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J Khan

Aga Khan University, javid.khan@aku.edu

A Malik

Aga Khan University

H Hussain

Aga Khan University

N K. Ali

F Akbani

See next page for additional authors

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Authors

J Khan, A Malik, H Hussain, N K. Ali, F Akbani, S J. Hussain, G N. Kazi, and S F. Hussain

Tuberculosis diagnosis and treatment practices of private physicians in Karachi, Pakistan

J. Khan,¹ A. Malik,¹ H. Hussain,¹ N.K. Ali,¹ F. Akbani,² S.J. Hussain,¹ G.N. Kazi³ and S.F. Hussain¹

الممارسات المتعلقة بتشخيص السل ومعالجته من قِبَل أطباء القطاع الخاص في كراتشي
جاويد خان، أمين مالك، حماد حسين، نادبة علي، فاروق أكباني، شادية جاويد حسين، غلام نبتي قاضي، سيد فياض حسين

الخلاصة: تم إجراء دراسة مسحية لمعارف وممارسات مئة وعشرين من الأطباء الممارسين للطب العام في القطاع الخاص في منطقة مزدحمة بالسكان في ريف كراتشي، باكستان، في ما يتعلق بتشخيص ومعالجة مرض السل. وقد كان معظم هؤلاء الأطباء يدركون أن الأعراض الرئيسية للسل هي السعال والحمى وفقد الوزن، إلا أن أقل من نصفهم كانوا يجهلون أن البلغم المدمى وفقدان الشهية وألم الصدر أعراض تترافق مع المرض. ولم يستخدم الفحص المجهرى للبلغم لتشخيص السل سوى 58.3% من الأطباء، ولم يستخدمه إلا 35% منهم كاختبار للمتابعة. وكان 41.7% من الأطباء فقط يعالجون مرضاهم بأنفسهم، أما البقية الباقية فيحولون مرضاهم إلى الاختصاصيين. وقد كان 73.3% من الأطباء على علم بالأدوية الأربعة المختارة للخط الأول من المعالجة المضادة للسل. وعلى هذا فإن من الضروري الإسراع في بذل الجهود لتحسين معارف الأطباء الممارسين في القطاع الخاص، وتحسين الاستراتيجيات التي تعزز التعاون بين القطاعين العام والخاص في مكافحة السل في المناطق الريفية.

ABSTRACT In a densely populated urban area of Karachi, Pakistan, a questionnaire survey was made of the knowledge and practices of 120 private general practitioners about the diagnosis and treatment of tuberculosis (TB). The majority knew that cough, fever and weight loss were the main symptoms of TB, but less than half knew that blood in sputum, poor appetite and chest pain were associated with the disease. Only 58.3% of physicians used sputum microscopy for diagnosing TB and 35.0% used it as a follow-up test. Only 41.7% treated TB patients themselves, the remaining referring their patients to specialists. Around 73.3% of the doctors were aware of the 4 first-line anti-TB drugs. Efforts to improve the knowledge of private practitioners, and strategies to enhance public-private collaboration for TB control in urban areas are urgently required.

Diagnostic de la tuberculose et pratiques thérapeutiques des médecins privés à Karachi (Pakistan)

RESUME Dans une zone urbaine à forte densité de population de Karachi (Pakistan), une enquête par questionnaire a été réalisée sur les connaissances et les pratiques de 120 médecins généralistes privés concernant le diagnostic et le traitement de la tuberculose. La majorité d'entre eux savaient que la toux, la fièvre et une perte de poids étaient les principaux symptômes de la tuberculose, mais moins de la moitié savait que le sang dans les expectorations, la perte de l'appétit et une douleur thoracique étaient associés à la maladie. Seulement 58,3 % des médecins avaient recours à la microscopie des expectorations pour le diagnostic de la tuberculose et 35,0 % l'utilisaient comme test de suivi. Seulement 41,7 % traitaient eux-mêmes les patients tuberculeux, les autres les dirigeaient vers des spécialistes. Environ 73,3 % des médecins connaissaient les 4 médicaments antituberculeux de première intention. Il faut de toute urgence engager des efforts pour approfondir les connaissances des praticiens privés et établir des stratégies afin de renforcer la collaboration public-privé pour la lutte antituberculeuse dans les zones urbaines.

¹Pulmonary Section, Aga Khan University, Karachi, Pakistan.

²Memon Diabetic and Diagnostic Centre, Karachi, Pakistan.

³World Health Organization, Pakistan.

Introduction

Tuberculosis (TB) constitutes a major public health problem in most developing countries of the world. It accounts for the largest burden of mortality due to any infectious agent worldwide. The incidence of TB rose so rapidly over a number of years that the World Health Organization (WHO) was compelled to declare it a global emergency in 1993 [1], the first declaration of this sort ever. In the impoverished communities of Karachi, Pakistan, TB is the second leading cause of adult death [2].

Globally, Pakistan has been ranked sixth by WHO in terms of the estimated number of TB cases, with an incidence of 171 per 100 000 persons [3] and a case notification rate of 23 per 100 000 in the year 2001 as reported by WHO [3]. Pakistan has a very strong private health sector, particularly in the major cities, and it is estimated that approximately 80% of TB patients seeking treatment initially report to private general medical practitioners for their diagnosis and treatment [4]. Although private practitioners in Pakistan are currently diagnosing and treating a major proportion of TB patients, few studies have investigated their TB management practices. This study therefore aimed to evaluate the knowledge and practices of private medical practitioners concerning the diagnosis and treatment of pulmonary TB. Such information will help in better understanding the present contribution of private practitioners in TB control and identify ways to involve them in the implementation of TB control programmes.

Methods

An estimated 6340 qualified medical practitioners practice in the city of Karachi. In many areas, non-qualified practitioners also

see TB patients but their practices were not a focus of this study.

The study was performed between May 2002 and September 2002, in Karachi, Pakistan. A densely populated area of Karachi was selected that had a private sector hospital providing sputum microscopy facilities. The population in the area is typically middle class, living in constructed houses/apartments with tap water, sewerage and electricity facilities. All 141 qualified private physicians practising in a radius of around 2 km of the private sector hospital were identified. The physicians were invited to attend an awareness workshop about TB and its control. Investigators of the TB control programme, which included a provincial level TB control coordinator facilitated this workshop.

The physicians were requested to complete a pilot-tested self-administered questionnaire. All the physicians present at the workshop completed and returned the questionnaire at that time while those who were unable to attend the workshop were contacted personally at their clinics and requested to complete the questionnaires. Anonymity was optional and confidentiality guaranteed.

The questionnaire was designed to collect information on the number of suspected TB patients seen on average every month, the common presenting symptoms and the diagnostic, treatment and referral practices employed by the physician. Respondents were asked to write the prescription for a 60 kg man recently diagnosed to have smear-positive pulmonary TB. The responses were compared with the recommendations of the Pakistan National TB Control Programme [4]. The recommended daily dosage of drugs in the initial phase of TB treatment (2 months) is isoniazid 300 mg + rifampicin 600 mg + ethambutol 900–1500 mg + pyrazinamide

1500–2000 mg. For the continuation phase, the recommended regimen is either (isoniazid + thiacetazone) or (isoniazid + ethambutol) or (rifampicin + isoniazid) in the same doses.

Responses to structured questions were entered and analysed using *SPSS*, version 10.0.5. All information was coded before computer entry to retain the confidentiality of private practitioners participating in the study.

Results

A total of 120 out of 141 (85.1%) physicians completed the questionnaire. On average, each physician saw 4–5 TB patients in a month.

Table 1 summarizes the main symptoms of TB as recognized by the physicians and the duration of cough before suspecting TB as the diagnosis. The majority of physicians were aware that cough, fever and weight loss were the main presenting symptoms of TB, but fewer knew that blood in the sputum (40.8%), poor appetite (30.0%) and chest pain (16.7%) could also be associated with TB. Although a majority of physicians (67.5%) knew that TB should be suspected if the clinical symptoms last 2–4 weeks, 29.2% incorrectly thought the symptoms should last for more than 4 weeks before the diagnosis of TB could be considered.

Just over half of physicians (55.0%) said they preferred to diagnose TB patients themselves rather than refer them to a government or private sector centre (Table 1). The single most important test to confirm the diagnosis of pulmonary TB was considered to be sputum microscopy (58.3% of respondents), followed by chest radiography (20.0%) (Table 1). Respondents believed that the most useful tests in the follow-up of a case being treated for pul-

Table 1 Knowledge and practices of private physicians about tuberculosis (TB) presenting symptoms, diagnosis and management

Knowledge and practices	No. (n = 120)	%
<i>Presenting symptoms</i>		
Cough	114	95.0
Fever	104	86.7
Weight loss	89	74.2
Blood in sputum	49	40.8
Poor appetite	36	30.0
Chest pain	20	16.7
<i>Duration of cough before diagnosis</i>		
< 2 weeks	5	4.2
2–4 weeks	76	63.3
> 4 weeks	35	29.2
No response	4	3.3
<i>Preferred diagnosis</i>		
Diagnose the case themselves	66	55.0
Refer to government TB centre	21	17.5
Refer case to a private centre	7	5.8
No response	26	21.7
<i>Preferred treatment</i>		
Treat the case themselves	50	41.7
Refer to government TB centre	23	19.2
Refer case to a private centre	22	18.3
Let the patient decide	6	5.0
No response	19	15.8
<i>Most important diagnostic test</i>		
Sputum microscopy	70	58.3
Chest radiography	24	20.0
Tuberculin testing	5	4.2
PCR testing	6	5.0
No response	15	12.5
<i>Most important follow-up test</i>		
Sputum microscopy	42	35.0
Chest radiography	33	27.5
ESR testing	19	15.8
Liver function testing	5	4.2
Tuberculin testing	1	0.8
No response	20	16.7

n = total number of respondents.

PCR = polymerase chain reaction.

ESR = erythrocyte sedimentation rate.

monary TB were sputum microscopy (35.0%), chest radiography (27.5%) and erythrocyte sedimentation rate (15.8%). Only 27 (22.5%) of the physicians kept a record of their TB patients.

Less than half the physicians (41.7%) prefer to treat TB cases themselves (Table 1) and 18.3% would refer them to a private clinic. For the initial phase of treatment, 88 (73.3%) respondents prescribed the recommended 4-drug regimen (isoniazid + rifampicin + ethambutol + pyrazinamide) (Table 2). Of these, 25 (20.8%) gave the 4 drugs in a fixed-dose combination regimen. There were gross errors in the regimens of other drugs prescribed separately or in

fixed-dose combinations. For example, only half of respondents could prescribe ethambutol or pyrazinamide in the correct doses or for the correct duration (Table 3).

For the continuation phase, only 31 (25.8%) physicians prescribed one of the recommended regimens (Table 2). None of the respondents prescribed thiacetazone and there were 8 different drug combinations prescribed for the continuation phase. Only 58.0% prescribed the correct dosage of ethambutol while less than half prescribed the correct dosages of rifampicin and isoniazid.

Discussion

It has been found that the private sector is the first source of help for a large number of TB patients in South Asia [5,6]. This has emerged because of the inability of the public sector to meet population expectations so far [7]. However, the knowledge and practices among private medical practitioners are often unsatisfactory [8–10]. Many private practitioners in Pakistan practice after completing only 5 years of undergraduate training. This is different from private medical practitioners in the USA and Western Europe who obtain at least a further 3 years of postgraduate training before practising independently. The poor performance of private doctors here is probably because of the inadequacy of their undergraduate, as well as in-practice, training.

The majority of the physicians in the study were aware that cough, fever and weight loss were the main presenting symptoms of TB, but less than half knew that blood in the sputum, poor appetite and chest pain could also be associated with TB. While two-thirds of physicians were aware that TB should be suspected if the clinical symptoms last 2–4 weeks, 29.2% incorrectly thought the symptoms should

Table 2 Anti-tuberculosis medications prescribed by private physicians

Phase and drugs	No.	%
<i>Initial phase</i>		
R H Z E ^a	88	73.3
R H	2	1.7
H E	1	0.8
R H E	4	3.3
R H Z	2	1.7
R Z E	1	0.8
R H Z S	2	1.7
H Z E S	1	0.8
R H Z E S	3	2.5
No response	16	13.3
<i>Continuation phase</i>		
R H ^a	19	15.8
H E ^a	12	10.0
R E	1	0.8
R H E	42	35.0
R H Z	8	6.7
H Z E	1	0.8
R Z E	1	0.8
R H Z E	9	7.5
No response	27	22.5

^aRecommended regimen.

R = rifampicin, H = isoniazid, E = ethambutol, Z = pyrazinamide, S = streptomycin.

Table 3 Doses and durations of anti-tuberculosis therapy prescribed by private physicians for the initial treatment phase: comparison with recommended guidelines [4]

Drug	Below recommended %	As recommended %	Above recommended %
<i>Prescribed dose</i>			
Rifampicin (n = 102)	20	76	4
Isoniazid (n = 103)	6	83	11
Ethambutol (n = 98)	10	51	39
Pyrazinamide (n = 97)	15	52	33
Streptomycin (n = 6)	0	66	34
<i>Prescribed duration</i>			
Rifampicin (n = 102)	1	50	49
Isoniazid (n = 103)	0	52	48
Ethambutol (n = 98)	0	53	47
Pyrazinamide (n = 97)	0	61	39
R H E P (n = 28)	41	48	11

n = number of prescriptions.

R H E P = rifampicin + isoniazid + ethambutol + pyrazinamide (Myrin-P, Wyeth Pakistan Limited).

last more than 4 weeks. Such a delay in diagnosis would not only result in increased morbidity and mortality for the patients, but would also facilitate the spread of the disease among contacts.

Over-dependence of the physicians on chest X-ray [11] as the diagnostic tool as well as for follow-up of a case with pulmonary TB was noteworthy. Only 58.3% chose to use sputum microscopy with or without other investigations for diagnosis and only 35.0% used it as a follow-up test; this highlights the indifference of private practitioners to the public health implications of the sputum status of TB patients. In an earlier study in 1996, only 14% of Karachi private physicians performed sputum tests; however, in a more recent study, 38% of physicians recommended this test for the diagnosis of pulmonary TB [12,13].

It was surprising to note that far more respondents recommended using sputum

microscopy for diagnosing pulmonary TB but few used this test when GPs were provided this facility free of charge at a nearby centre. This shows that these physicians often do not practise what they know is medically correct. A probable reason for this could be that X-rays are financially more viable to the referring doctor than the cheaper sputum examination, especially in cases where there is some financial arrangement between the doctor and the diagnostic centre [11]. In our study, 23.3% of the physicians were not confident enough to diagnose TB on their own and hence preferred to refer their patients either to government TB centres or to private clinics. This figure indicates lack of awareness among private practitioners who are the source of medical help for the majority of patients [14]. This high referral rate could be one possible reason for the poor

control of the disease in this country, as it can lead to patients being lost to follow-up.

Few of the doctors referred patients to a government TB facility for treatment (19.2%). A figure of 38% was reported by a study done in Delhi, India [15]. This reflects the lack of faith private practitioners have in government facilities. Another reason is probably the loss of financial benefits that private medical practitioners may incur on referring patients to government-run clinics.

In terms of treatment practices, a large number of doctors were either giving inappropriate doses or prescribing treatment for a much longer duration than recommended in the Pakistan National TB Control Programme guidelines [4]. These inappropriate regimens are probably the most important factor leading to a rise in multi-drug resistant TB in Pakistan. Overdose of pyrazinamide, ethambutol and streptomycin was common among the private practitioners in our study. An earlier study done in the northern part of Pakistan in 1994 showed that 80% of private physicians were prescribing excessively long chemotherapy times of over 8 months [12]. Prolonged duration of anti-TB chemotherapy not only increases the adverse effect profile such as sensorineural deafness, optic neuritis, gout and hepatitis but also leads to non-compliance and high treatment costs [4].

Only 22.5% of the physicians kept a record of their patients, which means that tracing treatment defaulters would be close to impossible. It cannot be overemphasized that essential record keeping and treatment of defaulters are of utmost importance for the control of TB.

Our study reveals a disappointing state of affairs for TB control in Pakistan. A number of factors may have contributed to this failure. These include lack of awareness among physicians about the basic

symptoms of TB, appropriate diagnostic strategies and correct treatment regimens. The other factors that could also affect the control of TB are lack of financial resources, and the lack of awareness on the part of patients about the importance of completing a full course of anti-TB treatment.

A multi-faceted approach has to be adopted to improve TB management in our country. Owing to the high caseload of TB patients in private practice, directing official policies only towards public sector health facilities may not be appropriate for the control of TB. One way could be to train private general practitioners regarding diagnosis, treatment and follow-up of TB patients. Awareness could be provided by regular interaction of practising doctors with medical personnel involved in the national training programme, by providing health educational materials and free/subsidized diagnostic facilities especially for sputum examination. Financially disadvantaged patients could be helped by making available public funding for provision of TB care by private practitioners. The services of social workers could also help in health education, motivation and contact tracing of the patients.

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