ROLE OF HELICOBACTER SUIS AND FUSOBACTERIUM GASTROSUIS IN THE PATHOGENESIS OF GASTRIC ULCERATION IN PIGS

C. De Witte, R. Ducatelle, F. Haesebrouck.

Department of Pathology, Bacteriology and Avian Diseases, Faculty of Veterinary Medicine, Ghent University, Merelbeke, Belgium.

Helicobacter suis is a zoonotic, Gram-negative bacterium, that has been shown to cause gastritis and a reduction in daily weight gain in naturally and experimentally infected pigs. Several studies also attribute a role to this pathogen in the development of hyperkeratosis and ulceration of the non-glandular stratified squamous epithelium of the Pars oesophagea of the porcine stomach, although H. suis does not colonize this region. It is not completely clear how exactly H. suis influences ulcer development, but our recent studies indicate that alterations in gastric acid secretion may be involved. This may affect the composition of the Pars oesophageal microbiota. Compared to non-infected, 6-8 months old pigs with no obvious lesions, higher numbers of a recently described Fusobacterium species, designated F. gastrosuis, were detected in the Pars oesophageal microbota of H. suis-infected pigs of the same age group with hyperkeratosis and erosions of the Pars oesophageal and downregulated markers for gastric acid secretion. The genome of F. gastrosuis showed presence of genes encoding proteins similar to proteins that play a role in the pathogenesis of infections with other Fusobacterium spp. and F. gastrosuis lysate induced necrosis in gastric cell lines. In H. suis-infected adult sows, severe lesions were highly present in the Pars oesophageal and markers for acid secretion were upregulated.

We hypothesize that a decreased gastric acid secretion during the more acute phase of a H. suis infection (6-8 months old pigs) may allow higher numbers of F. gastrosuis, which may affect development of lesions. Increased production of gastric acid during the chronic phase of infection (adult sows) might then further aggravate severity of lesions.