses and rhinovirusesand the less common ones are the herpes simplex virus andthe enteroviruses.[6]The present study was conducted to assess cases of pneumonia.

MATERIALS & METHODS

The study was carried out on 60 cases of clinically suspected pneumonia as per the WHO criteria of both genders. All patients and family members gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Parameters such as chest radiographs, serum C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), total leucocyte count (TLC) and blood cultures were performed. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of cases

Total- 60		
Gender	**Male**	**Female**
Number	32	28

Table I shows that out of 60 cases, 32 were males and 28 were females.

Table II Assessment of parameters

Parameters	Variables	Mean	SD
Respiratory rate (cycles/min)	Age 10-20 years	45.2	5.2
	Age 20-30years	34.1	8.6
ESR (mm/hr)	Age 10-20years	36.1	6.2
	Age 20-30years	35.7	9.7
TLC (/cumm)	Age 10-20years	15124.6	257.8
	Age 20-30years	16110.2	310.4

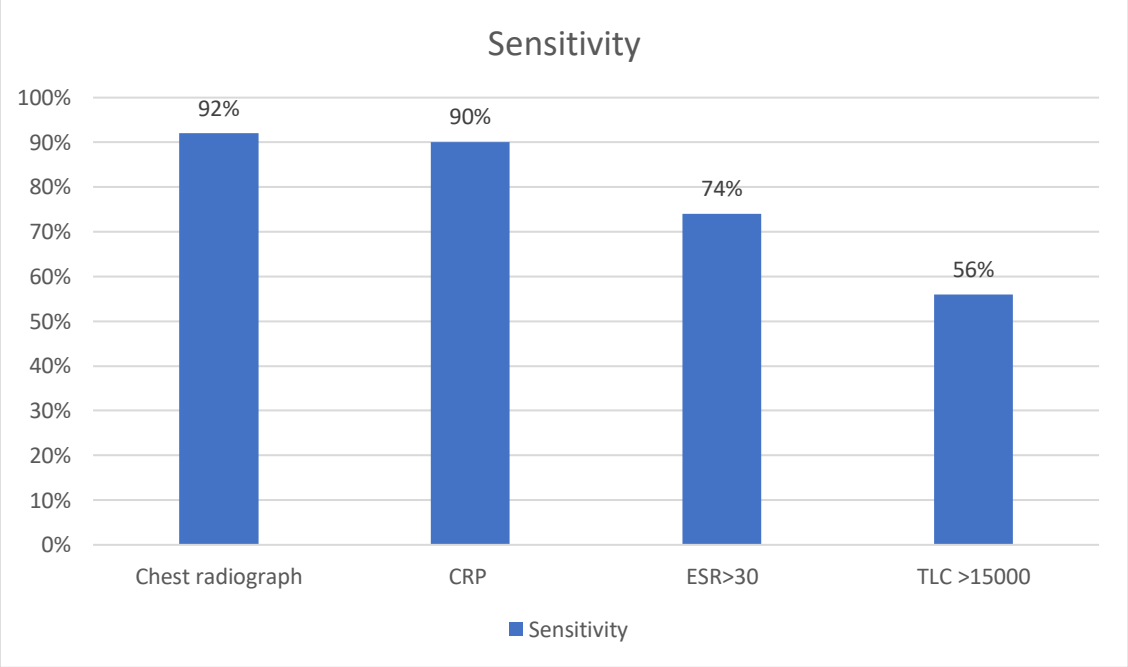
Table II shows that the mean respiratory rate in age group 10-20 years was 45.2 cycles/min and 20-30 years was 34.1 cycles/min. ESR was 36.1 mm/hr and 35.7 mm/hr and TLC was 15124.6 /cumm and 16110.2 /cummin age group 10-20 years and 20-30 years respectively.

Table III Sensitivity of various investigations

Tests	Sensitivity	P value
Chest radiograph	92%	0.05
CRP	90%	
ESR>30	74%	
TLC >15000	56%	

Table III, graph I shows that sensitivity of chest radiograph was 92%, CRP was 90%, ESR>30 was 74% and TLC >15000 was 56%. The difference was significant (P< 0.05).

Graph I Sensitivity of various investigations



DISCUSSION

The World Health Organization (WHO) has defined a clinical criteria for making the diagnosis of pneumonia, which consists of the presence of cough which is associated with tachypnoea, fever (>38.5o C) and chest recession without wheeze.[7,8] Tachypnoea is defined as a respiratory rate of over 40 breaths/min in children who are one to five years of age, of over 50 breaths/min in children who are two to twelve months old, and of over 60 breaths/min in children who are of the age of under two months. Overall, viruses are the most common causes of pneumonia in the first two years of life, accounting for up to 90% of pneumonias.[9,10] The most commonly implicated viruses are respiratory syncytial virus, parainfluenza virus types 1, 2, and 3, influenza virus types A and B,

adenovirus, rhinoviruses, and less commonly, herpes simplex virus and enteroviruses.[11] With increasing age, the incidence of pneumonia decreases, but bacterial pathogens including Streptococcus pneumoniae, Mycoplasma pneumoniae, and Chlamydia pneumoniae become more frequent. In children up to 15 years of age, S pneumoniae accounts for between 17% and 28% of all community-acquired pneumonia cases.[12]The present study was conducted to assess cases of pneumonia.

We found that out of 60 cases, 32 were males and 28 were females. Lakhani[13] compared the sensitivities of different investigations for the diagnosis of Community Acquired Pneumonia (CAP). The chest radiographs, serum C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), total leucocyte count (TLC) and blood cultures were determined in sixty-six patients who were amongst the age group of one month to five years of age, who were diagnosed with WHO defined CAP. The chest radiographs were found to be positive in 93.9% (n=62) patients, CRP was positive in 90.9% (n=60) patients, ESR was positive in 72.7% (n=42) patients, TLC was positive in 48.5% (n=38) patients and the blood cultures were positive in 6.1% (n=4) patients. Hence, the sensitivity of the chest radiograph, CRP, ESR, TLC and the blood culture in the diagnosis of CAP were 93.9%, 90.9%, 72.7%, 48.5% and 6.1%.

We found that the mean respiratory rate in age group 10-20 years was 45.2 cycles/min and 20-30 years was 34.1 cycles/min. ESR was 36.1 mm/hr and 35.7 mm/hr and TLC was 15124.6 /cumm and 16110.2 /cumm in age group 10-20 years and 20-30 years respectively. Bharti[14] studied eighty-three children hospitalized with severe pneumonia.Lobar consolidation (n=43, 51.8%) was the most common radiological abnormality. Twenty- six (31.3%) had interstitial abnormalities and 14(16.9%) had normal chest radiographs. Clinical characteristics at admission could not predict a radiographic abnormality. Time to defervescence for outcome measures of fever and tachypnea was similar in children with consolidation, interstitial pneumonia or normal radiograph. However, length of hospital stay was significantly longer in children with abnormal chest radiographs on univariate analysis.

We found that sensitivity of chest radiograph was 92%, CRP was 90%, ESR>30 was 74% and TLC >15000 was 56%. Shah et al[15]determined the prevalence of bacteremia in children presenting to the ED with CAP, identify subgroups at increased risk for bacteremia, and quantify the effect of positive blood cultures on management.A total of 877 (9.6%) of 9099 children with CAP were evaluated in the ED. The mean age was 3.6 years; 53% were male. Blood cultures were obtained from 291 children (33.2%). Overall, the prevalence of bacteremia was 2.1% (95% confidence interval [CI]: 0.8%-4.4%). Bacteremia occurred in 2.6% (95% CI: 1.0%-5.6%) with an infiltrate on chest radiograph and in 13.0% (95% CI: 2.8%-33.6%) with complicated pneumonia. Streptococcus pneumoniae accounted for 4 of the 6 cases of bacteremia. Blood culture results altered management in 5 of the 6 bacteremic patients; 1 had an appropriate broadening and 4 had an appropriate narrowing of coverage. The contamination rate was 1.0% (95% CI: 0.2%-3.0%).

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that CRP can be used as an alternative to the chest radiographs in the diagnosis of pneumonia cases.

REFERENCES

1. Jain R, Jain A, Agarwal J, Awasthi S. Chlamydia sp. in hospitalised children with community acquired pneumonia. Indian Pediatr. 2007 Mar;44(3):216-18.
2. Mathisen M, Strand TA, Sharma BN, Chandyo RK, Valentiner-Branth P, Basnet S, et al. Clinical presentation and severity of viral community-acquired pneumonia in young Nepalese children. Pediatr Infect Dis J. 2010 Jan;29(1):1-6.
3. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Global, regional and national causes of child mortality: an updated systematic analysis of 2010 with time trends since 2000. Lancet. 2012;379: 2151-61. doi: 10.1016/S0140- 6736(12)60560
4. United Nations Development Programme. The Millennium Development Goals: eight goals for 2015 [cited 2012 Aug 8].http://www.undp.org/content/undp/en/ home/mdgoverview.html.
5. Nair H, Nokes DJ, Gessner BD, Dherani M, Madhi SA, Singleton RJ et.al Global burden of acute lower respiratory infections due to respiratory syncytial virus in young children: A systematic review and meta-analysis. Lancet. 2010 May 1;375(9725):1545-55.
6. Figueiredo LT. Viral pneumonia: epidemiological, clinical, pathophysiological and therapeutic aspects. J Bras Pneumol. 2009 Sep; 35(9):899-906.
7. Henrickson KJ. Viral pneumonia in children. Sem Pediatr Infect Dis 1998;9:217-33.
8. Honkinen M, Lahti E, Österback R, Ruuskanen O, Waris M. Viruses and bacteria in sputum samples of children with community-acquired pneumonia. Clin Microbiol Infect. 2012 Mar;18(3):300-7.
9. Heiskanen-Kosma T, Korppi M, Jokinen C, et al. Etiology of childhood pneumonia: Serologic results of a prospective, population based study. Pediatr Infect Dis J. 1998;17:986-91.
10. R. Ananthanarayan, C.K. Jayaram Paniker. Blood Culture. In Textbook Of Microbiology, 8th edition. University Press Publisher, 2009;295-96.
11. Kiekara O, Korppi M, Tanska S, Soima Kallio. Radiological diagnosis of pneumonia in children. Ann Med 1996;28:69-72.
12. Obaro SK, Monteil MA, Henderson DC. The pneumococcal problem. BMJ. 1996;312:1521-55.
13. Adler-Shohet F, Lieberman JM. Bacterial pneumonia in children. Sem Pediatr Infect Dis. 1998;9:191-98.
14. Lakhani D, Muley P. The association of positive chest radiograph and laboratory parameters with community acquired pneumonia in children. Journal of clinical and diagnostic research: JCDR. 2013 Aug;7(8):1629.

15. Shah SS, Dugan MH, Bell LM, Grundmeier RW, Floris TA, Hines EM. Blood Culture in the emergency department evaluation of childhood pneumonia. Paed Infect Dis J. 2011;6:475-79.