MedCrave
Step into the World of Research

MOJ Immunology

Review Article

Open Access

CrossMark

Tuberculosis at the socialized patients without comorbidity in different age groups

Abstract

The investigations of pulmonary tuberculosis (TB) often include observations of TB at patients with the burdened comorbid background, which have imprisonment, and homelessness, that strongly change the picture of TB.

Aim: to describe some properties of TB at the socialized patients who did not have comorbid diseases in age aspect.

Materials and methods: 305 protocols of autopsies (2000-2010 yrs.). The significance of differences was checked by nonparametric methods of the statistical analysis. Relation of lethal outcomes with the industrial enterprises and motor transport was studied with a geographic information system.

Results: The most part of cases of TB in the described group of patients were presented by men of 46-60 years with fibrocavernous TB, mainly bilateral superlobar localization. The TB form was associated with its time duration and duration of the last hospitalization. The quantity of lethal outcomes in general was bound to accommodation near the industrial enterprises and highways. However, the quantity of deaths at sharply progressing forms, unlike observations of chronic forms was not bound to distance to large industrial enterprises. The lethal outcome was determined by cardiopulmonary inefficiency and cachexia. Among patients with acute forms more often a brain edema developed, whereas patients with chronic forms frequently died from lethal pulmonary bleeding. No features of TB in age aspect have been revealed.

Conclusion: For the analysis of pulmonary TB as a comparison group is effectually to use TB cases at full-socialized patients without comorbid diseases. Differences of TB at patients of age groups, in our opinion, are caused by diseases that form a comorbid background.

Keywords: pulmonary tuberculosis, comorbidity, age groups, geographic information system

Volume 6 Issue 6 - 2018

Belosokhov MV,[1] Kazachkov EL[2]

[1]State Budgetary Healthcare Institution , Russia

[2]South-Ural State Medical University of the Ministry of Healthcare of the Russian Federation, Russia

Correspondence: Belosokhov MV, Department of clinical pathomorphology, State Budgetary Healthcare Institution,Chelyabinsk state clinical hospital, Russia, Tel, +7351 260 98 10, Email belosakhovmv@chelmed.ru

Received: November 20, 2018 | **Published:** December 11, 2018

Introduction

The problem of tuberculosis is still relevant, despite the trend towards a reduction of morbidity.[1] Labor migration entails the delivery of new TB cases and TB epidemic burdening situation. In studies that examine the various features of TB, the analysis is performed in patients that have burdened comorbidity status, and often social problems - the lack of a permanent place of residence, are or were present earlier in the prison system. In the available literature we have not TB research has been reported in patients socialized with no significant (comorbid) conditions. In our opinion, it is in these "ideal" patients, epidemiological and clinical presentation of TB is devoid of confounding factors that can make a fairly dramatic change in the picture of TB.

Material and methods

Through continuous selection from the archive specialized pulmonology prozektury were obtained and analyzed 1045 reports of autopsies carried out in 2000-2010., In the postmortem diagnosis of which met the mention of one or another form of tuberculosis (TB). From this sample were selected by monitoring TB patients were characterized by the absence of alcohol and drug addiction, and had no indication of diabetes, HIV, hepatitis, cirrhosis of the liver and lung cancer. In addition, these patients had a permanent place of residence and certain not in penal institutions. The resulting study group included the 305 TB of observations, which accounted for 29.2% of the total sample. Despite the significant age of the number of patients up to 93 years, significant these individuals had TB for comorbid diseases. The presence of cardiovascular system of patients neglected diseases, as according to the authors,[2,3] they have no influence on the course and thanatogenesis for TB. Also, they do not take into account the presence of comorbidities that are based on their definition,[4] also has no effect on the characteristics of TB any significant influence. In this regard, we supposed lack of elderly patients of diseases that could form the background of comorbidity for TB. also does not have the characteristics of the TB any significant influence. In this regard, we supposed lack of elderly patients of diseases that could form the background of comorbidity for TB. also does not have the characteristics of the TB any significant influence. In this regard, we supposed lack of elderly patients of diseases that could form the background of comorbidity for TB. Formation of the data set and statistical analyzes were performed using Microsoft Office Excel 2007 software and STATISTICA6, respectively. Checking normality of quantitative variables was performed using the Shapiro-Wilk criteria and Kolmogorov-Smirnov adjusted Lilieforsa when N> 60. The distribution of all data series was different from the normal distribution. In this regard, the average values were characterized by median (Me) and interquartile range (IQR), indicating the upper and lower quartiles minimum and maximum values. The significance of differences between groups was examined using the U-test nonparametric Mann-Whitney (U, Z, p), the links - using the Spearman rank correlation coefficient (rs, p). Significance of differences between the discrete features studied using bilateral exact Fisher criterion (Fp), in some cases- using the chi-squared Pearson ($\chi 2$, df, p) with Yates' correction. Differences were considered statistically significant at $p < 0,05$. Analysis of the differences between multiple groups was performed

using Kraskella-Wallis test (Hdf, N, p). In addition, calculated odds ratios (OR) and confidence interval values. Age groups were formed according to conventional WHO classification ages.[4] We calculated the odds ratio (OR) and confidence interval values. Age groups were formed according to conventional WHO classification ages.[5] We calculated the odds ratio (OR) and confidence interval values. Age groups were formed according to conventional WHO classification ages.[6] The study of relationships between the location of patients and industry of residence conducted in the following manner: on the map in an open geographic information system '2GIS-Chelyabinsk Labels' Labels residential address listed in the records of autopsies. Then measured the shortest distance from the mark to the boundary of the enterprise. If the label is surrounded by several companies, the distance measurement is carried out to the borders of each. Subsequently marks were grouped into 20 zones corresponding to a range of 500 m for leveling measurement inaccuracies. Next, using the Spearman rank coefficient of correlation study performed relations between the number of tags and their remoteness from industrial plants. Investigation of the influence of road transport carried out by the same procedure as in the ranges of distances in increments of 100m.

Results

study group consisted of 248 men (81.3%) and 57 women (18.6%). Age survival of patients in the group was 20-93 years, reaching on the average 50 years (IQR=42-61). The men died at an average age of 50 years (IQR=44-60). Age of death for women did not differ from the age of survival of men (p=0,692) and occurs on average at the age of 46 years (IQR=34-74). Most patients were living in the vicinity of industrial sites and major highways with asphalt. Mapping TB observations revealed strong negative connection both with respect to the plants (rs= -0,82, p= 0,000003), and in relation to nearby streets with heavy traffic road (rs=-0,97, p=0, 000002). The duration of pain ranged TB over a wide range and numbered 0 to 50 years, typically 3 years (IQR=0,3 - 7,0). Experience of TB in men and women did not differ (p=0,504) and was equal to 6.4 and 5.5 years, respectively. Last hospitalization lasted 0-650 days and had little to do with the experience of TB (rs=0,2, p= 0,004320). On average, the patients were in the hospital 28 days (IQR=6-90). The most common form of lung tubercular lesion was fibrocavernous TB (Table 1). To study the characteristics of TB monitoring were divided into three groups: a group of acute progressing forms, which included disseminated, infiltrative TB, caseous pneumonia, the group with chronic forms, including a fibrous-cavernous, cirrhotic and tuberculosilicosis. The third group consisted of other forms of lung lesions (Table 2). Clinical form of TB was associated with the duration of inpatient treatment of patients. Acute progressive form accompanied by a shortening of hospitalization (rs=-0,2, p=0,000459), whereas patients with chronic forms of TB and form accompanying kavernizatsiey light (fibro-cavernous and cavernous TB), were hospitalized for a longer time (rs=0,2, p=0,000165 and rs=0,3, p=0,000006, respectively). In the vast majority of cases the disease accompanied by smear: In general, in 86.6% of cases, no differences between the groups of patients with acute (86.6%) and chronic (91.9%) forms (Fp=0,1416). The study of the patient's home, depending on the TB showed a certain regularity. Thus, most patients with acute progressive forms of TB were living near major industrial sites represented core enterprises: Electro-plant, electrolytic-zinc plant, tractor plant, pipe-rolling factory. Correlation analysis showed a strong negative correlation between the number of patients and the distance to the boundaries of industrial enterprises (rs=-0,7, p=0,0001198). However, this relationship is carried unstable-by removing from a set of observations (N=3) located at a great distance from the borders of plants communication lost statistical significance (p=0,106). Mapping observations chronic forms reveal a part of the location of the observations in close proximity to each other, that did not occur in the mapping of acute forms. As in the acute forms observations greatest number of patients were living near the enterprises and decreased with increasing distance from the border (rs=-0,9, p=0,000001). The connection was stable and did not change with the removal of observations. In addition, a large number of patients with both acute, chronic forms so accommodated along highways and streets with heavy traffic, which was confirmed by the presence of a strong negative correlation (rs= -0.9, p=0.002138 for the group acute progressive forms and rs=-0,97, p=0,000022 for chronic forms of TB). Distribution of living patients with other forms of plants characterized by a relatively unstable bond (rs=-0,54, p= 0,019449), which, after removal of extreme individual observations (N=6) loses statistical significance (p=0,585). Communicate the patient's home with major highways statistical significance was not (p=0,439). TB changes involved in the pathological process in the majority of cases, both lungs, which were recorded in 77.4% of patients, and most often located in the upper lobes: 79.0% in the right lung and in 80.3% -the left lung (p=0,763). Acute forms of TB were characterized by more frequent bilateral localization - in 88.2% of cases, specific inflammation foci were found in the contralateral lung. Bilateral lesion in chronic forms of TB was detected significantly less often-in 77.5% of cases (Fp=0,0351). Lobar localization of TB focus has been associated with its clinical form and had some of the features. Frequency register TB lesions in the upper lobes in patients with acute and chronic forms did not differ (Fp=0,206 and Fp=0,315 for the left and right lung, respectively). However, patients with severe forms of lung damage underlying divisions recorded more often. Defeat of the middle lobe of the right lung in acute forms were detected in 76.5% of autopsies and chronic only 56,3% (Fp=0,0020). The lower lobe of the right lung in the observations of acute been implicated in the pathological process in 76.5%, whereas the frequency of the development of chronic forms involving this card was only 36,6% (Fp= 0,0000). Involvement of the lower lobe of the left lung is also varied among patients with acute and chronic forms, and recorded in the 80.9% and 46.5% respectively of observations (Fp=0,0000). The lower lobe of the right lung in the observations of acute been implicated in the pathological process in 76.5%, whereas the frequency of the development of chronic forms involving this card was only 36,6% (Fp=0,0000). Involvement of the lower lobe of the left lung is also varied among patients with acute and chronic forms, and recorded in the 80.9% and 46.5% respectively of observations (Fp=0,0000). The lower lobe of the right lung in the observations of acute been implicated in the pathological process in 76.5%, whereas the frequency of the development of chronic forms involving this card was only 36,6% (Fp=0,0000). Involvement of the lower lobe of the left lung is also varied among patients with acute and chronic forms, and recorded in the 80.9% and 46.5% respectively of observations (Fp=0,0000). Most reported in 78.7% of cases of pulmonary TB observations were accompanied by the formation of screenings in the internal organs. Of these, 76.1% of cases screenings located in the lymph nodes, in 36.7% in the spleen and in 18.4% - the liver. In other screenings bodies were found in 14.1%, settling most commonly in the kidneys. Recording frequency observations dropout and dropout rates in general in thoracic lymph nodes in patients with acute and chronic progressive forms did not differ. However, differences in the frequency of detection of screenings at autopsy in the spleen, liver and other organs were statistical significance. Thus, the registration frequency of screenings in the spleen in acute forms reached 48.5%, and chronic forms only in 34.3% of cases (Fp=0,0253). Screenings were found in

Citation: Belosokhov MV, Kazachkov EL. Tuberculosis at the socialized patients without comorbidity in different age groups. *MOJ Immunol.* 2018;6(6):305–309. DOI: 10.15406/moji.2018.06.00249

the liver at necropsy in 27.9% of cases of acute and 17, 4% - chronic (Fp=0,0449). In other screenings organs during acute forms were also noted in 27.9% of cases and in chronic - in 10,3% (Fp=0,0006). Lethal outcome in patients advancing mainly from progressive pulmonary heart failure, recorded in 60.0% of cases. In 18.4% of patients the cause of death was cachexia and 7.5% of the cases-massive pulmonary hemorrhage. The group of patients with severe forms of TB differ significantly increased frequency of cerebral edema, who were the immediate cause of death in 7.4% of cases. In the group of patients with chronic forms of TB this state has played a leading role in tanatogenesis only in 0.9% of cases (Fp = 0,0105). In turn, a group of chronic forms of TB was characterized by more frequent development of fatal pulmonary bleeding in 9.5% of patients, while in the group of acute bleeding from the lungs caused the death of 1.5% of patients (Fp=0,0186). The largest age group was the group of late adulthood (Table 3). In all groups, dominated by males, except for groups of elderly and long-lived groups. Due to the small number of observations group of centenarians has been merged with a group of elderly people. Experience TB Group has been weakly associated with the patient's age at the time of death (rs=0,14, p= 0,025992). However, the multiple comparison revealed no differences in the mean duration TB in groups (H (6,N=263)=8,6,p=0,200). Just groups did not differ in duration steady flow (H (6,N=298)=1,182740, p=0,978). In all groups, fibro-cavernous TB was the most frequently reported (Table 4). However, in a group of elderly and senile its registration rate was minimal due to the high proportion of silicotuberculosis and disseminated TB, which reached the same widespread only in the young patients group. Differences frequency TB forms depending on the type of predominant tissue reaction in the age groups were not statistically significant (Table 5). However, it traced a definite trend towards higher incidence of registration of acute in young patients. Thus, their frequency in the following age groups was approximately the same level (p=0,655). The prevalence of chronic, accompanied by a pronounced fibrous component was minimal in young patients group. Thus, reaching the maximum value in the group of early adulthood, the detection rate of chronic forms showed a tendency to decrease with increasing patient age (p=0,334). Forms accompanied by destruction of lung tissue with the formation of cavities, showed a similar distribution pattern, thus showing a significant relationship with age (rs=-0,2, p=0,000031). In general, the distribution of the forms with a predominance of alterations is almost a mirror reflection of the forms of distribution with a strong productive component. lung disease in the age groups had often bilateral, reaching maximum values in the group of younger patients (Table 6), are not demonstrating the existence of any significant association with age (p=0,250). The presence of the source of infection in the lungs in most cases accompanied by the formation of screenings in the internal organs. The frequency of registration, having a maximum value in a group of young patients, patients decreased with increasing age (rs=-0,1, p=0,023756). Similarly, bacterial excretion distribution was characterized by demonstrating a significant decrease in the number of observations of patients with increase in age (rs= -0,2, p=0,000824). Lethal outcome of TB patients from different age groups advancing mainly due to progressive heart failure, pulmonary - 55,6-67,8% in the observations, without any connection with the age of patients (p=0,072). Cachexia took the second place ranking on the prevalence and was most often recorded in young patients group. The frequency of its registration declined steadily with increasing patient age (rs=-0,9, p=0,007666).

Table 1 registration form rate of TB in the study group patients

The form of pulmonary tuberculosis	**Number of obs.**	
(Listed in descending order of frequency registration)	Abs.	%
Fibrocavernous	188	61.6
Disseminated	33	10.8
cheesy pneumonia	29	9.5
tuberculosilicosis	20	6.6
Cavernous	ten	3.3
Residual changes (long-term effects)	ten	3.3
infiltrative	6	2
cirrhotic	five	1.6
Focal	3	1
tuberculoma	one	0.3

Table 2 Proportion of acute and chronic progressive forms in the study group

Tuberculosis	**Number of obs.**	
	Abs.	%
Form a fibrous component, chronic	213	69.8
(Fibrocavernous, cirrhotic, tuberculosilicosis)		
Acute progressive form	68	22.3
(Disseminated, infiltrative, caseous pneumonia)		
Other forms	24	7.9

Table 3 Age groups of patients with pulmonary tuberculosis

Age group	**The range of years**	**Total, persons ***		**Husband people**		**Wives people**	
		abs.	%	abs.	%	abs.	%
young age	18-24	9	3	7	77.8	2	22.2
Early adulthood	25-35	34	11.1	20	58.8	14	41.2
The average adult age	36-45	61	20	49	80.3	12	19.7
Late adulthood	46-60	120	39.3	113	94.2	7	5.8
Elderly age	61-74	59	19.3	51	86.4	eight	13.6
senium	75-89	20	6.6	eight	40	12	60
centenarians	more than 90	2	0.7	0	0	2	100

Note: * - the age of the patient was unknown

Citation: Belosokhov MV, Kazachkov EL. Tuberculosis at the socialized patients without comorbidity in different age groups. *MOJ Immunol.* 2018;6(6):305–309. DOI: 10.15406/moji.2018.06.00249

Table 4 Frequency registration tuberculosis in age subgroups %

Tuberculosis	Group					
	18-24	25-35	36-45	46-60	61-74	75-89
Disseminated	22.2	14.7	8.2	9.2	8.5	22.7
Focal	-	-	-	1.7	1.7	-
infiltrative	-	-	-	0.8	8.5	-
cheesy pneumonia	22.2	5.9	14.8	10.8	5.1	-
tuberculoma	-	-	-	0.8	-	-
Cavernous	-	2.9	4.9	1.7	6.8	-
Fibrocavernous	55.6	76.5	70.5	68.3	42.4	31.8
cirrhotic	-	-	1.6	-	3.4	9.1
tuberculosilicosis	-	-	-	3.3	16.9	27.3
residual changes	-	-	-	3.3	6.8	9.1
(Long-term effects)						

Table 5 Frequency of TB registration forms according to the type predominant in the lung tissue reaction *

Tuberculosis	Group					
	18-24	25-35	36-45	46-60	61-74	75-89
	%	%	%	%	%	%
	(Abs.)	(Abs.)	(Abs.)	(Abs.)	(Abs.)	(Abs.)
acute progressive	44.4	20.6	23	20.8	22	22.7
shape	(four)	-7	-14	-25	-13	(five)
Form a fibrous component	55.6	76.5	72.1	71.7	62.7	68.2
(Fibrocavernous, cirrhotic, tuberculosilicosis)	(five)	-26	-44	-86	-37	-15
Forms with kavernizatsiey	55.6	79.4	75.4	70	49.2	31.8
(Cavernous, fibrocavernous)	(five)	-27	-46	-84	-39	-7

Note * - in parentheses are absolute values of the Group

Table 6 Some characteristic pulmonary tuberculosis in age groups %

Characteristic	Group					
	18-24	25-35	36-45	46-60	61-74	75-89
Bilateral localization	88.9	79.4	78.7	79.8	72.4	72.7
The presence of screenings	100	82.4	86.9	75.8	71.2	77.3
bacterioexcretion	100	94.1	93.4	88.3	80	72.7

Conclusion

The main proportion of patients with complete socialization was represented by men of late adulthood without comorbid diseases. The most common was a fibro-cavernous TB. Clinical determines the duration of the last hospitalization and was associated with the experience of TB. Distribution of TB observations in the city was due to their distance to the city-forming industrial enterprises and highways. Number of observations acute progressive forms, unlike the chronic form was not related to the distance from boundaries of large industrial plants. Patients with both those and other forms mainly resided near major highways. Overall, the process was bilateral in nature, apparently, due to acute forms, in which the involvement of the second lung was detected more frequently. In all forms often recorded verhnedolevaya localization. In the majority of cases have been reported in the screenings parenchymatous organs, thus in observation of acute screenings frequency was higher. The disease is almost always accompanied by bacterial excretion. Lethal outcome advancing, mainly from cardiopulmonary failure and cachexia. Among patients with acute forms most developed swelling of the brain, whereas in patients with chronic forms it was found more frequent fatal pulmonary hemorrhage. Age groups did not differ in most of these characteristics with the exception of TB increased frequency of acute progressive forms in young patients. With increasing age, the patient tended to reduce the frequency of registration bilateral lung lesions, screenings in the internal organs, bacteriological, and cachexia. With increasing age of the patients showed a tendency to decrease in forms characterized by a predominance alterative component of the inflammatory process and formation of cavities in the lungs. Thus, the difference of TB patients from different age groups, as described by various authors. In our opinion, due not tuberculous lesions of the lung, and diseases that form the background of comorbidity. Clinical form of TB is often related to the patient's home and is due to appear, immunosuppression due to exposure to harmful factors, emerging as a result of vehicular traffic and industrial production. For the analysis of pulmonary TB should be used as a monitoring TB control group described the group of persons with a full socialization and zero comorbid background, in particular, do not have a drug and alcohol dependency, diabetes, HIV and lung carcinoma. The study of the characteristics of TB in the aspect of its current phase-the progression of acute and chronic - provides a great opportunity for the analysis of disease.

Acknowledgments

None.

Conflicts of interest

The study was conducted without the participation of sponsors. All authors are familiar with the final version of the manuscript, and are fully responsible for its content. The authors express their gratitude to the Head of the Laboratory of Ecological Genetics FGBUN "Institute of General Genetics. Vavilov "RAS, Doctor of Biological Sciences Rubanovich AV for the methodological assistance provided in the preparation of the article. The study was performed without any sponsorship. Authors thank the head of the laboratory of ecological genetics of FGBUN "Institute of the general genetics na NI Vavilov" RAN Dr.Sci.Biol. Rubanovich AV for the methodical help by preparation of article.

Reference

1. Bubochkin BP . Tuberculosis in young adults: the author's abstract dis. *Doctors of medical sciences*. 1993.

2. On the infectious and parasitic diseases in the Chelyabinsk region in 2016. *Inf byulleten Chelyabins*k. 2016
3. Goldstein VD. Pulmonary tuberculosis in elderly and senile age. *M Binom*. 2013.
4. Fingers MA, Kovalenko BL, Anichkov NM. Guide biopsy-sectional course. *Tutorial M Medicine*. 2002.
5. Tsygankov VA, Zharkov SL. Classification and systematization of the working population by age groups. *Omsk Scientific Bulletin*. 2009;4(79):67–69.
6. Harang L, Stsemeni K. Pathology of Tuberculosis in the elderly. *M Medicine*. 1978;82(3):602–606.

Citation: Belosokhov MV, Kazachkov EL. Tuberculosis at the socialized patients without comorbidity in different age groups. *MOJ Immunol.* 2018;6(6):305–309. DOI: 10.15406/moji.2018.06.00249