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Research Article

**ASSOCIATION OF COUNT OF WHITE BLOOD CELLS, COUNT OF
ABSOLUTE NEUTROPHIL IN CHILDREN SUFFERING FROM FEVER
DUE TO INFECTIONS OF BACTERIA**¹Dr Hafiz Muhammad Hammad Yaqub, ²Dr Junaid Hussain,¹THQ Hospital Tandlianwala²Aziz Fatima Hospital, Faisalabad

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Abstract:

Objectives: This research work aimed to study the association count of WBC (white blood cells), ANC (absolute neutrophil count) in feverish children from one to eighteen months of age as prognosticator of the infection due to bacteria, so to improve the expectedness of infections because of bacteria in emergency to reduce the preventable admissions & use of the antibiotics.

Methodology: Retroactive review carried out on feverish children from one to eighteen months of age who got admission in the General Hospital Lahore from August 2018 to March 2019 on the probable identification of the fever with no focus. Whole septic work-up carried out for every patient in accordance with the protocol of the local hospital including complete count of the blood, culture of blood, culture of urine, X-ray of chest & lumbar puncture. Patients who found with the previous antibiotic usage history within forty-eight hours of admission were not the part of this research work. We reviewed the data regarding history, laboratory testing, physical examination & radiology carried out. Information regarding age, gender, fever, availability or non-availability of the infection due to bacteria, white blood cells count, absolute neutrophil count, report of chest X-ray & culture of the body result's collection carried out for analysis.

Results: We reviewed 34 patients in this research work. Total 23.50% (n: 8) patients were available with infection of bacteria: categorized as Group-1 (two pneumonias, three infection of the urinary tract, two meningitis, one occult bacteremia) & 76.50% (n: 26) patients found with no proof infection due to had no evidence of bacterial infection, categorized as Group-2. There was no important disparity available between the members of both groups regarding age, fever, gender & white blood cell count whereas there was an important disparity among the patients of both groups about absolute neutrophil count and there was better sensitivity (78.0%) & specificity (89.0%) of ANC in comparison with the white blood cell count (sensitivity 77.0% & specificity 62.0%).

Conclusion: Absolute neutrophil count is very good prognostic test for the determination of the infection due to bacteria in the young feverish children with no focus. But still there is requirement for other more consistent fast and cheap method for dealing with the young feverish children at the department of emergency.

KEY WORDS: Neutrophil, Prognostic, Feverish, Determination, Consistent, Pneumonia, Sensitivity, Specificity.

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INTRODUCTION:

Fever is very frequent symptom experienced by the small children and doctors of emergency department. The approach of medical & laboratory for the identification & management febrile complication among neonates & toddlers is very challenging problem [1]. About 20.0% among these children will be available with no recognizable fever source from the physical as well as examination of the history. Majority of these children will be present with the benign illness of viruses, children less than three year of age are available with high danger of medically untraceable infections due to bacteria [2, 3]. About 2.0% to 3.0% children found with OB4, whereas 2.0% to 8.0% found with infections of urinary tract [5]. Some other reasons include pneumonia because of bacteria, meningitis etc.

Treatment through antibiotics is very vital for the infants suffering from infections because of various kinds of bacteria, this is very vital to restrict treatment to these infants at highest level of risk. Because most of the febrile children do not available with infections of bacteria; tests of laboratory and probable antibiotic treatment of those children adds much to economic cost, time duration, uneasiness & parental depression and may take part to resist for the antibiotic treatment. Practice instruction whose development carried out to support clinicians in the administration of feverish child have proposed the utilization of the white blood cells count as a discernment between feverish patients who could be otherwise detected with no prophylactic treatment of antibiotics therapy & those who give values to therapy [6]. In this research work, the comparison of white blood cell with the absolute neutrophil count carried out as prognosticators of infections due to bacteria in the young feverish infants from one to eighteen month of age.

METHODOLOGY:

This research work was retroactive in nature. In this research work, we reviewed the feverish patients from

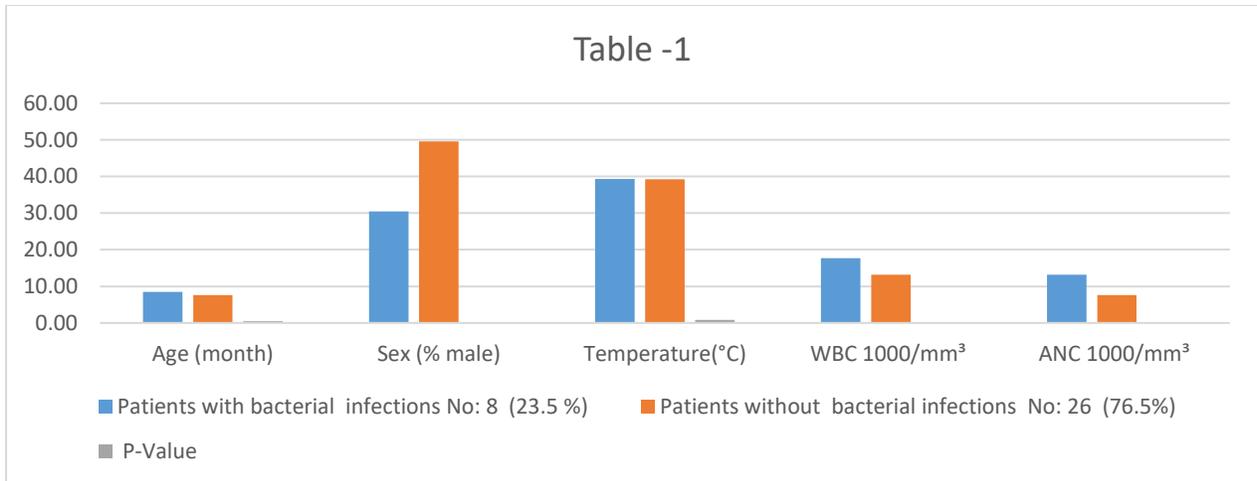
one to eighteen months of age who got admission in the Pediatric ward of the General Hospital, Lahore from August 2018 to March 2019. In accordance with the administrative instruction of the hospital, all feverish children from one to eighteen month of age with fever of thirty-nine centigrade with no focus should get admission in the hospital, period which complete the septic work-up should be carry out complete count of blood, absolute neutrophil count, X-ray of chest & culture of blood and urine and lumbar puncture with the help of cerebra-spinal fluid. Patients suffering from other serious complications or those who took antibiotic treatment within twenty-four hours were not the part of this research work. We reviewed the records of the patients who were fulfilling the standard of the research work. The reviewed data of the patients included: total age of the children in months, temperature at the time of appearance in centigrade, weight of patients, availability or non-availability of the focal infections due to bacteria, count of white blood cells, absolute neutrophil count, report of the chest X-ray and cultures of blood & urine.

RESULTS:

Only 34 patients fulfilled the standard of this research work and we reviewed their records. Total 23.50% (n: 8) patients found with infections due to bacteria and classified as categorized as Group-1, 76.50% (n: 26) patients were available with no proof of infection due to bacteria and classified into Group-2. The eight patients who found with infection of bacteria: two patients found with patchy pneumonia diagnosed by X-ray of chest, three patients had infection of urinary tract & Escherichia Coli was the main prompting agents in all patients, with Streptococcus pneumonia & meningitis was the main reason & 1 patient was available with the infection due to Streptococcus bacteremia of pneumonia. The comparison among different variables is available in Table-1.

TABLE-I

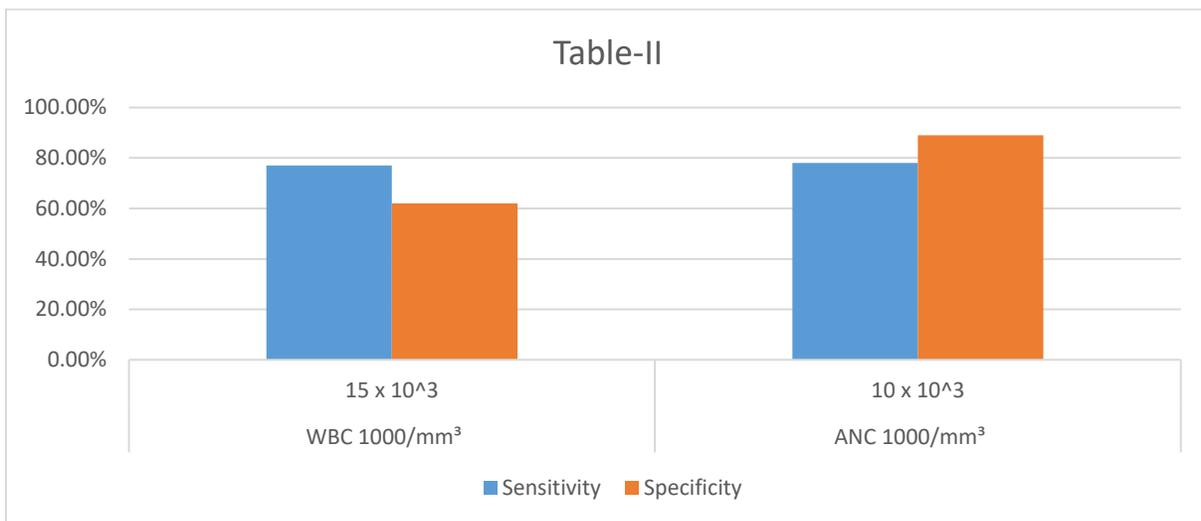
	Patients with bacterial infections No: 8 (23.5 %)	Patients without bacterial infections No: 26 (76.5%)	P-Value
Age (month)	8.50	7.60	0.520
Sex (% male)	30.50	49.60	0.180
Temperature(°C)	39.30	39.20	0.870
WBC 1000/mm ³	17.70	13.20	0.070
ANC 1000/mm ³	13.20	7.60	0.020



This research work displayed that there was no important disparity between the patients of both groups regarding age, gender, fever & white blood cell whereas the only significant disparity was available in the results of absolute neutrophil count. Sensitivity & specificity of both white blood cells & absolute neutrophil count in forecasting infection of bacteria is available in Table-2. As available in Table-2, sensitivity (78.0%) & specificity (89.0%) of absolute neutrophil count were better in comparison with the white blood cells (sensitivity of 77.0%, specificity of 62.0%).

TABLE-II

Blood Analysis	WBC 1000/mm ³	ANC 1000/mm ³
Cutoff point	15 x 10 ³	10 x 10 ³
Sensitivity	77.00%	78.00%
Specificity	62.00%	89.00%

**DISCUSSION:**

The complete count of the WBC is very frequent utilized test for screening for occult bacteremia & guidelines of medical practice proposed that utilizing a total white blood cell of greater than 15,000 as

decisive factor among patients who are easily observable and those patients who require antibiotic treatment [6]. Due to of low amount of prediction, empiric therapy based on a white blood cells greater than 15000 result in needless treatment in 85.0% to

95.0% patients [4, 6]. The administration of the young feverish children with no obvious source of infection remains contentious, because there is no test or method available with proper sensitivity as well as specificity needed to differentiate which child is available with high danger for acquiring the infection due to bacteria. Complete count of the white blood cells is very frequent utilized laboratory test utilized in the clinical condition. As OB's test of careening, a total white blood cell greater than 15,000 cells per mm³ has a sensitivity value of 80.0% & specificity of 69.0% [7]. Though about eighty percent children with OB will have white blood cell count more than 15,000, 94.0% children with white blood cell count greater than 15,000 will be without OB. Some research works stated that acute reactant phase; like CRP may be beneficial in this medical condition [10]. This research work showed that utilization of the ANC is very good in comparison with the WBC count alone because of better sensitivity & specificity. Kupperman in his research work stated the same outcome. His information based on one hundred and sixty-four patients of occult pneumococcal bacteremia taking place in six thousand five hundred and seventy-nine patients, stated that values of ANC greater than 10,000 was a good discriminator for identification of bacteremia in comparison with white blood cell count of 15,000 cells per mm³ [7].

CONCLUSION:

Absolute neutrophil count is very better prognostic test for finding out the infection of bacteria among the young feverish children. There is also requirement to perform it on larger population of study & to extend the age of the patients up to three years for highly suitable results. The association between absolute neutrophil count, white blood cells and other fast identification test as acute reactant phase; C reactive protein, should be the part of study.

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