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LETTER TO THE EDITOR / ПИСМО УРЕДНИКУ

Alcohol use and clinical manifestations of tuberculosis

Dear Editor,

Tuberculosis (TB) remains a major cause of morbidity and mortality from infectious diseases worldwide. In 2011, there were 8.7 million new cases of active tuberculosis worldwide (13% of which involved coinfection with the human immunodeficiency virus) and 1.4 million deaths [1]. Studies have shown TB to be a stigmatized disease, which presents a challenge in controlling it. Improved counseling of patients and communication, patient choice of treatment support, and reinforcement of supervision activities are associated with improved treatment outcomes [1]. Alcohol use disorders (AUDs) among tuberculosis patients are associated with nonadherence and poor treatment outcomes [1, 2]. AUD has been reported as a risk factor for an impaired immune system and increases a person's susceptibility to active TB infection, as well as to the reactivation of latent disease. Many studies have demonstrated that alcoholism has been one of the major reasons for default and mortality under the directly observed tuberculosis treatment. Persons who abuse alcohol, smoking and illicit drugs are increasingly affected by tuberculosis, with reported tuberculosis rates up to 28 times higher than the age-matched general population [3, 4, 5]. All 90 consecutive patients with active TB hospitalized from January 2015 to September 2015 at the Clinic for Pulmonary Diseases, Clinical Centre of Serbia, were included in the study. Tuberculosis was confirmed by direct microscopy (positive sputum sample for acid-fast bacili) and/or culture sputum, but rarely pathohistologically. Basic demographic data, sputum sample for direct microscopy or culture, chest X-ray, alcohol use, smoking history and body mass index were collected. This study was approved by the institutional review board and patients' consents were obtained.

Comparison between the groups was performed with the χ^2 test. The basic and clinical variables are listed in Table 1. There was a significant difference in the distribution of the categories of chest X-ray stages ($\chi^2 = 62.740$, df = 2, $p < 0.0001$) between the subjects who drank alcohol excessively compared to those who did not drink or drank occasionally. Patients who drank alcohol excessively had more extensive changes in the lungs (25/32) compared to those who did not drink or drank occasionally. Significantly more patients with excessive alcohol consumption and irregular nutrition in comparison with those subjects who did not drink alcohol or drank occasionally had more extensive changes in the lungs ($\chi^2 = 26.894$, $p < 0.001$).

Hemoptysis as a symptom of serious illness was significantly more frequent in TB patients

Table 1. Baseline and clinical characteristics of the study population (n = 90)

Parameters	n (%)
Gender (male/female)	62 (68.9) / 28 (31.1)
Marital status (married/single/widowed/divorced)	46 (51.1) / 23 (25.6) / 5 (5.6) / 16 (17.8)
Place of residence (urban/rural)	68 (75.6) / 22 (24.4)
Education (without / primary school / secondary school / high school / college / university)	7 (7.8) / 20 (22.2) / 14 (15.6) 35 (38.9) / 5 (5.6) / 9 (10)
Employment (employed/unemployed/retired/students)	43 (47.8) / 29 (32.2) / 16 (17.8) / 2 (2.2)
Alcohol consumption (never/sometimes/often/excessively)	45 (50) / 3 (3.3) / 41 (45.6) / 25 (27.8)

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with alcohol use (odds ratio = 4.699, p = 0.040). Also, TB patients who drank alcohol had a higher risk of extensive chest X-ray changes at the moment of establishing the diagnosis of tuberculosis (odds ratio = 63.424, p < 0.0001). There is a strong association between AUD and TB [2, 5]. There are only a few studies which assessed alcohol use disorders in tuberculosis patients in low- and middle-income countries: Kazakhstan (4% alcohol abusers); Russia (24–62% alcohol abusers/dependents); India (14.9–32% alcohol abusers/alcoholics); Brazil (14–24% alcohol abusers); and South Africa (31–62% alcohol misusers [1, 5]. We found high rates of hazardous or harmful habitual drinking among tuberculosis patients in Serbia, which is consistent with studies conducted in low- and middle-income countries. Alcohol exerts immunosuppressive effects, but the exact mechanisms are difficult to define because excessive alcohol use is often associated with other comorbidities, such as nutritional deficiencies, liver disease, and cigarette smoking.

It is not clear whether excessive alcohol use actually leads to an increased transmission of *Mycobacterium*, apart from several groups. In this study we found that excessive alcohol use was not associated with cavitary lesions in a multivariate analysis. Tobacco use does not contribute to impairment of tuberculosis.

In sum, there is evidence of social marginalization and drift pathway on how alcohol could lead to TB. Multidisciplinary approach is essential in the treatment of these patients, and the findings suggest the importance of integrating alcohol treatment into TB care. Studies of interventions that concurrently treat excess alcohol use and tuberculosis are needed to make progress in tuberculosis elimination.

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REFERENCES

1. Zumla A, Raviglione M, Hafner R, von Reyn CF. Tuberculosis. N Engl J Med. 2013; 368(8):745–55.
2. Siemion-Szcześniak I, Kuś J. Impact of social risk factors on treatment outcome in patients with culture positive pulmonary tuberculosis (CPPTB). Pneumonol Alergol Pol. 2012; 80(5):412–21.
3. Škodrić-Trifunović V, Mihailović-Vučinić V, Stjepanović M, Radisavljević-Pavlović S, Adžić-Vukučević T, Ilić B. Analysis of tuberculosis prevalence among cigarette smokers. Med Pregl. 2013; LXVI(Suppl 1):84–7.
4. Golo DL, Cirić-Janković S, Santrić-Milićević M, Simić S. Alcohol use among adolescents in Serbia. Srp Arh Celok Lek. 2013; 141(3–4):207–13.
5. Azevedo MJ, Conwill DE, Lawrence S, Jackson A, Bhuiyan AR, Hall D, et al. Tuberculosis containment among the homeless in Metropolitan Jackson, Mississippi. J Miss State Med Assoc. 2015; 56(8):243–8.