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ORIGINAL ARTICLE

Pulmonary tuberculosis specificities in smokers



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KEYWORDS

Clinic;
Radiology;
Bacteriology;
Smoker;
Tuberculosis

Abstract *Background:* Smoking and tuberculosis are two major challenges in public health system. The aim of our study is to identify the impact of smoking on clinical, radiological manifestations and evolutive pulmonary tuberculosis.

Methods: This retrospective case–control study examined the files of 104 patients. The patients monitored for pulmonary tuberculosis were divided into 2 groups. We studied the clinical and radiological profile, and evolution in both groups.

Results: 104 patients were included, divided into two groups: Group I: 59 current smokers who have tuberculosis (TB) and Group II: 45 TB patients who have never smoked. The mean age is 38 years. All patients in Group I are male while there is no predominance of one sex over the other in group II. The time to diagnosis is delayed in patients who smoke. There is no significant difference in the clinical symptoms. Radiological lesions are diffuse among current smoker patients, as they are mostly unilateral in group II. The clinical outcome was good in 91.1% of TB non smoking patients with weight gain between 2 and 5 kg versus 35.3% in the group of smokers. Bacteriological conversion in the second month was reached in 95.6% of patients in group II, while there was a bacteriological negativity delay in group II patients. Three smoking patients died.

Conclusion: Our study raised the harmful impact of smoking on the clinical and radiological presentation of tuberculosis, and late bacteriological negativity, therefore we need to integrate smoking control into the national TB control program.

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Background

Smoking and tuberculosis (TB) represent two major issues of worldwide public health, especially in emerging countries.

Abbreviations: TB, Tuberculosis; UK, United Kingdom; AFB, Acid-Fast Bacilli

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According to the World Health Organization (WHO), there were 8.6 million cases of tuberculosis disease (TD), responsible for 1.3 million deaths in 2012. Every year nearly 6 million deaths are due to smoking among which over 600,000 are non-smokers exposed to the smoke.

The incidence of tuberculosis remains strong despite the effectiveness of antibacillary chemotherapy. Several factors are involved: promiscuity, low socioeconomic status, HIV infection and genetic susceptibility to tuberculosis. Often neglected, the active and passive smoking is a risk factor for pulmonary tuberculosis occurrence. Our study aims to

investigate the effects of smoking on the diagnosis period, clinical, bacteriological, radiological and evolutive pulmonary tuberculosis.

Methods

We made a retrospective case-control study with patients monitored for pulmonary tuberculosis in a health center in Rabat from January 2013 to April 2014. The center’s chief doctor has given permission to conduct and publish this study. The diagnosis is confirmed by two positive bacteriological exams or a positive test and a positive culture or a radiological environment compatible with tuberculosis. We excluded patients in poor condition or malnourished, patients treated with steroids or immunosuppressive therapy, those with a history of respiratory and wean smoking. All data were collected on a pre-established form and data capture and analysis were performed using SPSS version 10.0 software.

This manuscript does not include details, images, or video relating to individual participants, therefore no consent was requested.

Results

A total of 104 patients were included and divided into two groups: Group I represents 59 current smokers with tuberculosis, and Group II represents 45 TB who have never smoked. The mean age of our patients is 38 ± 15 years. The age of the patients in group I (current smokers TB) ranges between 21 and 73 years; while the number of patients in group II ranges from 15 to 67 years. The mean age of patients in group I was higher than that in group II: 42.9 versus 31.6 years. All patients in group I were male while there was no significant gender predominance in Group II: 51.1% men versus 48.9% women.

Contact with tuberculosis was noticed in 37.3% of patients in group I versus only 4.4% in group II, with a statistically significant difference ($p < 0.001$). The degree of smoking intoxication in the smoker group was estimated between 14 and 33 pack-years with a mean of 20 pack-years.

In group I the diagnosis confirmation period is from 30 to 120 days with an average of 60 days, while in the second group the period is between 15 and 60 days with an average of 30 days. The difference between the two groups was statistically significant $p < 0.001$. Clinical symptoms were not different between the two groups (Fig. 1).

Regarding the type of radiological lesions, 89% of group II patients have only one type of radiological lesions. Meanwhile

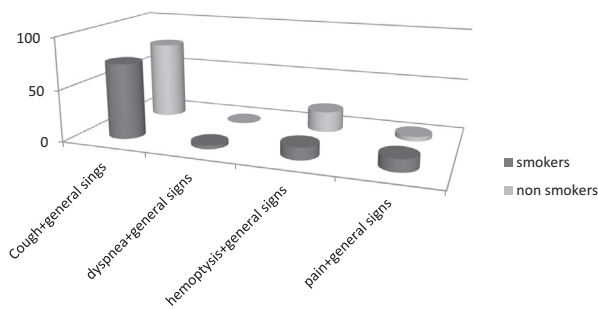


Figure 1 Comparison of clinical signs between the two groups.

in group I, 44.2% of patients have a combination of several radiological lesions (Figs. 4 and 2). These lesions are usually extended in the group of smokers (71.2%), while they are mostly unilateral in patients who have never smoked (77.1%) with a statistically significant difference ($p < 0.001$) (Fig 3).

All patients were under the same therapeutic regimen: two months of combined rifampicin, isoniazid, ethambutol and pyrazinamide and four months of rifampicin and isoniazid combined. In group I all patients (100%) were compliant, while in group II, three patients discontinued treatment in the second month, but there was no significant impact of smoking on patient compliance.

In the second month of treatment, 91.1% of patients in group II have evolved clinically gaining 2–5 kg weight, while in the first group only 35.3% gained weight with a significant difference ($p < 0.001$).

The AFB sputum in the second month of treatment was systematic in all patients, it was negative in 95.6% of patients in group II versus 66.1% of patients in group I, with a statistically significant difference $p < 0.001$. Thus, smoking is linked to a late negativity Koch’s bacillus in sputum smears in our patients. Three patients died; they were active smokers. No death was observed in group II, but there was no significant difference between the 2 groups.

Discussion

The relationship between smoking and pulmonary tuberculosis was suspected since 1918 and it is only recently that the effect of smoking on TB has been identified [1]. Indeed smoking is not only a major cause of morbidity and mortality, but also one of the risk factors for the occurrence of tuberculosis.

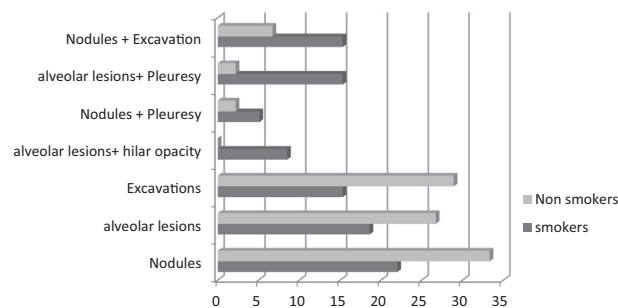


Figure 2 Radiological lesions in the studied groups.

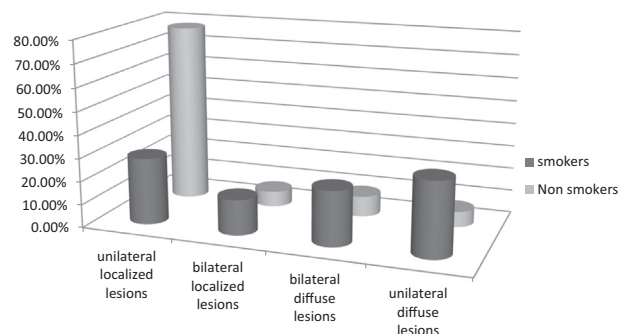


Figure 3 Extension of the radiological lesions in the two groups.

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