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Bacteriological investigations of skin ulcers in a Swedish pig herd

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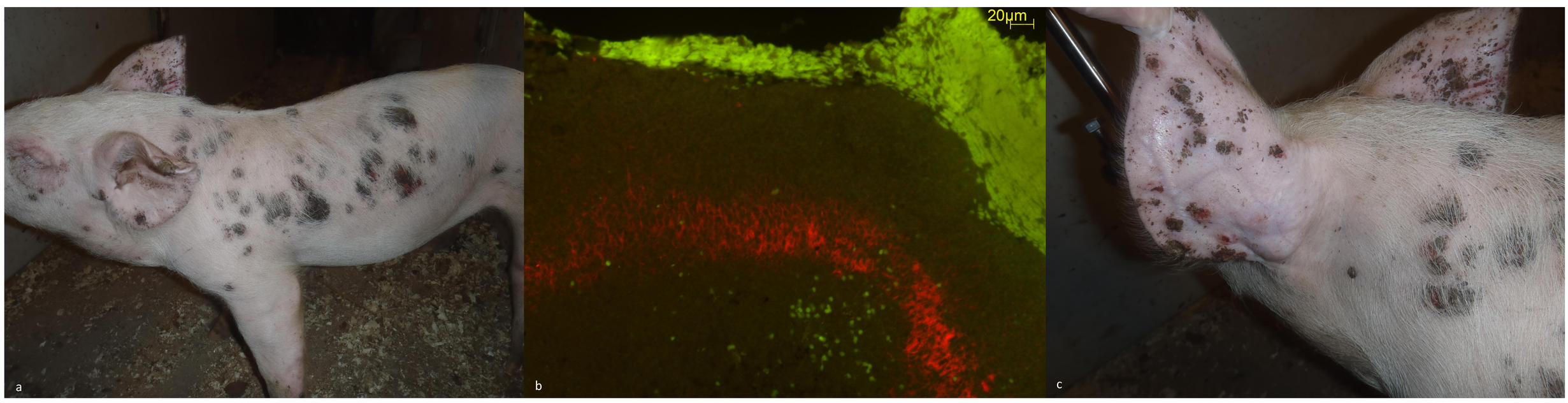

Figures a and c showing typical examples of sampled skin ulcers. Figure b showing Fluorescence *In Situ* Hybridization for *Treponema pedis* (red) (CY3) and domain bacteria (green) (FITC) in a section from a porcine skin ulcer F1223. Autofluorescence from erythrocytes is green. Bar 20 µm.

Conclusions

- Both classic skin pathogens as *S. aureus* and streptococci as well as *Treponema* spp. occur simultaneously in skin ulcers of pigs.
- All isolates of staphylococci and streptococci were susceptible to beta-lactam antibiotics, which are also active against *Treponema* spp.
- Although treponemes were located deep in the skin it is not known whether their role is to lead the way for other skin pathogens or if these bacteria are secondary invaders.

Overview of samples and methods

Sample	W-S[a]	FISH		PCR[b] (*T.* spp)	Aerob culture
		T. spp	*T. pedis*		
E[c]1221	+	+	+	+	Nt[d]
E 1222	-	-	Nt	-	Nt
E 1223	-	+	+	-	Nt
E 1224	-	+	+	+	Nt
E 1225	-	-	Nt	-	Nt
F[e]1221	-	-	Nt	Nt	*S.a.*[f], S.β.[g]
F 1223	-	+	+	Nt	*S.a.*, S.β.
F 1224	-	+	+	Nt	*S.a.*, S.β.
F 1226	Nt	Nt	Nt	-	*S.a.*, S.β.
F 1227	Nt	Nt	Nt	-	*S.a.*, S.β.

W-S[a]: Warthin Starry silver staining, PCR[b]: Intergenic spacer region 2- based PCR, E[c]: Ear necrosis, Nt[d]: not tested, F[e]: other type of skin ulcer, *S.a.*[f]: *Staphylococcus aureus,* *S.*β.[g]: β –hemolytic streptococci

Aims

- Investigate the presence of *S. aureus*, streptococci and *Treponema* spp. in skin ulcers of pigs in one herd.
- Test the antimicrobial susceptibility of obtained isolates of *S. aureus* and streptococci.

Minimal inhibitory concentration (MIC) mg/L
of two *Staphylococcus aureus* isolates and three isolates of β-hemolytic streptococci[a]

	≤0.12	0.25	0.5	1	2	4	8	16	32	>32
Penicillin	S.a.[b] S.β.[c]									
Ampicillin				S.a. S.β.						
Ceftiofur		S.β.		S.a.						
Spiramycin						S.a. S.β.				
Neomycin						S.a.			(S.β.)[d]	
Gentamicin					S.a.		(S.β.)			
Streptomycin						S.a.1[e]		S.a.3[f]	(S.β.)	
Trim./Sulph.[g]			S.a. S.β.							
Enrofloxacin		S.a.		(S.β.)						
Tetracycline				S.a.	S.β.7[h]			S.β.3,4[i]		
Florfenicol					S.β.	S.a.				
Oxacillin			S.a. S.β.							

[a] The white fields denote range of dilutions tested for each substance. MICs above the range are given as the concentration closest to the range. MICs equal to or lower than the lowest concentration tested are given as the lowest tested concentration. Bold vertical lines indicate cut-off values defining resistance according to VetMIC Large Animal, National Veterinary Institute, Sweden. [b] S.a: *Staphylococcus aureus* isolates 1221 and 1223. [c] S.β: β-hemolytic streptococci isolates 1223, 1224 and 1227. [d] (S.β): Not relevant as the inherent susceptibility is above concentrations that can be obtained during therapy. [e] S.a.1: *Staphylococcus aureus* isolate 1221. [f] S.a.3: *Staphylococcus aureus* isolate 1223 . [g]Concentration of trimethoprim given, tested in concentration ratio 1/20 (trimethoprim/sulphamethoxazole). [h] S.β.7: β-hemolytic streptococci isolate 1227.
[i] S.β.3, 4: β-hemolytic streptococci isolates 1223 and 1224.

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