



Frequency of Brucellosis Dissemination on the Southern and Southern-East Region of Albania

KEYWORDS

brucellosis, epidemiology, serologic method, zoonoses.

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ABSTRACT

*Brucellosis is a bacterial infectious disease caused by *Brucella melitensis*. The infection from *Brucella melitensis* is a known fact and one of the most important challenges to human health, having big economic and financial consequences, especially in countries where the disease is endemic, such as Albania. In the last 20 years the frequency of the spread of zoonoses in Albania is increasing in a considerable way, especially in the southern and south-eastern region where it is more vulnerable. The identification of brucellosis is made through the agglutination test and A.W Right test. The knowledge regarding the frequency of brucellosis, the time, space and age dynamics and the ways of its transmission are the purpose of this study. The ratio between the total number of the population and the number of those infected with brucellosis reaches an average of 68.69 cases per 100 000 inhabitants, which is about 10-12 times higher than some Mediterranean regions.*

INTRODUCTION

Brucellosis is one of the common bacterial zoonosis caused by organisms belonging to brucella sort. In Albania, the brucellosis has an early origin (16). The first case in humans was discovered in 1925 in the district of Gjirokastra (1). We undertook to carry out this study for the period from 2005-2009, based on the fact that Gjirokastra district currently remains the most problematic district all over the country, in terms of brucellosis infection in animals and in humans, but also because of the fact that brucellosis is ranked being the first bacterial infectious disease. The highest frequency of brucella that causes brucellosis in our country is *Brucella melitensis* (7).

The brucellosis infection is taken through direct ways i.e. from the contact with the infected animals (the shepherds, veterinarians, laboratory employee, meat, milk, cheese and skin processing employees) and/or indirect way i.e. from the consumption of livestock products and contaminated by-products (9, 15).

The study is important to present the brucellosis due to the health and economic impact it has. Out of the researches conducted in the recent years there has resulted that the infection is spread not only to the livestock and people, but also in the environment, due to the non functioning of the technical structures that keep the disease under control, such as:

- inefficient functioning of the veterinary service structures;
- lack of control of dairy products;
- uncontrolled movements of livestock within the country and abroad.

For these reasons, in epidemiological terms, the brucellosis infection is a social risk, as the number of people with brucellosis is growing (10, 14, 15).

The purpose of this study is to present as much data as possible, related to this disease.

The epidemiological surveillance of brucellosis is of high importance, especially on the endemic countries, where Albania is included.

Material and Methods Measures taken

The sampling for the bacteriological examination was taken from the individuals who after the checking resulted to have brucellosis (1).

The identification of brucellosis is made through the agglutination test and A.W Right test. During the analysis both methods were used at the same time in order to get more accurate result.

Evidence of agglutination

We spill with a pipe some drops of serum divided in two parts over a glass (1; 4, 7, 11). We pour in one of them some drops of antigen from *Brucella melitensis* or rose Bengal. The analysis is carried out under the temperature of 22-27°C and the result is defined after 2 minutes. This method is fast but not very accurate.

Wright Test

The proof of A. Wright is carried out to get a more accurate result by determining the agglutination amount in the serum of patients. In two rows of tubes it is done the serum dilution starting from a dilution of 1:40 in the first tube reaching to 1:1280 in the ninth tube. Whereas the tenth tube serves to check the antigen, where is not poured the diluted serum (1, 4, 11, 19).

In all the test tubes with the diluted serum is poured 0.25 ml antigen. The antigens are kites produced at the Institute of Hygiene in Tirana. The test tubes are incubated in the thermostat at a temperature of 37°C for 24 hours (1, 2). In cases where the antibodies are present the process of agglutination occurs and there happens a positive reaction.

The test tubes without clarity and without agglutination are considered as negative.

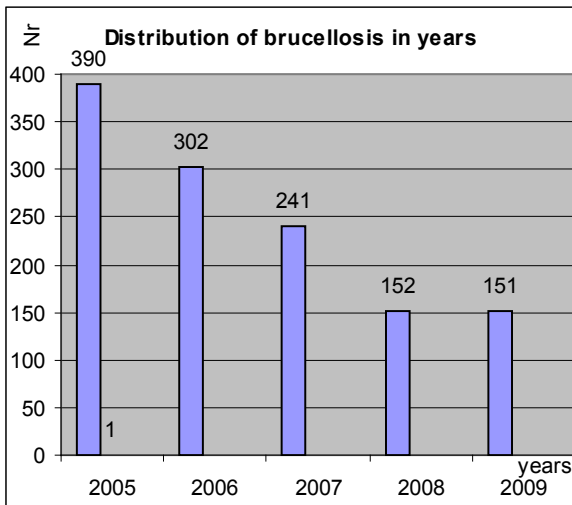
Results

Descriptive study

During the years 2005-2009 in the South and Southeast Region (Gjirokastra, Tepelena, Përmet, Korça), of Albania, there have been isolated and identified 1236 cases of brucellosis in sick people and carriers (1).

The infected individuals have displayed the following symptoms considered to be major: fever (100%), chills (100%), night sweats (94%), fatigue (94%), irregular sleep (81%), headache (68%), anorexia (81%) and irritability by toxic (92%) (5, 9, 10).

Figure 1. Distribution of brucellosis in years.



Analytical study

All the studied cases (1236) are analyzed in a detailed way, in order to determine their ratio compared with the contaminated animals, the ways of obtaining the infection, time of infection, recognition of the nature and dynamics of the spread of brucellosis.

The results show that Brucellosis has a high frequency during the spring, (7, 8). In Chart No. 2, the critical point on having more infection is during May. The dynamics of the infection is favored by the impact of the climatic factors.

The identified cases show that the higher rate of infection is attributed to persons who have direct contact with the contaminated animals, identified on the basis of two indicators that are the profession of the people, displayed by the settlements of the infected persons and their age (Chart No. 3,4), which shows that with the passing of the years, the percentage of the infected persons, being town residents is firstly increased and latter slightly decreased (according to the years in this study 13.3%, 16.9%, 20.7%, 15.8%, 14% due to the migration of infected persons in an individual way, but also the whole family from the village to the town, over the years 2006-2007), in addition to the consumption of the contaminated products by not having enough information on the epidemiology of brucellosis.

Figure 2. The dynamic of brucella in months.

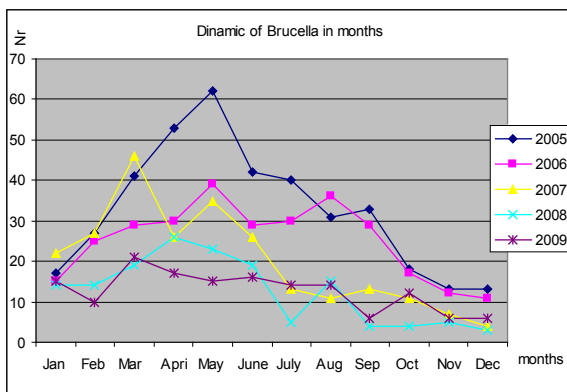
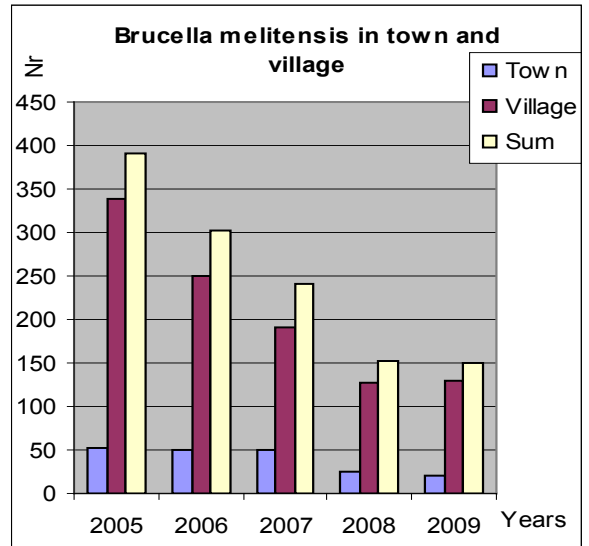


Figure 3. Distribution of brucella melitensis in town and village.



In the analysis, about 90% of the infected people living in the city are contaminated indirectly from the consumption of livestock products and by-products. The characteristic for such infected individuals is their random distribution by sex and age groups, which is mostly related with their taste, by having a light predominance of the male and advanced ages. (17,18,19,20), (52% are male and 48% female). The infected people, who live in the villages are in a higher percentage (in years: 87.7%, 83.1%, 79.3%, 84.2% and 86%), where the main contamination factor is the direct contact with the infected animals. The changes in the frequency of the infection ($\pm 4.6\%$) are related to the internal migration process from the village to the city. 7.2% of the infected persons ($ds = \pm 1.89$) do not have any contact with the infected animals but they have used their contaminated livestock products and by-products, while 92.2% ($ds = \pm 0.87$) have been directly contaminated.

Figure 4. Dynamics of distribution of brucellosis according to age.

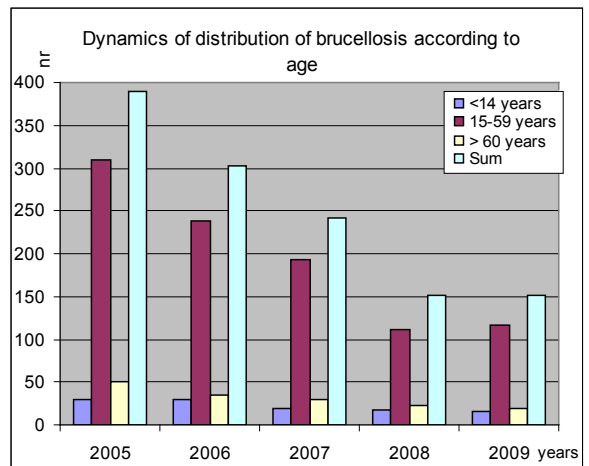
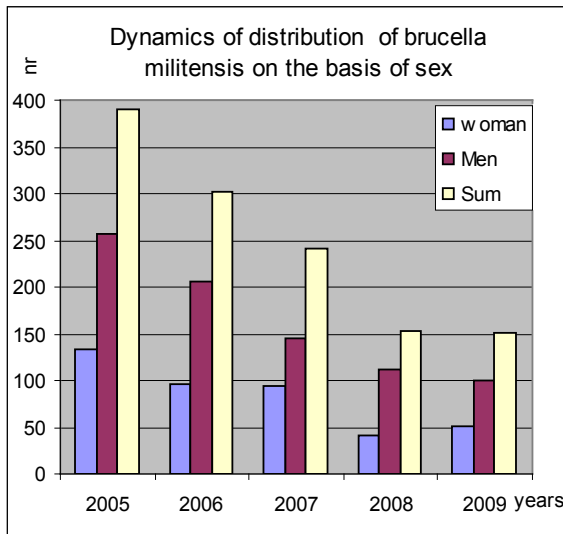


Figure 5. Dynamics of distribution of *Brucella melitensis* on the basis of sex.



DISCUSSIONS

The region chosen to carry out this study includes approximately 359,875 (environmental report) inhabitants. This is a region in which is carried out an intensive agricultural activity with about 291,700 sheep and goats. The rural population of this region constitutes 42% of the population. The ratio between the total number of the population and the number of those infected with brucellosis reaches an average annual figure of 247.2 cases or 68.69 cases per 100 000 inhabitants, which is about 10-12 times higher than some Mediterranean

regions (Spain). The main source of infection is the contaminated animals as a result of the development of the livestock out of the veterinary control and from the non elimination of the infected animals (6, 10, 14, 15, 17). Another important factor is the manipulation with the infected organisms and products and their consumption by the local people and nationwide, expanding this way the area of the spread of brucellosis.

RECOMMENDATIONS

After the completion of the study, it is concluded that there are identified the potential sources of the brucellosis infection. The precautionary measures to eliminate any possible spread of the infection are:

- To coordinate the work of the medical and veterinary institutions.
- To withdraw from the market of all the contaminated livestock products and sub-products
- To eliminate the infected animals.
- To programme the livestock vaccination.
- To promote the health activities among farmers, producers and consumers
- To put into life the measures that will improve the communication and exchange of information between the hygiene-sanitary services and the veterinary service.

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