

An up-date on Progress and Challenges in Control of Brucellosis

Vaso Taleski

Faculty of Medical Sciences, University „Goce Delcev“ Shtip, Macedonia

Introduction

Brucellosis exists in R. Macedonia since 1980, also reported in all neighboring and almost all European countries with significantly different incidence.

Brucella melitensis biotype 2 was confirmed as etiological agent in R. Macedonia.

From 1980 to 2015, almost 12.000 cases of human brucellosis were reported (highest number of 907 in 1992).

In 2008, national control strategy was completely changed from „test and slaughter” to vaccination of small ruminants (sheep and goats) with Rev 1 vaccine.

Aim

To give an up-date of current epidemiology situation of brucellosis in Republic of Macedonia, a small country with endemic areas, its experience and progress in control of brucellosis since implementation of vaccination of small ruminants.

Additional aim is to present some results of recent molecular genotyping study.

Material and Methods

Review and presentation of official data on epidemiology of brucellosis after several years of experience of new national strategy based on implementation of vaccination of small ruminants with Rev 1 vaccine, applied intraocular.

Some interesting results of recently conducted genotyping research are presented.

Results and Discussion

Implementing vaccination for small ruminants (sheep and goats), as a new national control strategy instead former strategy of „test and slaughter”. Country was divided in three vicinal regions: of high, middle and low (free of brucellosis) prevalence. PCR – RLFP was used as a method for discrimination of Rev 1 strains from infectious/field strains, based on mutation of *rpsL* gen.

Implementation of new strategy followed with significant results in decreasing of epizooty in animals and human morbidity, in a relatively short time. Numbers of human cases of brucellosis were continuously decreasing as follows: 287, 167, 107, 94, 47, 35 and 20 in 2009, 2010, 2011, 2012, 2013, 2014, and 2015 respectively.

Experiences from some other countries indicate re-emergence of animal and human brucellosis after ceasing the brucellosis vaccination control programs.

Based on results of molecular methods AMOS PCR and rt PCR as methods for species typing, and MLVA-16, MLVA-8 methods for genotyping. *Brucella melitensis* and *Brucella abortus* (for the first time in Macedonia) were confirmed. MLVA-16 system identified 22 genotypes of *B. melitensis* and 2 genotypes of *B. abortus*.

Conclusions

Control of animal brucellosis is imperative for control of human brucellosis, as a major task for well-organized veterinary service, needs stable long term financial support, institutional cooperation, collaborations with stock breeders and regional cooperation.

New *brucella* strains and new reservoirs are continuously challenge and brucellosis must not be neglected even in countries which achieved satisfactory control on brucellosis.

Introducing molecular methods for detection and genotyping of *Brucella spp.*, may significantly increase efficacy in detection of new reservoirs and epidemiological connection.

Key words: *B. melitensis*, *B. abortus*. Brucellosis, control, epidemiology, genotyping, MLVA-16, PCR, Rev1 vaccine.

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