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PULMONARY TUBERCULOSIS, TRANSVERSAL EPIDEMIOLOGICAL STUDY

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Abstract: *The present work is a descriptive transversal, epidemiological study, of the patients diagnosed with pulmonary tuberculosis, admitted at Pneumophtisiology Hospital Brasov, in the first three months of 2011. The aim of the study is the analysis of particular condition of contacting the disease, the identification the risk factors involved in the occurrence of pulmonary tuberculosis and the analysis of their distribution in the study group. There were a high percentage of new cases of disease (68%), 62% of patients are smokers, 47% are alcohol consumers and 17% low income.*

Key words: *Pulmonary tuberculosis, transversal study, risk factors, public health.*

1. Introduction

According to World Health Organization, one third of the world's population is thought to have been infected with Mycoplasma tuberculosis, with new infections occurring at a rate of about one per second [2]. In 2007, there were an estimated 13.7 million chronic active globally cases, while in 2010, there were an estimated 8.8 million new cases and 1.5 million associated deaths, mostly occurring in developing countries [3].

In Romania tuberculosis (TB) is one of the priority for public health; in 2009, its incidence was 99.9%ooo inhabitants, of which: 83, 2%ooo new cases and the incidence of relapses of 16.7%ooo inhabitants [1]. In Brasov County the incidence of tuberculosis is 45.4 per 100,000 inhabitants, so it is half of the incidence in the country [1].

2. Material and methods

The present work is a descriptive transversal, epidemiological study, of the patients diagnosed with pulmonary tuberculosis, admitted at Pneumophtisiology Hospital Brasov, in the first three months of 2011.

The existing data, obtained from the medical charts of 100 patients, were processed using Microsoft Excel, also calculating indicators of central tendency and dispersion.

The aim of the study is:

- The analysis of particular condition of contacting the disease, for a better approach of the endemic TB in the area where the research was conducted
- Identifying the risk factors involved in the occurrence of pulmonary tuberculosis and the analysis of their distribution in the study group.

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• The recognition of a possible disease pattern distribution, according to the patient's age.

3. Results and discussions

According to age distribution, pulmonary TB is registering the highest percentage, 40% in the age group of 30-49 years old, followed closely by the group 50-69 years old (37%).

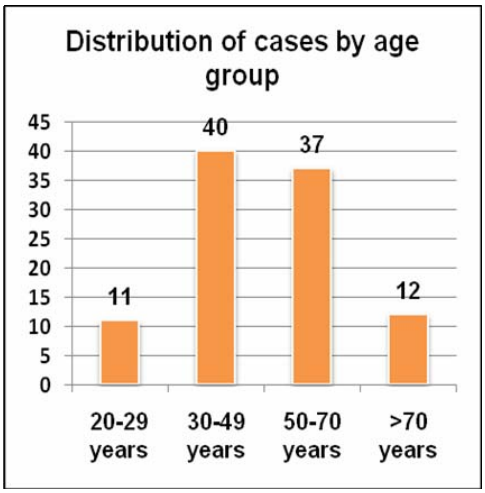

Fig. 1. *The distribution of cases according to age*

To the age group over 70 years old, illnesses were fewer (12%) and for the category of persons aged between 20-29 years, the percentage was 11% (figure 1). The average age of the lot is 48.19 years and the median age was 49 years. Coefficient of variation of age groups is 32.82% with standard deviation of 15.82 (p ± 0.5).

In the group of 100 patients studied, pulmonary TB is more spread to men (68%) than women (32%), because they combined more risk factors for this disease.

There was an almost equal distribution between urban and rural areas, 49% and 51%.

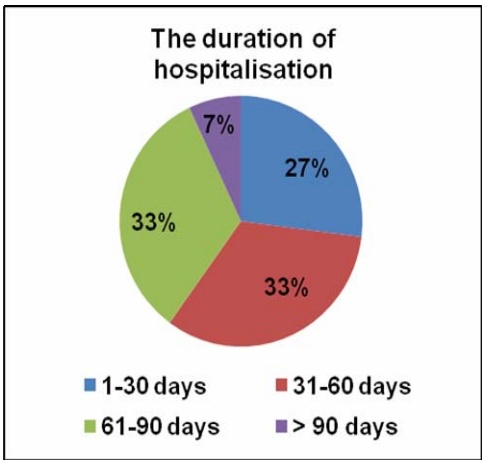

Fig. 2. *The duration of hospitalization*

The duration of hospitalization for the infection caused by Mycoplasma tuberculosis enrolled for most patients (66%) in the interval of 31-90 days, as it is shown in figure 2. During the study, 7 cases required hospitalization longer than 90 days.

Increased number of hospital days entails high costs for health systems, high costs for patients and their families that derive from the additional medical acts and temporary or partial loss of the patients work capacity, delayed and sometimes incomplete reintegration into previous active life.

Regarding the income of the patients, 6% of them have incomes between 0 - 500 RON, 11% between 501 and 900 RON. Only 15% of patients have incomes above 900 RON. The highest percentage, 68%, is reported as unspecified income.

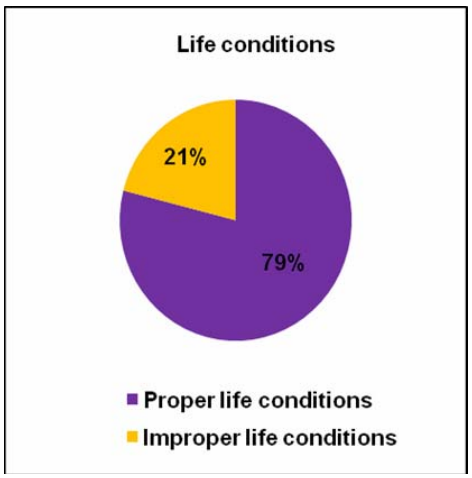

Fig. 3. *Distribution of cases of pulmonary tuberculosis according to life conditions.*

Tuberculosis remains the disease of poverty, with the chance of spreading among the disadvantaged socially and economically, although in studied group, the majority (79%) have adequate life conditions (figure 3).

Fig. 4. *Cases distribution according to patient's workplace*

According to the analysis of cases admitted in the first three months of 2011, it may be noticed that working in an environment without risk factors for TB, such as attending a closed community where there is a large number of patients with active tuberculosis, such as hospitals, prisons, in our study this it is not the main cause for the development of pulmonary tuberculosis, as seen in the chart above. There was a high incidence of TB cases in the workplace without risk factors (40%).

In the group of 100 patients, 68 cases were new emerging, and 32 of these were patients with a history of TB. The large number of new cases occurred in such short time is a concern, because of population susceptibility, severity of the disease, but also because of the strains resistance to treatment.

According to the literature, Romania occupies the first place in the European Union as number of pulmonary tuberculosis cases [1].

In the present study, it was found that 19% of patients had a family history of TB, while 6% have other family pathology. The highest percentage, 75% of the cases studied, is the category of without importance background.

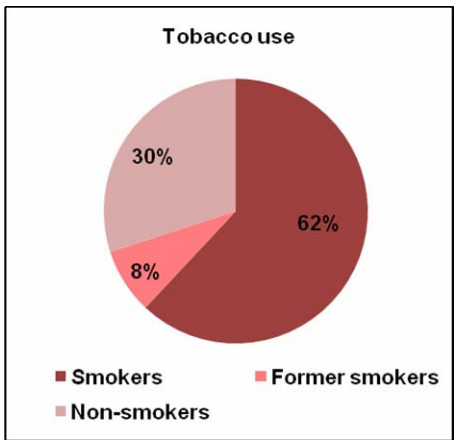

Fig. 5. *Distribution of cases according to tobacco use*

Of patients with pulmonary tuberculosis, 62% are cigarette smokers (figure 5), most of them between 10 and 19 smoke cigarettes daily and 24 of the cases more than 19 cigarettes per day. It stands out a greater proportion of smokers among men (75%), than in women (25%).

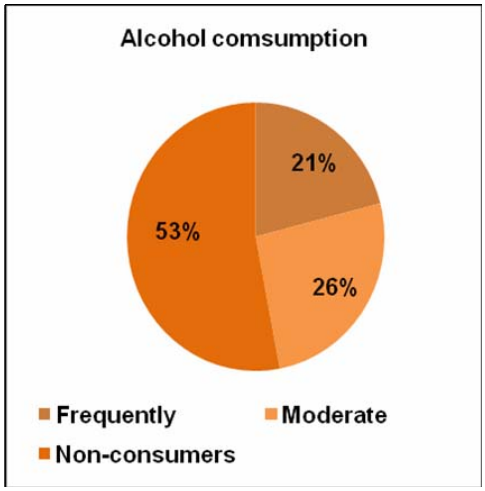

Fig. 6. *Distribution of cases according to alcohol consumption*

About half of patients are consumers of alcohol, daily (21%) or occasionally (26%). The increased percentage of unconsumed alcohol can be due to the insincerity of some of them. As with tobacco, men are those who consume alcohol in greater proportion than women, 81% versus 19%.

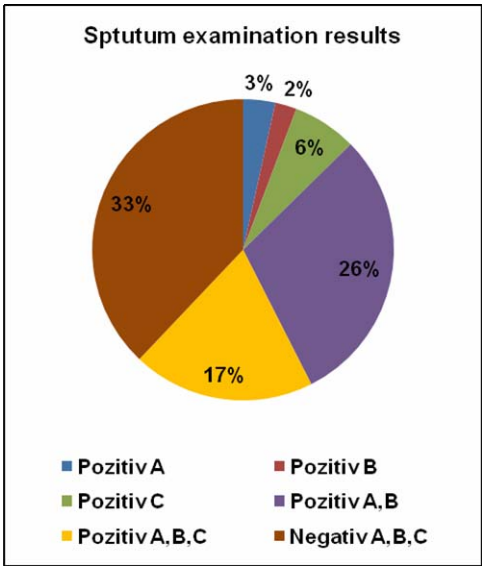

Fig. 7. *Sputum examination results*

Regarding the sputum examination, the analysis of data obtained from patients charts, indicated that a proportion of 33% of the patients receive, at admission, a negative result of 3 sputum samples (the first sample noted with A, the second with B and the third with C) and, at the same time, 26% were identified positive in 2 sputum samples (A, B), (figure 7).

The most frequently encountered symptoms at admission were found to be: association with mucopurulent cough with dyspnoea, weight loss and night sweats, patients presenting with these symptoms being 35% (table 1).

Table 1

Patient's symptoms at admission	
Dyspnoea	4%
Mucopurulent cough	8%
Mucopurulent cough, dyspnoea	18%
Mucopurulent cough, weight loss	16%
Mucopurulent cough, dyspnoea, weight loss, night sweats	35%
Cough and hemoptysis, weight loss, night sweats	19%

There was no evidence to predilection for a certain associated pathology; the percentages are relatively similar for TB association with other pulmonary pathology (29%), the association with visceral (25%) or cardiovascular pathologies (17%). There have been cases (29%) that showed no associated pathology.

Pulmonary pathology includes: chronic obstructive pulmonary disease, disabling pulmonary fibrosis, tobacco-related chronic bronchitis, chronic bronchitis, pneumothorax, silicosis and pulmonary emphysema.

Cardiovascular pathology includes ischemic heart disease, high blood pressure, stage 2 or 3, congestive heart failure, thrombophlebitis, peripheral arterial disease.

Visceral pathology include: chronic hepatitis, liver cirrhosis, alcoholic-toxic hepatitis, chronic gastroenteritis, gastric ulcers, kidney stones, epilepsy, rheumatoid arthritis, diabetes mellitus type 1 and 2, enlarged prostate, cancer of the mouth floor and scabies.

Analyzing, the study group in terms of the body mass index, the highest percentage of patients, 48%, had normal weight.

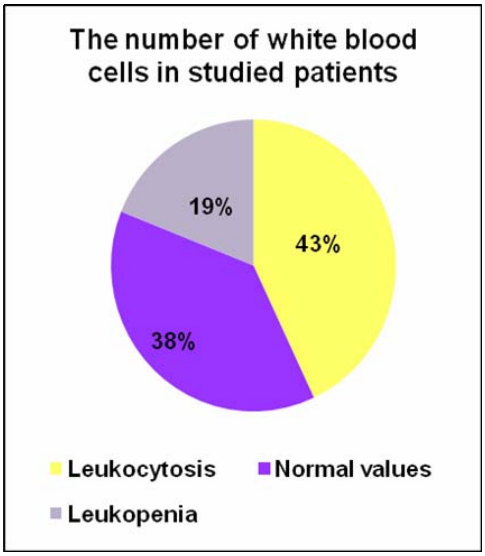

Fig. 8. *The number of white blood cells in studied patients*

A percentage of 43% of patients had leukocytosis, as it is shown is the figure above.

There were recorded to men normal hemoglobin levels for 58 of patients and below normal for the remaining 42 male patients. For women, hemoglobin level was below normal parameters for about 65%.

Regarding the radiological aspect of the lesions, the percentages are balanced between nodular type of lesion in the right upper lobe, bilateral caseous infiltration type and cavern (table 2).

Table 2

Radiological aspects of the lesions at admision	
Right lower lobe caseous infiltrate	4%
Right upper lobe caseous infiltrate	13%
Left upper lobe caseous infiltrate	10%
Bilateral caseous infiltration	14%
Right upper lobe nodular opacities	15%
Right upper lobe nodular opacities	10%
Disseminated micronodular opacities	8%
Pleurisy	6%
Cavern	13%
Aspect of sequela	6%

Most patients (71%) received treatment with one of the following combinations: HRZE, HRZS, HR and an 18% had individualized treatment.

4. Conclusions

- Most cases of disease, 40%, are found in the age group of 30-49 years old.
- There were a high percentage of new cases of disease (68%).
- Analyzing risk factors, 62% of those infected with Mycoplasma pneumoniae are smokers, 47% of patients are alcohol consumers and 17% low income.
- The most frequent patient's complaints at admission were found to be: association with mucopurulent cough with dyspnoea, weight loss and night sweats.
- When examining the sputum, a percentage of 33% of the patients examined at admission receive a negative result from 3 samples and, at the same time, 26% were identified positive at 2 sputum samples.
- Regarding the radiological aspect of the lesions, the percentages are balanced between nodular type of lesion in the right upper lobe (15%), bilateral caseous infiltration type (14%) and cavern (13%).

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