

RAPID COMMUNICATION

Schmallenberg Virus Antibodies Detected in Poland

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Summary

Between 24 and 30 July 2012 230 adult goats from three western provinces of Poland bordering on Germany (Western Pomerania, Lubuskie and Lower Silesia) were blood-sampled and tested for antibodies to Schmallenberg virus (SBV) using indirect immunoenzymatic test (ID Screen® Schmallenberg virus indirect, IDvet Innovative Diagnostics). The ELISA test identified 21 seropositive goats – 15 in Western Pomerania (16% of all goats tested in this province), five in Lubuskie (6%) and one in Lower Silesia (2%). Our study demonstrates for the first time the presence of antibodies to SBV in Poland.

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Introduction

Schmallenberg virus (SBV) is a novel member of the family *Bunyaviridae* genus *Orthobunyavirus* and Simbu serogroup. The virus was detected for the first time in October 2011 in cattle with acute fever and decreased milk production on a farm in the city of Schmallenberg, Germany (Hoffmann et al., 2012). By October 2012, SBV cases confirmed by laboratory testing have been reported from fifteen European countries (Fig. 1). The infection has been detected mainly in sheep and cattle, much less frequently in goats, and also in a few wild ruminant species. SBV infection has been confirmed by RT-PCR on aborted fetuses in only 72 holdings keeping goats in five European countries (Germany, the Netherlands, Luxemburg, France and Italy), whereas no adult goat has had positive result of RT-PCR, and only a few adult goats have been serologically confirmed by now (Eurosurveillance Editorial Team, 2012). Neither any case of SBV infection nor even antibodies to SBV have been so far detected in any ruminant species in Poland.

The study was aimed at detecting the presence of goats seropositive to SBV in the western border region of Poland.

Materials and Methods

Serum collection was carried out between 24 and 30 July 2012 and covered 10 border districts from three western

provinces bordering Germany: Western Pomerania (four districts), Lubuskie (five districts) and Lower Silesia (one district) (Fig. 1). For each province, data on the number of goats and herds in border districts were obtained from the Agency for Restructuring and Modernization of Agriculture. There were 343 goats in 53 herds in the Western Pomerania, 421 goats in 103 herds in Lubuskie and 133 goats in 27 herds in the Lower Silesia. Totally, the target population counted 897 goats grouped in 183 herds (on average five goats per herd). Number of goats essential to be tested in the border region of each province to detect the presence of antibodies to SBV at expected seroprevalence of 5% and 95% level of confidence was worked out for an imperfect test using Epitools (Sergeant, 2012). Then, number of herds that had to be visited assuming that average herd size was five goats and all goats in a herd were tested was calculated. The analysis yielded 84 goats essential to be tested in Western Pomerania (approximately 17 herds), 85 in Lubuskie (approximately 17 herds) and 45 in Lower Silesia (approximately nine herds). The target population was regarded as a contiguous population because the only so far proven horizontal route of SBV spread is transmission by several species of *Culicoides* (De Regge et al., 2012), for which cluster character of the target population does not seem to be a limiting factor. Therefore, the epidemiological analysis was performed on the number of goats, not herds. Herds to be enrolled in the study were selected using non-probability



Fig. 1. Location of the study area (black ellipse). Countries in which Schmallenberg virus has been confirmed by now (grey colour) with the city of Schmallenberg (black dot).

method to increase the chance of detecting seropositive animals – herds located not further than 15 km from the western border of Poland were visited. A herd was excluded from the study if at least one goat had been bought from any other farm, in Poland or abroad, since the beginning of 2011. Only adult does and bucks (>1 year old) were blood-sampled. Totally, 230 adult goats were blood-sampled – 97 goats in Western Pomerania (28% of all goats in the province), 81 goats in Lubuskie (19% of all goats in the province) and 52 goats in Lower Silesia (39% of all goats in the province).

Blood was collected to 10-ml dry tubes and chilled to 4–8°C for 24 h. Then, sera were harvested without centrifugation, poured to 1-ml vials and kept at 4–8°C until testing on 1 August 2012.

The sera were tested using indirect immunoenzymatic test (ID Screen® Schmallenberg virus indirect, IDvet Innovative Diagnostics), and sample-to-positive control serum value of 60% was assumed as the cut-off according to the manufacturers' manual. Even though, sensitivity and specificity of the test reported by the manufacturer were 100% (Quality Control Data sheet, 2012), there are no other scientific data supporting so strong claim. Therefore, we

assumed that the test was imperfect with both sensitivity and specificity of 99.9%.

Results and Discussion

The ELISA test identified 21 seropositive goats – 15 in Western Pomerania (16% of all tested goats), five in Lubuskie (6% of all tested goats) and one in Lower Silesia (2% of all tested goats). Weak reaction (60–90%) could be observed in five sera, whereas the remaining 16 reacted strongly (>90%), with eight of them even above 120%. As goats were not randomly selected, no seroprevalence could be reported; however, relatively higher number of seropositive goats in the Northern Province (Western Pomerania) may indicate that this is the region where SBV has entered the country.

Our study demonstrates for the first time the presence of antibodies to SBV in Poland. As neither any vaccine is in use in Poland nor any of tested goats was imported, the presence of antibodies indicates that SBV may have already emerged in Poland. Given that the infection has been so far reported only from western neighbours of Poland (Euro-surveillance Editorial Team, 2012), our study implies the potential of SBV to cover new territories. Emergence of

infection in cattle and sheep population, which are much larger than goat population in Poland, is thus anticipated in the nearest future.

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