Abstract

Thirty two positive sputa from 104 untreated cases of pulmonary tuberculosis, were tested for sensi-
tivities against antituberculosis drugs. Twenty four were positive on direct smear as well as culture
while 8 were only culture positive. Nine (28%) were resistant to Isoniazid, 3 (9.4%) to Streptomycin
and 2 (6.3%) were resistant to both the drugs. All the 32 were sensitive to Rifampicin and
Ethambutol (JPMA 38: 73, 1988).

INTRODUCTION

Tuberculosis is a major health problem of developing countries including Pakistan. Considerable
advancement has been achieved in the management of the disease with the introduction of new more
potent and less toxic drugs, but the problem of drug resistance has also increased. In the economically
advanced countries primary drug resistance has been reported in 3-5% of cases. From Hong Kong, a
prevalence rate of 15% of primary drug resistance has been reported in Latin America, it is as high as
22%. From Peru primary resistance to INH of 7.3%, Rifampicin 1.5%, Streptomycin 73% and to
combination of Rifampicin, INH and Streptomycin of 1.5% has been reported. Primary resistance in
Korea was found to be 3.1% while in Haiti 32% of patients had resistant organisms to one or two
antituberculosis drugs. Haphazard use of antituberculosis drugs is common in Pakistan. Combination
of Streptomycin and Penicillin is also in use for common infections. This study was undertaken at
PMRC Research Centre at Khyber Medical College to document the prevalence of primary drug
resistance to the commonly used antituberculosis drugs.

MATERIAL AND METHODS

From 3890 patients who attended the district Tuberculosis control centre during the period May 1981 to
August 1983, 104 new patients were selected for the study. The criteria for selection were:
1. Patient with no history of previous antituberculosis treatment, or combination of Streptomycin,
Penicillin (combiotic) for more than 5 days.
2. Chest X-ray showing a cavity or infiltrations in the upper lobe or upper segment of lower lobe or any
other shadow consistent with the disease.
An early morning specimen of 10—20 ml sputum was collected from each patient. In patients who
could not produce the required quantity, 24 hours collection of sputum was carried out. The sputum
sample was transferred to a centrifuge tube with a screw cap. An equal volume of 1-cysteine sodium
hydroxide was added, mixed well and the mixture allowed to stand for 30 minutes. Distilled water was
then added and the mixture centrifuged at 3000 rpm for 30 minutes. A smear was prepared from the
sediment and stained for acid fast bacilli. A portion of the sediment was also inoculated on to two tubes
of Lowen Stein Jenson (U) slants. A third tube of Li. containing sodium salicylate was also inoculated
for species identification. These L.J. Slants were incubated at 37°C and examined for growth at weekly
intervals for maximum of 8 weeks. Colonies from positive cultures were transferred to a sterile tube
containing 6-8 glass beads and 3 ml normal saline. The mixture was homogenised and then shaken for
10-15 minutes. Serial 10 fold dilutions were then prepared in sterile distilled water. These were inoculated on to drug containing media and incubated at 37°C for one week to study drug sensitivity patterns.

RESULTS
Of the 104 sputum samples studied, 32 (30.8%) gave a positive culture for mycobacterium tuberculosis (human). Of these eight were smear negative (Table).

<table>
<thead>
<tr>
<th>Total Cases Studied</th>
<th>=</th>
<th>104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture Positive</td>
<td>=</td>
<td>32(30.8%)</td>
</tr>
<tr>
<td>Smear and Culture Positive</td>
<td>=</td>
<td>24</td>
</tr>
<tr>
<td>Smear Negative Culture Positive</td>
<td>=</td>
<td>8</td>
</tr>
</tbody>
</table>

The sensitivity pattern is shown in the table. All were sensitive to rifampicin and ethambutol. Three (9.4%) were resistant to streptomycin while 9(28%) exhibited resistance to INH. Two (6.3%) were resistant to the combination of INH Strep tomycin.

DISCUSSION
This study gives two important informations regarding tuberculosis in the area. Firstly, during the 18 months period of the study, of the 3890 patients registered at the T.B. Control Centre, only 104 (2.67%) were new cases. The rest were patients who had been visiting various clinics, practitioners and hospitals and had been taking irregular treatment. This shows that although case finding may be an
important problem in the management of the disease, case holding is a greater problem. Patient compliance and uniformity of treatment are aspects of the T.B. problem which require special consideration. Secondly, the initial drug resistance to commonly used antituberculosis drugs i.e., Streptomycin and INH is quite high. Previous studies in Pakistan showed a high resistance to S.M., INH and PAS in treated cases\(^1\). In the study of Jafri,\(^2\) drug resistance in untreated cases was not significant and this author concluded that the danger of spread of resistant bacilli in a population is more apparent than real. Snider et al\(^3\) from USA have also reported that despite the widespread use of antituberculosis drugs, primary resistance is not increasing. This is attributed to the low pathogenicity of the drug resistant tubercle bacilli as compared to drug sensitive mycobacteria. Our study shows a high prevalence of primary drug resistance but since previous figures from this area are not available, we cannot comment whether any increase has occurred. Our results are comparable to those of Latin American and South East Asian countries\(^3\)\(^-\)\(^6\). The obvious explanation for the very high primary drug resistance prevalence in our population is due to irregular and inadequate use of drugs and low patient compliance.

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