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Research Article

**HEMATOLOGICAL MANIFESTATION OF PULMONARY
TUBERCULOSIS**^{1*}Dr. Abdul Haque Khan, ¹Dr. Mona Humaira, ¹Dr. Rashid Ahmed Khan,²Hamid Nawaz Ali Memon, ¹Dr. Alveena Batool Syed and ³Dr. Samar Raza¹Liaquat University of Medical and Health Sciences (LUMHS) Jamshoro²Zulekha Hospital Dubai United Arab Emirates³Liaquat University Hospital Hyderabad / Jamshoro**Abstract:****Objective:** To determine the hematological manifestation of pulmonary tuberculosis.**Patients and Methods:** The cross sectional study was conducted on patients had tuberculosis. Every patient was subjected to chest X-ray P.A view and other routine hematological and biochemical investigations, including hemoglobin concentration, blood sugars, blood urea, serum creatinine and HIV testing. Pulmonary TB involvement of lung parenchyma by tuberculosis as evidenced by signs and symptoms, Clinical examination, Sputum for AFB and Radiological evidence of Tuberculosis, disseminated tuberculosis defined as involvement of 2 or more non contiguous organs by tuberculosis. All the patients diagnosed with tuberculosis were further explored for hematological parameters by taking venous blood sampling and sent to laboratory for analysis while the frequency / percentages (%) and means \pm SD computed for study variables.**Results:** During six months study period total fifty patients of pulmonary tuberculosis were explored for hematological parameters. The frequency for male and female population was 33 (66%) and 17 (34%) with mean \pm SD for age of male and female individuals was 49.96 ± 8.95 and 51.86 ± 9.64 . Regarding the gender distribution male 33 (60%) and female 17 (40%) whereas regarding the hematological profile anemia 40 (80%), leucopenia 10 (20%), neutropenia 07 (14%), lymphocytopenia 25 (50%), thrombocytopenia 15 (30%), leukocytosis 35 (70%), neutrophilia 05 (10%), thrombocytosis 16 (32%) and pancytopenia 10 (20%).**Conclusion:** Anemia is a common finding associated with tuberculosis and the presence of hematological abnormalities, leukopenia, lymphopenia and platelet disturbances are associated with severe form of tuberculosis with increased mortality.**Keywords:** Hematology, Pulmonary and Tuberculosis.**Corresponding author:***** Dr. Abdul Haque Khan,**Email: zulfikar229@hotmail.com

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INTRODUCTION:

Tuberculosis affects large number of people, especially of low socioeconomic status and continues to intimidate the human race since time immemorial not only due to its effect as medical malady, but also by its impact as social and economic tragedy [1,2]. The world health assembly resolution recognized tuberculosis as a major public health problem and suggested two targets for national tuberculosis programs [3]. WHO recognized the lethal impact of disease and declared it as a global emergency in 1993. Although the bacilli has been discovered over a century back and drugs have been available for more than 70 years, nearly a third of the world's population is infected with TB bacilli, i.e. have latent TB, of these 10% have a life time risk of developing into active disease [4, 5] Poor living conditions, debility and malnutrition predisposes population to disease [6]. In 2006, nearly 9.2 million new cases and 1.7 million deaths were reported due to TB, and over 90% of these occurred in the low and middle income countries [7]. TB is the one of the leading cause of adult mortality, ranking third after HIV/AIDS and ischemic heart disease as a cause of death among those aged 15-59 years and 7th globally among all age groups [8]. The atypical and varied spectrum of tuberculosis poses a diagnostic and therapeutic challenge to physicians. Various hematological presentations have been described with tuberculosis. However very little is known about the prevalence of hematological abnormalities in Tuberculosis and their association with the clinical spectrum of the disease.

PATIENTS AND METHODS:

The cross sectional study was conducted on patients had tuberculosis. Every patient was subjected to chest X-ray P.A view and other routine hematological and

biochemical investigations, including hemoglobin concentration, blood sugars, blood urea, serum creatinine and HIV testing. Pulmonary TB involvement of lung parenchyma by tuberculosis as evidenced by signs and symptoms, Clinical examination, Sputum for AFB and Radiological evidence of Tuberculosis, disseminated tuberculosis defined as involvement of 2 or more non contiguous organs by tuberculosis. Miliary TB is defined as the acute diffuse dissemination of mycobacterium tuberculosis from the primary site of infection. Tubercular Effusion (Pleural/pericardial) involvement of pleura or pericardium by tuberculosis as evidenced by signs and symptoms, clinical examination, and pleural/pericardial fluid analysis for examination and for adenosine deaminase level while the exclusion criteria were exclusion criteria HIV WithTB, liver and renal diseases, malignancies and known bleeding disorders and hematological disorders and already on ATT. All the patients diagnosed with tuberculosis were further explored for hematological parameters by taking venous blood sampling and sent to laboratory for analysis. The data was collected in proforma while the frequency and percentages was calculated to analyze the data in SPSS.

RESULTS:

During six months study period total fifty patients of pulmonary tuberculosis were explored for hematological parameters. The frequency for male and female population was 33 (66%) and 17 (34%) with mean \pm SD for age of male and female individuals was 49.96 ± 8.95 and 51.86 ± 9.64 whereas the demographical and clinical profile of study population is presented in Table 1.

TABLE 1: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF STUDY POPULATION

Parameter	Frequency (N=50)	Percentage (%)
AGE (yrs)		
18-20	14	28
21-29	13	26
30-39	09	18
40-49	06	12
50-59	05	10
60+	03	06
GENDER		
Male	33	60
Female	17	40
Hematological parameters		
Anemia	40	80
Leukopenia	10	20
Neutropenia	07	14
Lymphocytopenia	25	50
Thrombocytopenia	15	30
Leukocytosis	35	70
Neutrophilia	05	10
Thrombocytosis	16	32
Pancytopenia	10	20

DISCUSSION:

In our study we studied fifty cases (33 males and 17 females) and all of them belonged to low socioeconomic group. Bozoky G, et al [9] et al Studied 380 cases of Tuberculosis. Singh KJ [10] et al studied 55 cases of Tuberculosis. Raina S [11] et al studied 40 cases of Pulmonary Tuberculosis. Former study explored cases of disseminated tuberculosis and all of them to be anemic most common being normocytic normochromic anemia, followed by microcytic hypochromic, megaloblastic and aplastic anemia [12]. The presence of neutrophilia in our study was similar to the study by Singh KJ, et al [10]. There was a significant association of Lymphocytopenia (61% and 50%) which was statistically significant (P value <0.027). The finding

was similar as in other studies as Singh KJ [10] et al and Baynes RD, et al [14]. In our study, prevalence of thrombocytosis (most cases were Pulmonary TB) was 32% and that of thrombocytopenia was 30% (most cases were disseminated / miliary TB). This finding was similar to the findings by Singh KJ, et al [10] (thrombocytosis 32% in PTB and thrombocytopenia - 34% in disseminated/miliary TB). The Prevalence of thrombocytopenia was higher in disseminated / miliary TB was similar to that of the study by Dallalio G, et al [15].

CONCLUSION:

Anemia is a common hematological abnormality in patients with Tuberculosis and the association of tuberculosis and abnormal hematological findings

should direct investigation in the line of tuberculosis which will lead to early diagnosis and institution of antituberculosis therapy. The presence of hematological abnormalities, leukopenia, lymphopenia and platelet disturbances are associated with severe form of tuberculosis with increased mortality.

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