

***Mycoplasma hyopneumoniae* detection and genotyping in wild boar and domestic pigs and investigations on the possible reservoir role of free-ranging wild boar**

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Key words

Mycoplasma hyopneumoniae, wild boar, risk factors, *Sus scrofa*, pathology, PCR, pneumonia, prevalence

Aim of the study

(1) To estimate the prevalence of *M. hyopneumoniae* infections in wild boar in Switzerland; (2) to identify risk factors for infection in wild boar; (3) to assess whether infection in wild boar is associated with the same gross and microscopic lesions typical of EP in domestic pigs.

Material and methods

Nasal swabs, bronchial swabs and lung samples were collected from 978 wild boars from five study areas in Switzerland between October 2011 and May 2013. Swabs were analyzed by qualitative real time PCR and a histopathological study was conducted on lung tissues. Risk factor analysis was performed using multivariable logistic regression modeling.

Results and significance

Overall prevalence in nasal swabs was 26.2% (95% CI 23.3-29.3%) but significant geographical differences were observed. Prevalence obtained with nasal swabs was lower than with bronchial swabs, however, it is expected to reflect the percentage of shedders, i.e. the epidemiologically most relevant animals. Wild boar density, occurrence of EP outbreaks in domestic pigs and young age were identified as risk factors for infection. There was a significant association between infection and lesions consistent with EP in domestic pigs. Data on the geographical distribution and frequency of occurrence of different *M. hyopneumoniae* types and on the evolution of prevalence in local wild boar populations suggested that spillover from domestic pig to wild boar occurs and influences the prevalence in wild boar. In conclusion, we found that *M. hyopneumoniae* is widespread in the Swiss wild boar population, that the risk factors for infection of domestic pigs also act as risk factors for infection of wild boar, and that infected wild boar develop lesions similar to those found in domestic pigs. Based on our data and the outbreak pattern in domestic pigs, spillover from domestic pigs to wild boar appears to be more likely than the contrary. Our results underline the complexity of the dynamics of infection at the wildlife-livestock interface and the importance of preventing pathogen transmission from livestock to wildlife.

Publications, posters and presentations

- Batista Linhares, M. (2011) Evaluation of sampling strategies for epidemiological studies on *Mycoplasma hyopneumoniae* infections in wild boar and scoring of lung lesions. VPH-Praktikumsarbeit, June 2011
- Batista Linhares, M.; Kuhnert, P.; Overesch G.; Origgi F.; Segner H.; Belloy L. (2012) Epidemiological and pathological investigations on *Mycoplasma hyopneumoniae* infection in wild boar (*Sus scrofa*) in Switzerland. Proceedings of the EWDA and WDA Joint Conference, Mai 2012, Lyon, France (oral present)
- Batista Linhares, M. In der Wildnis mit *Mycoplasma conjunctivae*: eine patho-epidemiologische Studie beim Wildschwein. VPHI Seminar, Dezember 2013, Liebefeld/BE, Switzerland (oral presentation)
- Ryser, M.-P. Ré-émergence de la pneumonie enzootique du porc : quel rôle le sanglier joue-t-il ? 32èmes Rencontres du GEEFSM, Olivone/TI, Switzerland, 06-08.06.2014 (oral presentation)
- Batista Linhares, M.; Belloy, L.; Origgi F.; Lechner, I.; Segner, H.; Ryser-Degiorgis, M.-P. (2015) Investigating the role of free-ranging wild boar (*Sus scrofa*) in the re-emergence of enzootic pneumonia in domestic pig herds: a pathological, prevalence and risk-factor study. PLoS ONE 10(3): e0119060, 26 pp.

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