

Original Research Article

Comparison of Yield of AFB in Patients with Duration of Cough (Two Weeks versus Three Weeks) and Two Smears Versus Three Smears

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Abstract: The objective of the present study is to study the effectiveness of reducing the screening criteria of chest symptoms from 3 weeks to 2 weeks and microscopic diagnosis from 3 smears to 2 smears. The present cross sectional study was conducted in Kamineni medical college, Narketpally from 2008 to 2011. All the patients with complaints of cough more than two weeks were included in the study and diagnosed by three and two sputum smear samples. There was increased yield of 36% in patients who were screened with cough more than 2 weeks duration compared to those of 3 weeks duration. Also the yield of sputum positivity with first smear was 82.6%, second sample was 100% and there was no added benefit of examining third sputum sample. Early detection of sputum positivity is done by screening all patients with cough more than 2 weeks rather than waiting for 3 weeks. And doing two smears ensures quality of sputum microscopy which is cost effective and reduced work load.

Keywords: Smear positive tuberculosis, duration of cough, number of sputum samples

INTRODUCTION

Pulmonary tuberculosis contributes around 85% of total TB cases and these cases serve as main reservoir of infection [1]. Main strategy of RNTCP is to detect the sputum positive cases and treat them promptly to reduce the transmission and thereby decrease mortality and morbidity [2].

Previously cough with 3 weeks duration is considered as the criteria to screen the patients with pulmonary tuberculosis. By decreasing the duration from three weeks to two weeks there will be increase in the diagnostic yield. A previous multi-centric study undertaken by Tuberculosis Research Centre (TRC), Chennai, compared the yield of sputum smear positive PTB cases among patients with a cough of > 2 weeks versus > 3 weeks, and found an increase in the yield if the duration of cough for screening was reduced to > 2 weeks [3]. Various studies have shown that PTB cases can be diagnosed by doing two smears examination rather than the present recommended three, saving time

as well as cost [4-6]. A recent systematic review suggested that reducing the recommended number of specimens from three to two could also potentially increase case detection by improving the quality of examination of the first two specimens [7]. To validate these findings, we undertook the current study.

METHODOLOGY

Study setting

The present study was carried out at general out-patient department of pulmonary medicine in Kamineni institute of medical sciences at Narketpally between 2008 to 2011.

Data collection

All the symptomatic patients with cough more than 2 weeks or more than 3 weeks duration attending in pulmonary medicine op were screened for tuberculosis. Sputum microscopy was done by Ziehl neelsen staining. All the patients were examined using 3

sputum smears and yield of 2 sputum smears and yield of 3 sputum smears were compared.

Statistical analysis

Data was analysed by statistical package for social sciences (SPSS) Version 16.0. Numerical data was summarised by mean ± standard deviation for continuous normal data and median ± Inter-Quartile Range for continuous non normal data/ordinal data. Categorical data was summarised by count and percentages. The association between categorical variables was done by Chi square test. All the P values less than 0.05 were considered as statistically significant.

RESULTS

This study included 200 patients with chronic cough.

Among 200 patients 159 patients had cough for more than 3 weeks and all of them had cough more

than 2 weeks duration. Number of Sputum positive cases in patients with cough more than 2 weeks was 23 and those for more than 3 weeks was 17. Increased yield of sputum positivity was 36% in patients with cough more than 2 weeks duration. In patients with 2 weeks cough, sputum positivity was more in age group of 15 -25 years. And in patients with 3 weeks cough ,sputum positivity was more in the age group of 46 – 55 yrs.

Smear examination showed the yield of 82.6% in first sample and 100% in second sample and 86.9% in third sample. Early morning sample had the highest yield of 100% and there was no added benefit of examining third sputum sample.

Comparison of Yield of AFB in Symptomatic Patients with 2 Weeks Cough versus 3 Weeks Cough

Table 1: Showing Age Distribution And Sputum Positivity In Patients With Cough More Than 2 Weeks And 3 Weeks

Age Group In Years	Cough Of 2 Weeks		Cough Of 3 Weeks		Increased Yield(%)
	Number Of cases	Sputum Positive	Number Of Cases	Sputum Positive	
15-25	40(20.0)	7(30.4)	29(18.2)	4(17.6)	75.0
26-35	31(15.5)	4(21.7)	25(15.7)	2(11.7)	50.0
36-45	37(18.5)	3(13.4)	30(18.8)	3(23.5)	9.0
46-55	38(19.0)	4(17.9)	35(22.0)	6(35.2)	
56-65	33(16.5)	3(13.4)	22(13.8)	1(5.8)	
>65	21(10.5)	2(8.6)	19(11.7)	1(5.8)	

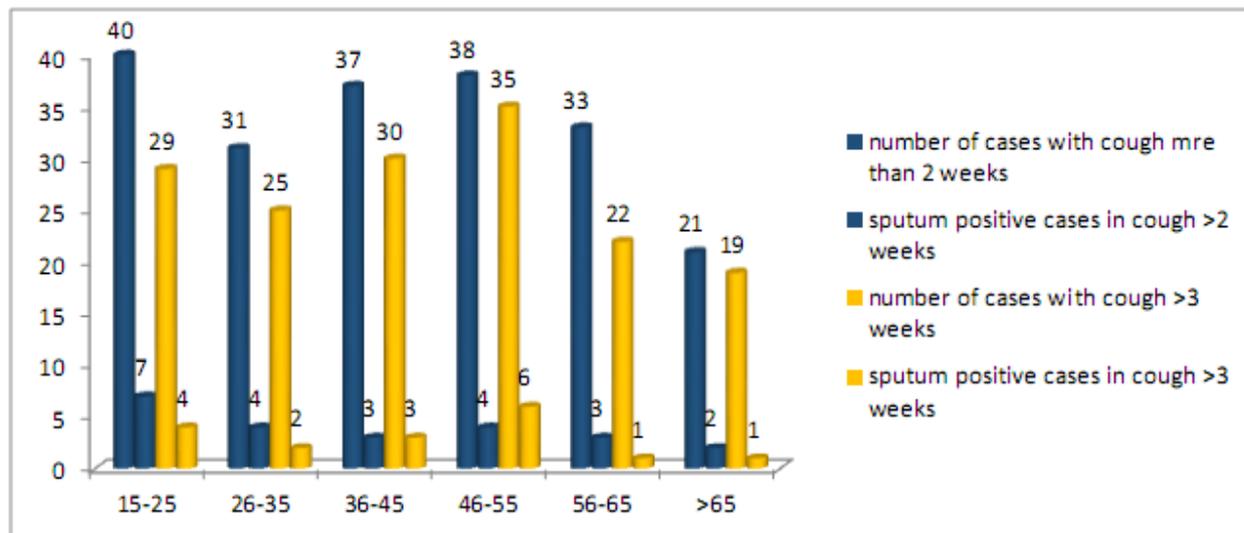
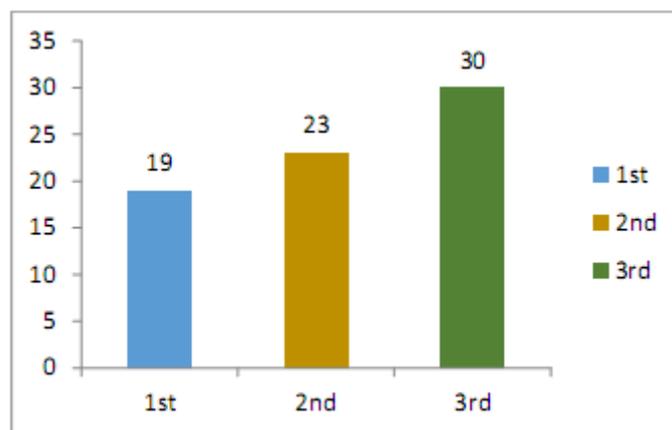


Fig-1: Cluster Bar Diagram Showing Age Distribution And Sputum Positivity In Patients With Cough More Than 2 Weeks And 3 Weeks

Comparison Of Yield Of AFB In Three Smear Versus 3 Smears

Table 2: Number Of Sputum Positive Cases And Percentages In 1st, 2nd And 3rd Smear

Smear	Number Of Positive Cases	Percentage (%)
1 st	19	82.6
2 nd	23	100.0
3 rd	30	86.9

Fig-2: Bar Diagram Showing Smear Positive Cases In 1st, 2nd and 3rd Smear

DISCUSSION

In the present study, in the group of 2 weeks cough majority (20.0%) of the patients were in the age group of 15-25 years, followed by (18.5%) of the patients in the age group of 46-55 years whereas in the group of 3 weeks cough (22.0%) majority of the patients were in the age group of 46-55 yrs, followed by (18.8%) 36-45 years. In cough of 2 weeks duration positive cases were 23, in cough of 3 weeks duration positive cases were 17. The increased yield of sputum positive cases in cough of 2 weeks duration was 36%. In cough of 2 weeks duration more number of sputum positive cases were observed in the age group of 15-25 (30.4%) yrs. In cough of 3 weeks duration more number of sputum positive cases were observed in the age group of 46-55 (35.2%) years. In the present study, smear examination yield from 1st smear was 82.6%, 2nd smear yield was 100% and 3rd smear yield was 86.9%. Early morning sputum sample had highest yield of 100%. In the 23 positive cases there was not even a single case in which the 1st and 2nd smears were negative and third was positive. There was no added benefit of examination of 3rd smear.

The optimal duration of cough chosen by the country to recommend sputum smear examination depends on prevalence of Tuberculosis, utilization of health facilities by the population and laboratory work load so that the quality can be maintained. But the sputum examination in patients with 3 weeks duration of cough misses out many sputum positive cases. In the present study the magnitude being 36% while Thomas *et al* reported the figure to be 38% and Santha *et al* reported it to be 42% [8].

CONCLUSION

By including two weeks cough instead of three weeks cough in the screening criteria, more number of cases can be recruited. Two weeks duration of cough cases increases the early detection of sputum positive cases and early treatment helps in the control of disease transmission. Doing two smears is cost effective, ensures quality of sputum microscopy and reduce the work load.

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