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The influence of the season on the community-acquired pneumonia incidence in the military

The medical histories of regular and contract service military men with community-acquired pneumonia treated in the pulmonary department of Branch № 1 FSI "321 OVKG," the Health Ministry in Novosibirsk in 2003-2005 were analyzed. Seasonal incidence of pneumonia in soldiers was found out: those in active service more often had pneumonia in winter and summer seasons of the year (January, May, June and July), the contract – more often in the winter and autumn (January, September and October).

Keywords: pneumonia, soldiers, seasonality.

Introduction. Community-acquired pneumonia – is one of the most common respiratory infections among military men. A.B. Belevitin and co-authors (2009) note the tendency of infection to rapid and heavy spread with the coverage of a considerable part of the staff for a short period of time that is the particularity of the modern epidemic process in case of community-acquired pneumonia in military groups (first of all among recruits). [1]

They distinguish year-round, seasonal and flare morbidity with community-acquired pneumonia in military men. Year-round morbidity appears in persons with low immune resistance inside military group or out of it in case of the contact with highly virulent strains of triggers. [1,6].

According to different authors, the analysis of the annual dynamics of the morbidity with pneumonias in conscripts showed that its growth began in October, mainly due to persons who had arrived in May. And in November with arriving of autumn reinforcements there is the excess of maximal year-round level. [3,4,5,7,8]. Herewith the most morbidity with community-acquired pneumonia is marked through 2-3 weeks after the arriving and reaches its maximum in 1-2 months depending on internal particularities of military group. [1,3,5].

Seasonal prevalence of the development of the disease has a great significance in community-acquired pneumonia that corresponds to the time constraints of the conscription in the Armed Forces of the Russian Federation, it means spring and summer conscription of recruits. [3,4,5,7,8]

There is a trigger moment of the activation of the epidemic process in military groups. It's the factor of "mixing" personal staff in the period of arriving of new recruits. It is this factor that according to findings of many authors "contributes to activation of the mechanism of transmission of pneumotropic triggers, the increasing of number of their carriers in the group, the increasing of virulence of pneumococci and other causative agents due to the passage among servicemen with low immune resistance". [1,6,8]



According to literature marked seasonal morbidity is noted in such groups where there is their significant renovation: educational, formed once again subdivisions and departments, military contingent in districts of states of emergency and armed conflicts. [1]

In many servicemen the development of community-acquired pneumonia is preceded with acute respiratory viral infection, the most morbidity is registered in the first 2 months after the conscription. [2,3,4,5]

So, the morbidity with community-acquired pneumonia among servicemen is an actual problem of the military public health.

The purpose of research is to study the rate of pneumonia in conscripts and servicemen on contract depending on the season.

Materials and Methods:

It was analyzed case histories of 1449 patients with community-acquired pneumonia being treated in the pulmonological department of the Branch № 1 of the FSE “321 DMCH” of MD of the Russian Federation in Novosibirsk in 2003-2005. There were 1425 male patients at the age from 16 to 86 and female patients (24) at the age from 24 to 90.

Pensioners composed 68 (4,6%) from 1449 examined patients, 25 (1,7%) – family members of servicemen. Due to that fact that during examination these two categories of patients were not servicemen and had less risk factors, they were not included in the research. Also it was excluded women on contract service – 8 (0,5%) and military men on admission who didn't have roentgenologic symptoms of pulmonary infiltration syndrome – 143 patients (9,8%).

So why 1205 (83,1%) of general amount of treated patients both conscripts and military men on contract were included in the research.

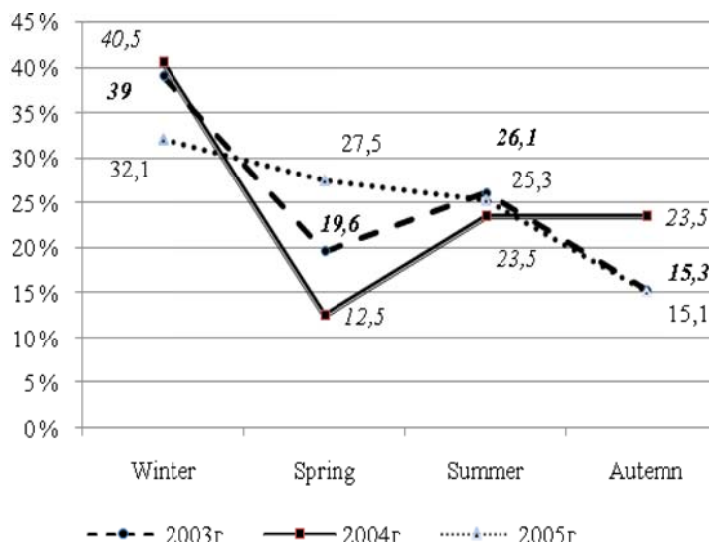
Due to the possible influence of the risk factors on the development of pneumonia connected with conditions of service considerably differentiated in conscripts, soldiers, cadets and officers all patients included in this research were divided into two groups.

In the main group there were conscripts – 2 years of service – 971 patients (80,6%), and in the comparative group there were military men of contract service (warrant officers and officers)- more then 2 years, and cadets – with 5 years of service – 234 patients (19,4%).

During the research we estimated the frequency of admission to the in-patient department both conscripts and servicemen on contract depending on the month and season of the year.

Results of research.

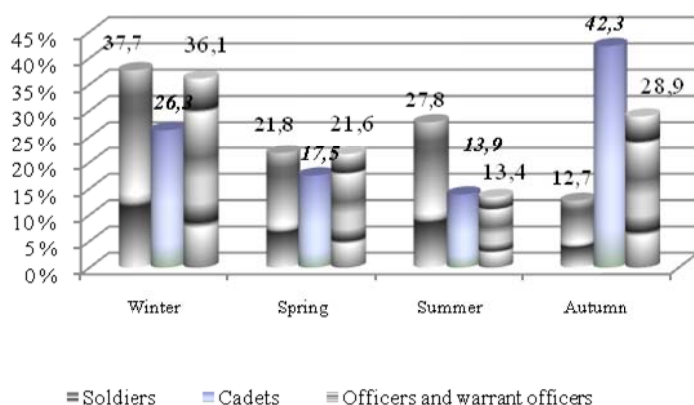
For all period of observation the rate of manifestation of community-acquired pneumonia in military men in winter season was 36,6%, spring season – 21,3% and autumn season – 17,3%.



Including: in 2003 in winter period – 39% cases, in summer – 25,3%, in spring – 19,6%; in 2004 in winter – 40,5% cases and with the similar frequency in summer and autumn – 23,5%, in 2005 in winter – 32,1% cases, in spring – 27,5% and in summer – 25,3% (pic. 1).

Picture 1. Rate of community-acquired pneumonia in examined patients according to seasons

It was studied the frequency of the development of pneumonias among examined military men in different periods of the year.

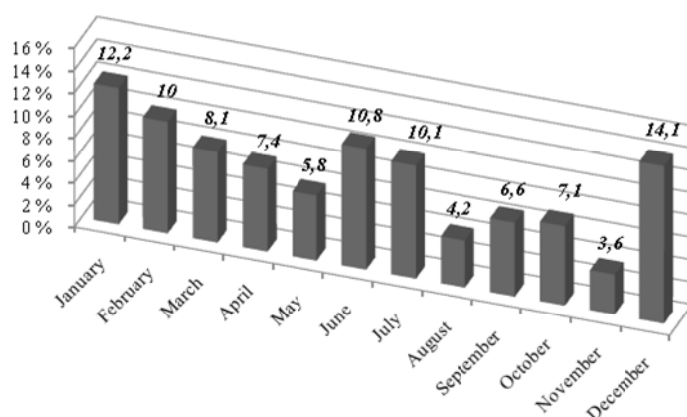


It was revealed some differences inside the comparative group in frequency of the development of the pneumonias. So cadets, officers and warrant officers were ill more often in autumn and spring, but among cadets the frequency of registration of community-acquired pneumonia in these periods was considerably higher.

Picture. 2. Rate of community-acquired pneumonia in servicemen according to the seasons.

Soldiers were ill more often in winter and summer periods. (pic. 2).

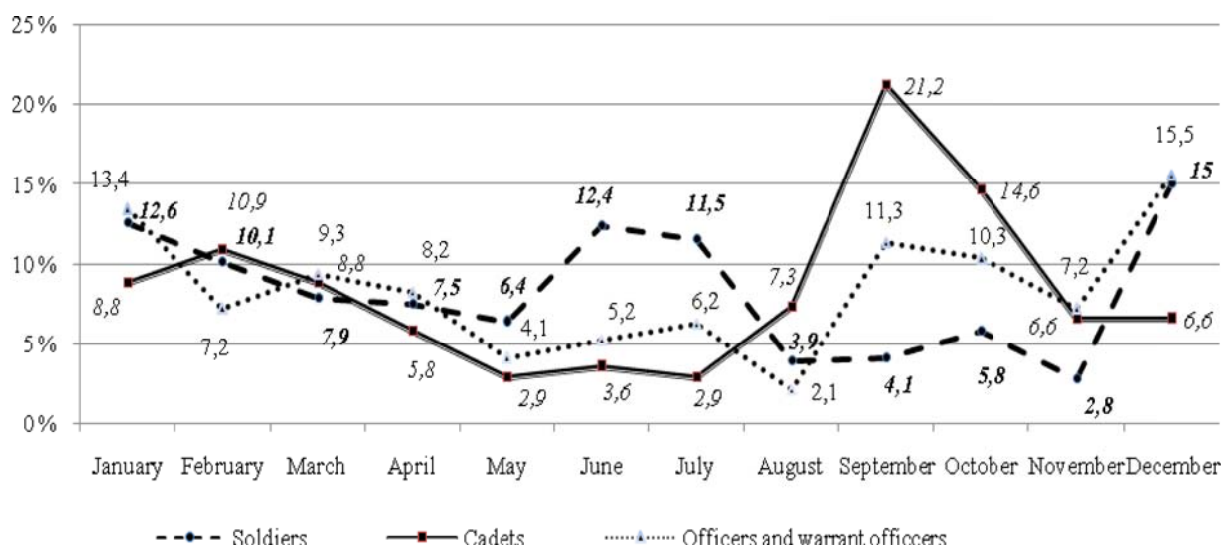
Taking into account the difference in compared groups according to the season of admission to the in-patient department it was analyzed months of the admission to the hospital. (pic. 3)



Picture 3. Morbidity with community-acquired pneumonia in examined patients according to months.

From the picture we can see that servicemen were admitted for treatment more often in winter months that composed 14,1% cases in December, 12,2% - in January and 10% - in February; less seldom they were ill in June and July – 10,8% and 10,1% respectively.

It was determined the differences according to months of the admission to the in-patient department among servicemen in the comparative groups. (pic. 4)



Picture 4. Morbidity with community-acquired pneumonia in servicemen by months

From the picture we can see that soldiers were ill with pneumonia more often in winter and summer months: in winter it was January – 12,6% cases, in February – 10,1%, in December – 15%; in summer – 12,4% in June, 11,5% - in July. Cadets, officers and warrant officers were ill more often in winter and autumn months: cadets were ill in winter – 8,8% - in January and 10,9% - in February; in autumn – 21,2% - in September and 14,6% - in October. Officers and warrant officers were ill in winter in January – 13,4% and 15,5% - in December, in autumn – 11,3% - in September



and 10,3% - in October.

Conclusions: 1. It was determined a seasonal morbidity with community-acquired pneumonia in military men.

2. Conscripts are ill more often in winter and summer seasons (January, December, June and July), but cadets, officers and warrant officers – in winter and autumn seasons (January, September and October).

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