Incidence of reproductive pathogens in breeding pigs population on selected farms in Republic of Srpska

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Abstract

The aim of the study was to determine the incidence of reproductive pathogens in the breeding pig population on selected farms in Republic of Srpska. The survey included a total of 11 farms from the Republic of Srpska (Bijeljina - 4, Gradiška - 3, Prnjavor - 2, Foča - 1, Ljubinje - 1), from which a total of 50 blood samples of sows and boars were taken. All samples tested were serologically negative for the causative agents of leptospirosis and brucellosis. The presence of PRRS virus was detected in 54.55% of farms tested and 40% of blood samples tested, circoviruses on 81.18% of farms and 66% of blood samples tested, and Aujeczcky disease virus was found on 9.09% of farms and 10% of blood samples tested. The results of this study indicate the presence of mixed infections with these pathogens, resulting in a vague clinical picture in pigs on the tested farms, as well as the need for systematic monitoring and active surveillance of these diseases, with the aim of reducing the negative impact of their presence and spread on the productive and reproductive parameters of pigs.

Introduction

Reproductive diseases in breeding boars and sows are highlighted as an important limiting factor for the promotion of pig production in the Republic of Srpska, since the full reproductive potential is not achieved (repeat breeding, abortions, decreased litters, increased piglet mortality, reduced number of fatteners per sow on a yearly basis, lower quality of ejaculates, etc.), which results in poor overall production results and a lack of competitiveness in domestic production. These diseases represent an important health and economic problem in pig production on industrial farms, both in the reproductive herd and in the rearing of piglets and fattening. The results of previous research, conducted by the Veterinary Institute of the Republic of Srpska "Dr Vaso Butozan" Banja Luka, indicate the presence of numerous pathogens in the population of domestic pigs, some of which can cause reproductive problems, such as viruses of the reproductive-respiratory syndrome (Porcine Reproductive - Respiratory Syndrome, PRRS), Circovirus (Porcine circovirus-2), Aujeszky's disease virus, as well as bacteria from the genus Leptospira and Brucella. In view of the above, the aim of study is the monitoring of the presence of pathogens important for the reproduction of pigs, that is, the causative agent of leptospirosis, brucellosis of the reproductive-respiratory syndrome of pigs, circoviruses and Aujecki's disease, in the population of domestic pigs on farms and reprocenters in Republic of Srpska.

Material and methods

The survey included a total of 11 pig farms from the entire Republic of Srpska (Bijeljina - 4, Gradiška - 3, Prnjavor - 2, Foča - 1, Ljubinje - 1), on which a completely rounded production system is present, from breeding sows, raising of breeding gilts and boars, to pig fattening. In order to gain insight into the incidence of reproductive pathogens in the breeding pig population in the field conditions, for the purposes of this research, higher-capacity farms which are selling the breeding animals and semen were selected, as well as those of particular importance for pig production in the given region (Herzegovina). Blood samples to test for the presence of reproductive pathogens (n = 50) were obtained from breeding sows and boars, according to the principle of a random sample, representative of a given farm, by v. cava cranialis puncture, in sterile vacuum test tubes without anticoagulants. After spontaneous coagulation at room temperature, blood samples were transported in a hand-held refrigerator to the Public Veterinary Institute of the Republic of Srpska "Dr Vaso Butozan" Banja Luka. After centrifugation and extraction of blood sera, the samples were serologically tested (ELISA, microagglutination, BAB test), for brucellosis, leptospirosis, PRRS, Circovirus and Aujeczsky's disease, and the data collected are presented in tables and charts.

Results and discussion

BRUCELOSIS AND LEPTOSPIROSIS

Caused by Brucella suis and different strains of Leptospira spp.
Both diseases have zoonotic potential, and are transmitted by direct contact, especially natural mating, so usage of artifical insemination decrease risk of transmission.
Included in national animal health monitoring programs (serological examination after abortions in sows, health monitoring of boars in reprocentres).
Main symptoms: abortion in sows, stillborn piglets, sterility in sows, orchitis in boars
Control: Brucelosis treatment is not allowed, no vaccine is avaliable, disease is eradicated by removal of positive animals and depopulation of farm.
Leptospirosis can be treated with antibiotics, there is commercial vaccine avaliable, it can be controlled by vaccination and implementation of biosecurity measures.
Our results: All examined blood samples (50/50, 100%) were serologically negative for both diseases.

PORCINE REPRODUCTIVE AND RESPIRATORY SINDROME – PRRS

Caused by PRRS virus, first described in 1992.
Spread by direct and indirect contact, mostly by semen for artificial insemination (boars do not have clinical symptoms, but spread virus through sperm).
Main symptoms: abortions in sows, stillborn, mumificated and avital piglets, repeat-breeder sows, subfertility in sows, decreased immunity, respiratory symptoms in piglets and fatteners (coughing, choking, pneumonia...), increased susceptibility to other infections, decreased growth rate ...
Control: There is no commercial vaccine avaliable in Republic of Srpska, detrimental effect of disease can be controlled by keeping good hygienic condition, control of secondary infections (mainly bacterial origin), and implementation of biosecurity measures. Breeding animals and semen for artificial insemination should be purchased from PRRS-free farms and reprocentres.
Our results: 54,55% (6/11) farms were positive, and 45,45% (5/11) farms were negative; 40% (20/50) of blood samples were positive, and 60% (30/50) were negative.

CIRCOVIRUS INFECTIONS

Caused by Circovirus (Porcine Circovirus – 2, PCV -2).
Disease is spread by direct and indirect contact, mostly by semen for artificial insemination, but also vertically (from sows to piglets).
Main symptoms: chronic wasting sindrome in piglets (Porcine Wasting Disease Sindrome, PWDS), with diarrhea and jaundice, pneumonia, dermatitis – nephropathy sindrome with skin lesions, decerased growth sindrome, circoviral pneumonia in piglets and fatteners, circoviral enteritis, circoviral reproductive disorders...
Control: There is commercial vaccine avaliable, disease can be controlled by keeping good hygienic condition, control of secondary infections (mainly bacterial origin), and implementation of biosecurity measures. Breeding animals and semen for artificial insemination should be purchased from Circovirus-free farms and reprocentres.
Our results: 81,82% (9/11) farms were positive, 18,18% (2/11) farms were negative; 66% (33/50) of blood samples were positive, and 34% (17/50) were negative.

AUJECZKY'S DISEASE

Caused by Aujeczky's disease virus.
Disease is spread by direct and indirect contact, can be transmitted by semen for artificial insemination.
Main symptoms: often can be present without symptoms, can cause abortions, stillborn, mumificated and avital piglets, respiratory and nervous symptoms in weaned piglets, respiratory symptoms in fatteners, gilts, sows and boars.
Control: There is commercial vaccine avaliable, disease can be controlled by keeping good hygienic condition, control of secondary infections (mainly bacterial origin), and implementation of biosecurity measures.
Our results: 9,09% (1/11) farms were positive, and 90,91% (10/11) farms were negative; 10% (5/50) of blood samples were positive (all from one farm), and 90% (45/50) were negative.

Conclusion

The results of this study indicate that mixed infections with the monitored viruses (probably other viruses besides the investigated ones are present) are present on examined farms, which results in an insufficiently clear clinical picture in the population of breeding and fattening pigs. The key points in controlling the presence of the investigated diseases are the creation of a systematic monitoring program for these diseases, ie their inclusion in the national animal health program for pigs, and the systematic control of the serological status of the breeding animals (especially boars, which are a source of infections spread by semen distribution). Additional measures that can contribute to reducing the adverse impact of the presence of these pathogens on the achieved production and reproductive performance of pigs on farms are the control of parasitic invasions, the improvement of hygiene and environmental conditions on farms, the establishment of farm biosecurity systems, as well as the control of movement of animals. The results of this research indicate a low level of knowledge and awareness among farmers about the importance of implementing preventive measures in controlling the presence of farm pathogens, so it is necessary to work on farmers' education in this regard in the future.