

Neosporosis in dairy herds in the Siemiatycki and Wysokomazowiecki county

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The protozoan *Neospora caninum* was not described until the 1980s. It turned out to be very similar to another common protozoan *Toxoplasma gondii*. Until now, this infection has been described as canine toxoplasmosis. It is now considered a separate genus. It is classified into the Apicomplexa subtype, Alveolata type. From an invasive point of view, this infection is referred to as heteroxenous coccidiosis. In the dog's final host, the protozoa *Neospora caninum* reproduce asexually and sexually in the intestinal epithelial cells. As a result, oocysts are excreted in the faeces. This is usually an asymptomatic process. In oocysts, further divisions (sporulation) take place in the external environment and then become invasive to intermediate hosts. These hosts are ruminants as well as dogs. Protozoa multiply in the tissues in an asexual manner (endodogenia). This leads to the formation of thick-walled cysts 100–110 µm in diameter in many internal organs. Tissue cysts and blood trophozoites are responsible for the clinical symptoms. Animals with an immature immune system (puppies, calves and fetuses) are particularly sensitive to their presence. The rapid spread of the infection in animal herds is influenced by the possibility of infection via the horizontal (infection with oocytes excreted by dogs) or vertically (in utero, via the intrauterine route). The biggest problems generating significant economic losses are caused by neosporosis in cattle breeding. In pregnant cows, it can cause abortions

or the birth of „weak” calves.

In young animals (calves and puppies), due to intrauterine infection, the infection is most often manifested by the lack of suckling reflex, limb paresis, laxity and muscle atrophy or paralysis. Adult animals do not show clinical signs of disease. In cattle herds, neosporosis is a serious problem affecting the dynamics of animal reproduction. The aim of the research was to obtain data on the occurrence, causes and effects of *N. caninum* invasion in one of the most dynamically developing dairy farming regions in Poland.

In the period from March to June 2019, the sera of 250 cows over 2 years of age from 20 dairy herds located in the Siemiatycze and Wysokie Mazowieckie county were tested with the ELISA test. A total of 1,315 cows and 1,014 heifers were kept in the studied herds. During sampling, an interview was carried out on the age of the animals, the presence of abortions, the presence of dogs on the farm, their presence in the cows' housing, methods of disposal of the placenta after delivery, purchase of breeding material, including imported ones, the age of the tested animals, the animal keeping system, the use of pastures and the average milk yield.

The *Neospora caninum* serum blocking version: P00510/02 Institut Pourquier test was performed strictly according to the manufacturer's recommendations.

Infection with *Neospora caninum* was confirmed

in 80 out of 250 tested animals (32%). Infected animals were confirmed in 15 of the 20 herds (75%) inspected. Prevalence in infected herds ranged from 10 to 100% (average 42%). The average age of the tested animals was 5.32 years. The average age of the infected cows is 5.68 years. Mean age of non-infected cows was 5.13 years. The following factors were confirmed as conducive to spreading the disease: purchase of animals from farms of unknown invasive status, keeping dogs on the farm with access to animal housing, lack of proper disposal of placentas released after giving birth, as well as a free-standing system of keeping animals.

In herds with a high prevalence of *Neospora caninum* infection, more frequent was the miscarriages and deliveries of „weak” calves. The presented research proves a relatively high risk of spreading neosporosis in dairy herds in Siemiatycze and Wysokie Mazowieckie poviats. This condition may be a factor influencing the dynamics of breeding development in this area. The presented research is a selected part of the cycle on neosporosis in Poland.

References available from the authors of the report.