Brucellosis in the Republic of Serbia – The Epizootiological Situation

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Abstract

Aim. To present seroprevalence data of the brucellosis in livestock in Serbia.

Methods. The classical serological diagnostic methods were used: Rose Bengal (RB) for screening, Complement Fixation Test (CFT) and Indirect ELISA as confirmatory tests.

Results. Brucellosis in livestock is present in some regions in Serbia. During the period from 2003 to 2007, the prevalence of brucellosis in sheep was 19.5%-73% (26.8%), in goats 0%-67.1% (35%), in cattle 0%-36.1% (4.8%), and in pigs 0%-16.4% (5.8%). During 2004 new foci of brucellosis in livestock and humans were discovered in the territories of Srednjebanatski and Zapadnobacki counties. By the end of 2004, new foci were registered on the territory of 10 communities from five counties and brucellosis cases were diagnosed in 12 settlements. Actual epizootiological situation during the period from 2007 to 2009 in Serbia was additionally complicated both by the increased number of registered cases and remarkable number of newly affected areas.

Conclusion. Brucellosis in Serbia during the last decade shows some specific characteristics such as rapid spread and easy transmission, and persistence. Outbreaks in new localities and increase of human cases were observed. The increase of brucellosis in the southern part of Serbia was facilitated by the border porosity and lack of control of animal movements toward Kosovo and Metohia territories and migration of infected sheep.

Introduction

Brucellosis is an ancient disease in the relationship between humans and animals. Hipocrates described symptoms which probably relate to the disease. On the Greek island of Tasos, humans had had prolonged fever which lasted from spring to winter. This illness was also described by other authors. Brucellosis research began at the end of 19th century on Malta (the first name of the disease was Malta fever) when English soldiers were infected by using raw milk of goats. The English doctor, Marston, was the first to describe brucellosis in 1861 as a separate disease.

The primary hosts of brucellosis are cattle, sheep, goats and pigs. Other domestic and wild animal species may be infected by one or more of the three classical species of the genus Brucella (B. melitensis, B. abortus, B. suis). Rabbits may be a reservoir for biotype 2 B. suis. Humans might be accidental hosts but their importance in further spreading and maintaining the disease is almost negligible. The presence of Brucella sp. in Serbia was confirmed by the isolation of B. suis from pigs (Pozarevac, 2001) [1]. The disease is still present and registered in...
In the former Yugoslavia, brucellosis was reported for the first time in 1947 in the district of Istra. After few years the disease was eradicated. It reappeared in the 1960s, in Macedonia, probably through sheep imported from Israel. By the end of 1970s, it had spread to most territories of Macedonia, Kosovo and Metohia and South Serbia. In the 1990s, as a consequence of armed conflicts and uncontrolled dislocation of infected sheep from Kosovo and Metohia territory, it spread to central and north Serbia [4, 5].

Methods

The classical serological diagnostic methods were used: Rose Bengal (RB) for screening, and the Complement Fixation Test (CFT) and Indirect ELISA, for confirmation on positive samples test. For control and eradication program “diagnose and remove” approach was introduced for infected animals to be slaughtered. It means that serologically positive sheep and goats were killed. Vaccination of cattle and small ruminants was prohibited.

Results

During 2000/2001 a brucellosis epizootie in South Banat in Serbia was observed and probably linked to a sheep flock that was relocated from Kosovo territory, in 1997-1998. The disease was diagnosed in animals following a case in a farm worker. An increase in cases of brucellosis in sheep occurred in 2000/2001 when several people in different areas of Banat were affected. A control action using serologic tests in all susceptible domestic animals in the area was conducted and cases were found in sheep, goats, donkeys, cattle and dogs. Seropositive cases were found in 5 cows, 476 sheep, 62 goats, 4 donkeys and 11 dogs. All seropositive animals were slaughtered. Seventeen people in this area were infected. It means that serologically positive sheep and goats were killed. Vaccination of cattle and small ruminants was prohibited.

Brucellosis in humans

The presence of brucellosis in humans is in direct correlation with the disease distribution in domestic animals (especially goats and sheep), as well as with habits of keeping domestic animals, the way of feeding them, low hygienic standards and other socio-economical factors. Brucellosis epidemiological situation in the world shows, by the WHO estimates, that over half a million people are infected by brucellosis annually. In Europe about 20,000 cases are reported, mostly in the Russian Federation and Mediterranean countries [6, 7]. In former Yugoslavia, the disease was present in Slovenia, Istra, Macedonia, and in Serbia where the majority of cases were found in Kosovo and Metohia and recently in South Serbia [8].

Data analysis reveals that the epidemiological situation in the Republic of Serbia was good until 1980s. The critical increase in cases was in the territory of Kosovo and Metohia where the disease was present since 1979 and the number of cases was continuously increasing until 1991, when 241 cases were reported. During 1990s, there was also worsening of the epidemiological situation in Central Serbia, while the situation in Vojvodina remained constant until the end of the 20th century (Figure 1).
The epidemiological data showed that brucellosis in Vojvodina appeared mainly as sporadic and single cases. During the period from 1951 to 1970, a total of 40 human cases were reported, with the highest number of 18 in 1965 [9]. From 1971 to 1999, brucellosis was not diagnosed either in humans or animals, and Vojvodina was seen as a brucellosis-free territory.

After almost a 30 year brucellosis-free period from 1971, brucellosis appeared again in Vojvodina. In 1999, brucellosis was diagnosed in two farm workers in South Banat county area. During the period from 1999 to 2004, because of uncontrolled relocation of infected herds (illegal trade, nomadic livestock herding) brucellosis foci were continuously spreading. During the poor implementation of measures ordered by the veterinary service, in the few subsequent years, brucellosis foci were dispersed to neighboring countries where animals use the same pasture for grazing. Also, workers exposed to infected animals, and consumers of milk products (cheese processed from unpasteurized milk) were infected. As reported from the statements of the patients, sheep were purchased in South of Serbia but veterinary inspection showed that their origin was Bosnia and Hercegovina. Apart from sheep, brucellosis was proven in other animals on farm (pigs and dogs). The institute for health protection in Pancevo conducted wide serological and epidemiological studies which included over 1000 exposed workers. Based upon clinical signs, the epidemiological data and results of serological tests, 21 brucellosis cases were discovered in this area. Since that time brucellosis has been present in South Banat county and new cases are appearing in other surrounding counties (Table 1). At the end of 2003, jurisdictional veterinary service has discovered newly infected sheep flocks in Sremski and South Backa’ county. At that time, only a few persons from those areas were infected but the final diagnosis was in the beginning of the 2004. During 2004 new foci of brucellosis in humans were discovered in the territories of Srednjebanatski and Zapadnobacki counties. By the end of 2004 new foci were registered in the territory of 10 communities from five counties and human brucellosis cases were diagnosed in 12 settlements (Table 2).

The true epizootiological situation in the Republic of Serbia was complicated during the period from 2007 to 2009 by increased number of registered infected animals and higher number of newly infected areas (Table 3).


Table 3: Epizootiological situation in Serbia during the period from 2007 to 2009.

In 2007, brucellosis was reported in cattle, goats and sheep in 9 epizootiological areas with 19 foci and 59 diseased animals (Figure 2A). During 2008, brucellosis was reported in 11 epizootiological areas with 35 foci and 83 diseased animals: brucellosis in cattle was reported on 13 localities with 16 diseased cows; in sheep and goats the disease was proven in 20 foci with 64 diseased animals; brucellosis in pigs was reported in two...
epizootiological areas, in two farms and in three diseased animals (Figure 2B). The total number of diseased animals in 2007 increased to 83. During 2009 (data until 30.09.2009.), there was a rapid increase in diseased sheep and goats in South Serbia in the border region with Kosovo and Metohia territories. An increase in infected sheep and goats was reported (157) in three localities, while the disease in cattle was reported separately in two cases of 2 animals (Figure 2C).

Discussion

An analysis of data for 2009 shows that brucellosis is increasing in the South Serbia territory (Bujanovac, Vranje). Since this is a border territory with those of the Republic of Macedonia and Kosovo and Metohia, where vaccination against brucellosis is implemented with alive attenuated vaccine, monitoring and analysis of the origin of seropositivity in animals in south territories of Serbia should remain. Similar findings can be expected on the western borders toward Bosnia and Herzegovina, where during last six months vaccination was also conducted. Porous borders, tradition of cattle breeding, nomad livestock herding and religious customs surely affect on presence of vaccinated animals in surrounding unvaccinated territories.

Conclusion

The appearance of brucellosis in the Republic of Serbia during the last decade is reflective of its characteristics such as rapid spreading and persistence of infection. Brucellosis in the Republic of Serbia still represents one of the most significant bacterial zoonoses. New outbreaks and an increase in the number of infected animals and humans are conclusive that brucellosis in Serbia is increasing.

During this period, regardless of radical methods of eradication, uncontrolled relocation of infected animals has resulted in the brucellosis spread to the surrounding territories, of which was observed by the increase in numbers of infected animals yearly. The spread of brucellosis in the south part of Serbia was assisted by the lack of control of animal movement from Kosovo and Metohia territory and migration of infected sheep flocks.

High technology and methodology implementation and communication, has motivated development of mass-casualties programs and for developing levels of infectious diseases monitoring [10-12]. Based on previous data on brucellosis in the Republic of Serbia, there is a need to fulfill new OIE and EU standards and challenges aimed to survey and risk assessment for appearance and spread of infectious diseases, including brucellosis. There is a need for continuous training and elevation of professionalism and efficiency. An appropriate control and eradication program should increase veterinary management of Serbia, cooperation among relevant sectors and services and cooperation with surrounding countries. It would increase efficiency on their competencies and practicing veterinary standards as key points and recommendations given in OIE’s Codex of animal health.

References

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