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INTRODUCTION

Prion diseases are a group of transmissible spongiform encephalopathies (TSEs) affecting humans and animals. Scrapie in small ruminants and bovine spongiform encephalopathy (BSE) in cattle are the most important prion diseases of animals and active surveillance in Member States for both diseases is obligatory. For that purpose brainstem samples are tested with rapid tests. Poland has started testing for scrapie in 2002.

OBJECTIVE

The aim of the study was to present the epidemiological data on scrapie cases diagnosed in Polish flocks in years 2002-2023 along with genetic background.

MATERIAL and METHODS

Brainstem samples from small ruminants were tested at the age of 18 months for healthy slaughtered animals and above 12 months for risk group. Currently, rapid testing is performed in 3 state, regional labs. In years 2002-2005 the majority of labs used Bio-Rad test (one lab used Enfer test). In 2006 Prionics LIA test was introduced in all labs and it was used until the end of 2008. Then Prionics LIA test was replaced with IDEXX test and it is continuously used in all labs until now. All initially reactive samples from state regional labs are sent to National Reference Laboratory for Animal TSEs, where confirmatory diagnosis using immunoblot is performed. Distinction between classical and atypical form of scrapie is based on glycoprofile analysis of PrP resistant form of prion protein in western-blot. DNA for genotyping studies was extracted from brainstem samples. Sequencing of *PRNP* gene was done using BigDye® Terminator v3.1 Cycle Sequencing Kit (Applied Biosystems) and capillary sequencers.

RESULTS

Scrapie cases in Poland were identified in years 2009-2023 (the end of June). Overall, 119 scrapie cases were diagnosed of which 87 were found in Polish flocks. Only two cases were diagnosed in goats (one classical and one atypical). All except one Polish scrapie cases were classified as atypical scrapie (NOR98) based on unique glycoprofile of prion protein resistant to proteolysis. Majority of them were found in fallen stock. 11 different genotypes and 5 alleles were identified in affected individuals. Most frequent genotype was ALRR/ALHQ. Around 30% of sheep had phenylalanine in codon 141, while in healthy animals it was 2-6%. Twelve positive sheep had ALRR/ALRR genotype.

CONCLUSIONS

Atypical scrapie is found in Polish sheep and sheep imported for slaughter since 2009. The annual number of native-born Nor98 cases found in years 2009-2013 was stable with 2-4 cases identified annually, followed by sharp rise to 11 cases in 2014. The number of imported cases dropped since 2014 with only 4 cases identified until June 2023. Most frequent genotype identified in positive animals was ALRR/ALHQ.