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Original Research Article

Serum CRP and smear grading standards between patients with lung TB

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ABSTRACT

Background: Assessing C-reactive protein concentration in lung TB as a predictor of sputum conversion and identifying the link active Serum-C protein and severity of disease.
Materials and Methods: Newly diagnosed lung tuberculosis patients and age group & gender compared to healthy people in the control group. A high-dose experimental test of active C-ELISA protein was used to measure Serum-C-reactive protein. ANOVA and t tests have been used to determine mathematical significance.
Results: In patients with AFB positive, Serum-C-reactive protein levels were significantly higher in AFB3 + patients (63.12 ± 11.21) compared with AFB2 + patients (36.25 ± 7.42), AFB1 + (14.26 ± 3.12) and and AFB ± 7.23 (7.23 patients) 7.23) 2.19).
Conclusion: Serum-C-reactive protein level should better understand the severity of the disease which plays a key role in diagnosing and determining the clinical outcome of the disease.

1. Introduction

Tuberculosis is commonly by bacteria in Mycobacterium. Tuberculosis is contagious and travels through the air. Tuberculosis was one of common causes of death worldwide. It has also been a leading killer of people with HIV and the leading cause of death related to antimicrobial resistance. In 2019, an estimated 10.0 million (8.9 -11.0 million) people are infected with TB worldwide.[1,2]

The diagnosis of pulmonary TB is clearly indicated by the M-segmentation. tuberculosis in the production of body fluids or fluids or tissue (e.g., pleural biopsy or lung biopsy). Additional diagnostic tools include smear test for sputum AFB smear and nucleic acid amplification (NAA); A NAA test (with or without AFB with smear positivity) for a person at risk for TB is considered adequate for a TB diagnosis. Radiographic studies are important supporting diagnostic tools.[3–6]

C - reactive protein a protein released by the liver to respond to inflammation caused by injury, infection, or something else.[7]

The active protein Serum-C contains an active biomarker of active Mycobacterium tuberculosis. Point-of-care CRP trials have been shown to be useful in clinical trials of respiratory diseases in adults.[8]

2. Materials and Methods

2.1. Research design

A hospital-based study.

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2.2. Sample size

A 34-character sample size requires each group in a reading volume of 80% and an alpha error of 5%. It is a cycle of 50 cases and 50 controls in the current study. As a study by Soedarsono et al.[5]

MEDCALC mathematical software was used for sample size.

2.3. Sample method

A simple random sample.

2.4. Inclusion terms

Recent PT Patients.

2.5. Terms of exclusion

People taking anti-tuberculosis (ATT) drugs, pre-treatment cases, dropouts, and non-drinkers were not included.

2.6. Code of conduct approval

A study approved by the Institutional Ethics Committee.

2.7. Data collection

Collection of sputum samples, smear correction, ointment, small tests performed in accordance with RNTCP guidelines. Smears are organized using 100x targeted oil immersion according to RNTCP technical manual.

CRP ELISA is used to measure C - reactive protein. It is based on the principle of the solid phase of the enzyme linked to immunosorbent testing.[2,9]

2.8. Data analysis

ANOVA tests and t tests and chi-square tests were used to determine statistical significance between groups and between grades.

3. Results

Table 1: General characteristics

Variable	Cases	Controls	p-value
Mean age in yrs	36.23±7.12 Yrs	36.19±7.14 Yrs	>0.05(NS)
Male : Female	29 : 21	31 : 19	>0.05
Smear (scanty : 1+ :2+:3+)	13:17:9:11		
Serum-CRP	42.13 ± 22.12 mg/l	4.12 ± 3.16 mg/L	0.001

The mean age in TB patients was 36.23±7.12 Yrs and controls was 36.19±7.14 Yrs. Male patients were more as compare to female. The CRP values were 42.13 ± 22.12 mg/l and 4.12 ± 3.16 mg/L respectively (P < 0.001) (Table 1)

Table 2: Association between serum-CRP level and microscopic finding.

Serum-CRP (mg/l)	Scanty (n=13)	1+(n=17)	2+(n=9)	3+(n=11)
Mean ±SD	7.23 ± 2.19	14.26 ± 3.12	36.25 ± 7.42	63.12 ± 11.21
p-value		0.981 (NS)		

Among the smear-positive patients, Serum-CRP levels were the highest in AFB3+ patients (63.12 ± 11.21) as compared with the AFB2+ patients (36.25 ± 7.42), AFB1+ patients (14.26 ± 3.12) and AFB scanty patients (7.23 ± 2.19).(Table 2)

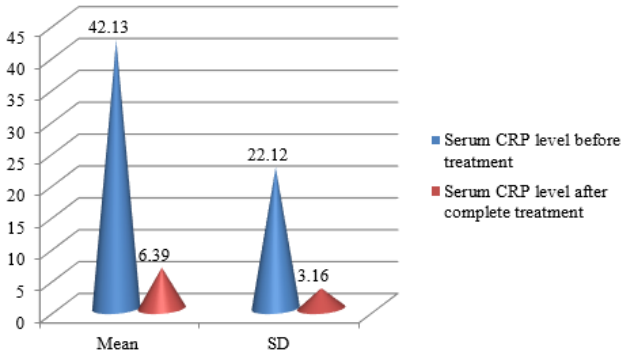

Fig. 1: Effect of treatment

Serum CRP level was significantly decreased after complete treatment

Table 3: Co-relation between predictors of sputum conversion and serum CRP

Variable	Co-relation	p-value
Age	.16	.215
Sex	.15	.362
Smear positivity	.89	.0001

4. Discussion

TB is a disease that is seen in people with low standard of living. The prevalence of TB has been reported to be higher in males than in females.[10]

Serum-C-reactive protein is one of the most common acute phase reactant proteins used as an indicator of inflammation. However, reports have been conflicting.[11]

One study found that high serum- C-reactive protein levels may be helpful in distinguishing between TB and non-tuberculosis,[12] and another study found that they did not have a high dose. In addition, a few studies that

have been found to be helpful were patients with pleural effusion.[10,11,13–15]

Add to this awareness and thought that although Serum-C - reactive protein levels were unclear in distinguishing between TB and non-TB diseases, these levels may still be useful as a symptom or intensity. It is very interesting to note that sputum conversion and disease progression are associated with Serum-C - reactive protein levels. All patients have higher levels of Serum-C - reactive protein than healthy controls. Follow-up patients have a higher BMI and a lower Serum-C - reactive protein conc. there are active patients with pulmonary tubercular disease in the first stage. Patients were also compared to Healthy Control and had higher Serum-CRP levels with lower BMI and worse socioeconomic status. AFB3 + patients also have higher SerumCRP concentrations than AFB2 +, AFB1 + and younger AFB patients.[3]

Lung destruction as shown by tuberculous cavitation indicates severe disease and thus the Serum-C - reactive protein values of existing patients with cavitation were higher than those without. Samuels Tha, et al., Found that Serum-CRP concentration in patients with pulmonary tuberculosis gradually increased within a few weeks of antitubercular therapy (DOTS).[16]

Serial Serum-C - reactive protein measurements have been used to monitor the effectiveness of diagnostic chemotherapy in patients with suspected TB[17] radiological disease. However, modern anti-TB drugs include rifampicin, a variety of antimicrobials. Therefore, non-TB infections can also be treated, making Serum Serum-C - reactive protein diagnostic tests invalid. This study also showed that Serum-C - reactive protein high conc. it took longer to change the sputum than the lower conc. Serum-C - reactive protein. Of the 50 patients, 5 patients remained sputum after treatment and had high Serum-C - reactive protein concentration. It also shows the predictive value of MDR.

5. Conclusion

Serum-C - reactive protein levels should better understand the severity of the disease which plays a key role in diagnosing and determining the clinical outcome of the disease.

6. Conflict of Interest

None.

7. Source of Funding

None.

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