

Brief Communication

INFECTION WITH STREPTOCOCCUS SUIS SEROTYPES 1
AND 2 IN THE SAME DISEASED PIG

Streptococcus suis is an important pig pathogen which is associated with respiratory problems, meningitis and less frequently with a variety of other conditions (Hommez *et al.* 1986). *S. suis* type 1 causes disease mainly in 1—2 week old pigs while serotype 2 is found commonly in 2—22 week old pigs. *S. suis* type 2 is a zoonosis. It can cause meningitis and septicaemia in man (Christensen & Kronvall 1985). Several other serotypes of *S. suis* have also been identified on the basis of the capsular polysaccharide (Perch *et al.* 1983, Hommez *et al.* 1986). We present a case where we isolated *S. suis* types 1 and 2 from the brain and lungs respectively of the same diseased suckling piglet. This is the first reported case of *S. suis* types 1 and 2 in Finland.

The mixed, open pig herd had about 100 pigs, with 20 sows. The environmental conditions in the pig house were fairly bad. There was a high population density and poor ventilation in the pig house. In the beginning of 1986 some 2 week old suckling piglets had become sick and died within 1 week. The local veterinarian was called by the owner when he had 3 new clinical cases and 1 dead piglet. Symptoms observed were loss of appetite, staggering and depression. The piglet was sent for pathological and microbiological investigation to the National Veterinary Institute, Regional Laboratory in Kuopio.

Lungs of the piglet were oedematic and mottled red. No other macroscopic changes were seen. Histological examination revealed acute purulent pneumonia and meningitis. Samples of brain, lung, spleen, liver, kidney and intestine were cultured on calf blood agar plates. The plates were incubated aerobically at 37°C for 48 h. There was no bacterial growth from the liver or kidney. Nonpathogenic *Escherichia coli* grew from the intestine. Small colonies with narrow β -hemolysis grew as pure culture on primary isolation from the brain tissue. Small α -hemolytic colonies grew as pure culture on primary isolation from the lungs and a few colonies from the spleen. Both the colony types were gram positive, catalase negative, and coccal in form. These cocci

belonged to Lancefield group D when tested with Streptex system (Wellcome Reagents Limited). Streptococci isolated from the brain were later identified as *S. suis* type 1 whereas those from the lung and spleen as *S. suis* type 2 when tested with Api 20 STREP system (Le Balme Les Grottes). HCl and autoclave extracts of types 1 and 2 were further confirmed by Wellcome groups R (serotype 2) and S (serotype 1) antisera using capillary and gel-diffusion tests with reference strains belonging to types 1, 2 and 1/2 as controls.

The 3 diseased pigs were treated with penicillin and they recovered. Some other 2—3 week old pigs, which later became ill recovered also after penicillin treatment.

This case shows the occurrence of *S. suis* types 1 and 2 in the same suckling piglet. It suggests that both serotypes existed at the same farm in the carrier animals. *S. suis* has been found commonly in tonsils of the carrier pigs (*Clifton-Hadley* 1982). *S. suis* type 1 was isolated from the brain in association with meningitis in the piglet. Type 1 has been reported as a common cause of baby piglet meningitis although reports from Britain and Belgium suggest a decreasing number of cases affected by type 1 (*Elliott* 1982, *Hommez et al.* 1984). *S. suis* type 2 affects all ages of growing pigs from less than 2 weeks to more than 22 weeks of age. The majority of the cases occur between 3 and 12 weeks of age. Type 2 is commonly associated with pneumonia (*Hommez et al.* 1984). Also in this case type 2 was associated with pneumonia.

The piglet may have acquired the 2 serotypes in different ways. It may have got infected with both types at about same time. Alternatively the piglet may have carried type 1 and later became infected with type 2 with fatal outcome. Lastly there may have been a serotype conversion due to the "immunopressure" from one type to another as has been reported with group A streptococci (*Maxted & Valkenburg* 1968). This is quite possible because presence of *S. suis* with both type 1 and 2 polysaccharides has been reported (*Perch et al.* 1981).

The incidence of disease caused by *S. suis* varies and seems to depend on environmental factors such as poor ventilation, high population density etc. Other stress factors, such as mixing and moving, weighing and vaccinating, may also predispose to overt disease (*Clifton-Hadley* 1982). It is reasonable to assume that in this farm environmental and stress factors predisposed to

overt disease in the carrier piglet which presumably lacked immunity to both types 1 and 2.

Although this case might be rare, it shows, that 2 different serotypes of *S. suis* can cause the disease in the same piglet.

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