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FREQUENCY OF ACID FAST BACILLI (AFB);
SAMPLES SUBMITTED FOR ZIEHL NEELSON TECHNIQUE

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ABSTRACT… Objective: To determine the frequency of Acid Fast Bacilli (AFB) in samples submitted for Ziehl Neelson (Z.N) Technique. **Design:** An Observational study. **Place and duration of study:** This study was carried out from july 2010 to Dec 2012 at Dept. of Clinical pathology Main Laboratory Jinnah Post Graduate Medical Centre (JPMC) Karachi. **Material & Method:** A total of 5064 samples were received in the department of clinical pathology main laboratory, JPMC, Karachi during the study period. We determined the presence of AFB in samples by Z.N Technique. **Result:** Out of total 5064 samples, 518(10.2%) specimens revealed the presence of AFB. The samples received were: sputum 4787 (503 positive; 10.5%), pus 56 (01 positive; 1.7%), fluid 118 (no positive), gastric 93 (14 positive; 15%); urine 10 (not positive). **Conclusions:**- Lower rate of positivity for Acid Fast Bacilli by Z.N Technique can be increased by Fluorescence microscopy and culture technique.

Key word: AFB, Z.N technique.

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INTRODUCTION

Tuberculosis was declared a global emergency by WHO[1]. It is one of the most common infectious diseases that infect about two million people of the world[2]. Pakistan is ranked 6th in terms of estimated number of tuberculosis cases by WHO in high burden countries[3]. Almost 1.5 million people suffer from tuberculosis in Pakistan indicating a prevalence exceeding 1% of the total population[4]. Global tuberculosis report by WHO mentions the case notification rate for Pakistan as 23/100,000 in the year 2001[5]. Prevalence of tuberculosis in Pakistan is 178/100,000[6]. New cases that are sputum smear positive are only 51%[7].

The diagnosis of mycobacterium disease depends upon identifying the infective organisms in secretion or tissues of the diseased individual. The present study was designed for estimation of frequency of acid fast bacilli (AFB) in samples submitted for Ziehl Neelson technique.

MATERIAL & METHODS

This study was carried out during July 2010 to Dec 2012 at department of clinical pathology JPMC, Karachi. It was an observational study. All specimens sent for AFB microscopy were included with no discrimination of age, gender and ethnic group. All specimens like sputum, gastric lavage, body fluid, urine, pus etc were taken in sterile containers. All specimens were tested for the presence of AFB by Ziehl Neelson technique. Negative and positive controls were run parallel. Direct smear were prepared by taking a small portion of the purulent part of the sputum with a sterile loop. Smear was then air dried, heat fixed and stained by the Ziehl Neelson staining technique. The stained slides were examined under oil immersion and were graded following WHO guide lines.

Interpretation of Results

Presences of AFB samples were detected by WHO classification:

- 1-9 bacilli / 100 fields, number of bacilli are

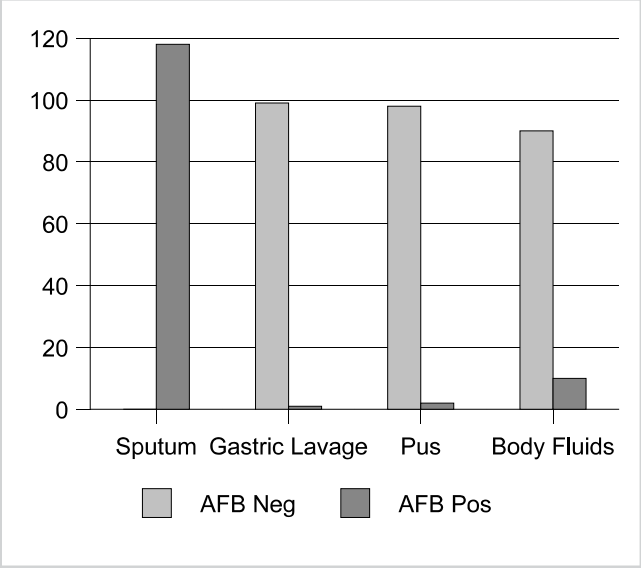
mentioned/100 fields
- > 10 bacilli / 100 fields showed by +
- < 10 bacilli / field showed by ++
- > 10 bacilli / field showed by +++

RESULT

A total 5064 specimen sent for AFB microscopy were examined for the presence of AFB by Ziehl Neelson technique age range of the patients was between 15-75 years. AFB was present in 518 (10.2%) specimens. Among the positive samples, 503 were from sputum (n = 4787), 14 were from gastric lavage (n = 93), 01 was from pus (n = 56) and no AFB is seen in body fluid (n = 118) and urine (n = 10) samples.

Specimens	Total	AFB seen	%
Sputum	4787	503	10.2
Gastric Lavage	93	14	15
Pus	56	01	1.7
Body Fluid	118	-	-
Urine	10	-	-

Table-I. Frequency distribution of AFB (n = 518) seen from 5064 samples tested for AFB microscopy.



DISCUSSION

Various methods and techniques are employed for the detection of AFB in body secretion and tissues[8]. Many studies have shown that the presence of AFB in different type of samples is different[9]. Similarly in present study 10.5% AFB were seen in sputum in contrast to the meagre AFB seen in pus samples 1.7% and non in body fluid and urine but significant number 15% of AFB was seen in gastric lavage. Smear microscopy is an old test but still it is the primary tool for diagnosing tuberculosis in under developed countries. Direct smear microscopy is inexpensive, rapid and highly specific in setting where tuberculosis is endemic[10]. In this study sensitivity is poor which is parallel and comparable to study done by Khuaja Maffiudin (2013)[11] but contrast to the study done by Mohammad Gammoa et al (2012)[12] which showed 65 % sensitivity. Microscopic examination to detect mycobacterium tuberculosis is specific but is not very sensitive as more than 10^3 to 10^4 organism per ml are required for the direct smear to be positive[13]. In low-income and middle income countries direct (un-concentrated) smear microscopy is the primary method for diagnosis tuberculosis. The method is fast, inexpensive and specific for Mycobacterium tuberculosis is high incidence areas. The main limitation of direct microscopy is its relation with low sensitively.

CONCLUSIONS

Lower rate of positivily for acid fast bacilli by Z.N technique can be improved by fluorescence microscopy and culture technique.

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