

Tuberculosis among drug addicts in Shiraz, Islamic Republic of Iran

A. Sadeghi-Hassanabadi¹ and M. Yaghout²

حالات السل بين مدمني العقاقير في Shiraz، بجمهورية إيران الإسلامية
علي صادقي حسن آبادي ومهرزاد ياقوت

خلاصة : تم تقدير العلاقة بين إدمان العقاقير وبين الإصابة بالسل في دراسة مقارنة لمعدلات الانتشار. فقورنت مجموعة مكونة من 561 رجلاً مدمناً بمجموعة أخرى مكونة من 1532 من غير المدمنين ذوي الخلفية الاجتماعية والاقتصادية المماثلة. وأظهرت نتائج معدل العدوى اختلافاً إحصائياً يعتد به ($\chi^2 = 72$, $p > 0.001$) في نسبة الحساسية الإيجابية للتوبريكولين بين المجموعتين (66.7% في المدمنين في مقابل 45.6% في المجموعة الشاهدة). واكتشفت بين المدمنين أربع عشرة حالة من السل الرئوي النشط بينما لم تكن هناك حالات بين المجموعة الشاهدة. وبناء عليه يكون معدل الانتشار 100 000/2500 مدمن، أي ما يزيد على المعدل بين عامة السكان بأكثر من مئة وخمسين ضعفاً. وهكذا يمثل مدمنو العقاقير جماعة عالية التعرض للإصابة بالسل، ومصدراً مستتراً للمرض في المجتمع.

ABSTRACT The relation between drug addiction and tuberculosis was assessed in a comparative prevalence study. A group of 561 male addicts were compared with a group of 1532 non-addicts of similar sociocultural background. The results of infection rate showed a statistically significant difference ($\chi^2 = 72$, $P < 0.001$) in the proportion of positive tuberculin sensitivity between the groups (66.7% among addicts versus 45.6% in the control group). Fourteen active cases of pulmonary tuberculosis were found among the addicts with no case in the control group. This gives a prevalence rate of 2500/100 000 addicts, more than 150 times the rate in the general population. Thus, drug addicts are a high-risk group for tuberculosis and a "hidden source" of the disease in the community.

La tuberculose chez des toxicomanes à Chiraz (République islamique d'Iran)

RESUME La relation entre la toxicomanie et la tuberculose a été évaluée dans une étude comparative de la prévalence. Un groupe de 561 hommes toxicomanes a été comparé avec un groupe de 1532 personnes non toxicomanes issues d'un milieu socioculturel similaire. Les résultats du taux d'infection ont montré une différence statistiquement significative ($\chi^2 = 72$, $p < 0,001$) dans la proportion de réactions positives à la tuberculine entre les groupes (66,7% chez les toxicomanes contre 45,6% dans le groupe témoin). On a trouvé 14 cas de tuberculose pulmonaire évolutive chez les toxicomanes et aucun cas dans le groupe témoin. Ceci donne une prévalence de 2500 pour 100 000 toxicomanes, soit plus de 150 fois celle observée dans la population générale. Les toxicomanes constituent donc un groupe à risque pour la tuberculose et une « source cachée » de la maladie dans la communauté.

¹Department of Community Medicine, Shiraz University of Medical Sciences, Shiraz, Islamic Republic of Iran.

²Tuberculosis Control Centre, Shiraz, Islamic Republic of Iran (Dr Yagout died in a car accident on 26 January 1997).

Received: 04/12/96; accepted: 28/10/97

Introduction

Drug-dependent persons, and narcotics addicts in particular, are a high-risk group for many diseases. Tuberculosis is one of the most serious health hazards in this regard [1-3].

The sociocultural environment of most addicts and their general susceptibility to infection makes them vulnerable to tuberculosis infection in the first place and they thereby play a part in the transmission of tuberculosis within the community. Drug addicts with tuberculosis are an important source of infection because of their lifestyle and unique contacts. When addicts get tuberculosis they act as hidden sources, hence making control much more difficult. Even case-finding efforts are difficult with this group of people and this generally makes control measures unsatisfactory. This might affect not only the addicts themselves, but also their families and the community as a whole.

In this study we present the results of a prevalence survey of tuberculosis among a group of drug addicts (heroin and opium) in Shiraz, Islamic Republic of Iran.

Subjects and methods

Five hundred and sixty-one (561) adult male addicts (aged between 18 years and 60 years), who had been referred and admitted to a correctional centre in Shiraz over a period of about ten years, were contacted and tested for the presence of tuberculin reactivity using the standard Mantoux test. The diameter of induration at the site of the purified protein derivative (PPD) injection was measured and recorded in millimetres after 72 hours, and those with a reaction of ≥ 10 mm were referred to the Tuberculosis Control Centre for further in-

vestigations. These included a chest X-ray and direct smear examination of the sputum for acid-fast bacilli in those with radiographic changes indicative of tuberculosis; this was followed by culture in smear-negative cases.

A group of 1532 male non-addicts, with a similar age distribution as the cases, who had been charged for different reasons and registered in the city prison during the same period as the addicts, were also identified. They were used as a control group because of their sociocultural similarities, and the same procedures were applied to them. The results of tuberculin sensitivity and case-finding were compared between the two groups.

Results

The results of the tuberculin skin tests in the two groups studied are shown in Table 1. Those with a previous history of drug dependence (opium or heroin addiction) showed a higher rate of tuberculin reactivity, i.e. induration diameter ≥ 10 mm (66.7%) as compared with the control group (45.6%); the difference was statistically significant at $P < 0.001$ ($\chi^2 = 72.76$, $df = 2$).

Table 1 Comparison of tuberculin reactivity (In mm) between the addicts and control group, Shiraz, 1994

History of drug addiction	Induration diameter (mm)				Total
	< 10		≥ 10		
	No.	%	No.	%	
Yes	187	33.5	374	66.7	561
No	833	54.4	699	45.6	1532

$\chi^2 = 72.76$, $df = 2$; $P < 0.001$

The difference between proportions infected (PPD ≥ 10 mm) in the two groups was found to be 0.211 (95% confidence interval = 0.164–0.257). The most striking difference was found in the prevalence of tuberculosis; a total of 14 cases of active pulmonary tuberculosis were detected only among those with a positive history of drug addiction (prevalence rate = 2.5%). All the 14 showed a positive skin reaction of ≥ 10 mm, all had respiratory symptoms indicating tuberculosis and the presence of active disease was confirmed by para-clinical studies including direct sputum smear (positive in nine cases), culture (positive in five) and chest X-ray. One of the 14 had a history of family contact with an active case of tuberculosis. All 14 were placed under treatment and follow-up by the Tuberculosis Control Centre in Shiraz. No active cases were found among the control group despite a relatively high rate of positive tuberculin test (45.6% with ≥ 10 mm induration).

Discussion and conclusions

Tuberculosis has been known for decades to be greatly dependent on the conditions of life [4]. Poverty, social problems, drug dependence and deprivation are among the major risk factors in this regard.

Tuberculosis is said to be one of the major infectious diseases with a high incidence in drug addicts [3]. The disease can even occur in a cluster, similar to an outbreak [5]. The role of drug addiction as a risk factor for tuberculosis has been discussed in other reports [1,2,6,7] and also its role in both pulmonary and extra-pulmonary tuberculosis [8,9]. The risk of tuberculosis transmission to the community by such groups has also been emphasized [10].

We found a higher rate of tuberculosis infection in addicts as evidenced by a higher tuberculin positivity in comparison with the control group. The rate found in this study was also higher than those of the community as a whole reported in other studies in the same area [11–14]. The prevalence of active pulmonary tuberculosis in the corresponding age groups of the general population in the area was about 15/100 000 population as reported by the Tuberculosis Control Centre for the same year [14]. So the prevalence rate of active pulmonary tuberculosis among the addicts in this study, which was found to be 14 out of 561 (or 2500 per 100 000), is more than 150 times that of the general population in the area.

The danger with tuberculosis among addicts is that it can be a covert source of infection for the community as a whole. This further emphasizes the need to strengthen the efforts of tuberculosis case-finding among drug addicts and to employ different control measures in this regard. That is why it has been suggested that drug addicts should be considered to be among the high-risk groups for whom screening for tuberculosis is recommended by the Advisory Committee for the Elimination of Tuberculosis, even in the United States of America [6]. It is important to mention that a survey conducted shortly before our study in the same population found no HIV-positive cases [15]. This makes it easier to deal with control measures against tuberculosis in high-risk groups since HIV infection is not a major problem at the moment. Although the higher risk of tuberculosis in addicts can be related mostly to lifestyle and socio-economic factors, there is also the possibility that addicts might be immunologically more prone to tuberculosis. This question has been raised by other researchers [16,17] and further investigation of this is needed.

References

1. Braun MM et al. Increasing incidence of tuberculosis in a prison inmate population. Association with HIV infection. *Journal of the American Medical Association*, 1989, 261(3):393-7.
2. Reichman LB, Felton CP, Edsall JR. Drug dependence, a possible new risk factor for tuberculosis disease. *Archives of internal medicine*, 1979, 139(3):337-9.
3. Baumgarten R. Correlation between disease and community: is drug addiction a problem of fringe groups? *Forensic science international*, 1993, 62(1-2):67-72.
4. Haas DW, Des Prez RM. *Mycobacterium tuberculosis*. In: Mandell GL, Douglas RG, Bennet JE, eds. *Principles and practice of infectious diseases*, 4th ed. New York, Churchill Livingstone, 1995:2215-8.
5. Leonhardt KK et al. A cluster of tuberculosis among crack-house contacts in San Mateo County, California. *American journal of public health*, 1994, 84(11):1834-6.
6. Screening for tuberculosis and tuberculous infection in high-risk populations. Recommendations of the Advisory Committee for Elimination of Tuberculosis. *Morbidity and mortality weekly report*, 1990, 39:1-7.
7. Crack cocaine use among persons with tuberculosis—Contra Costa County, California, 1987-1990. *Morbidity and mortality weekly report*, 1991, 40(29):485-9.
8. Firooznia H et al. Disseminated extrapulmonary tuberculosis in association with heroin addiction. *Radiology*, 1973, 109(2):291-6.
9. Merry J, Gompels BM. Miliary tuberculosis, tuberculosis of ribs and heroin addiction. *Lancet*, 1970, 1(7637):87.
10. Tuberculosis prevention in drug-treatment centres and correctional facilities—selected U.S. sites/1990-1991. *Morbidity and mortality weekly report*, 1993, 42, 210-31.
11. Mossanen E. *Results of PPD test in 1000 children in Shiraz, 1987*. Shiraz, Islamic Republic of Iran, Tuberculosis Control Centre, 1987 (unpublished).
12. Sadeghi-Hassanabadi A, Javidian I. Tuberculin sensitivity in an urban population, Shiraz, Iran (I.R.). *Medical journal of the Islamic Republic of Iran*, 1996, 10(1):31-5.
13. Pesaran P. *Use of tuberculin test for prevalence survey of tuberculous infection in 6-7- year-old children in Shiraz, 1987* [Thesis]. Shiraz, Islamic Republic of Iran, Shiraz Medical School, 1987 (In Farsi).
14. Yaghout M. *Tuberculosis in Fars Province. Report of the Provincial Health Centre*. Teheran, Ministry of Health and Medical Education, 1993. (Farsi).
15. Faghihi MA. *Serologic survey of HIV among high risk prisoners (Shiraz)* [Thesis]. Shiraz, Islamic Republic of Iran, Shiraz Medical School, 1995.
16. Yeager MP et al. Morphine inhibits spontaneous and cytokine-enhanced natural killer cell cytotoxicity in volunteers. *Anaesthesiology*, 1995, 83(3):500-8.
17. Portoles JM et al. Suppression of immune parameters in animal models of morphine dependence. *Immunological investigations*, 1995, 24(4):643-52.