



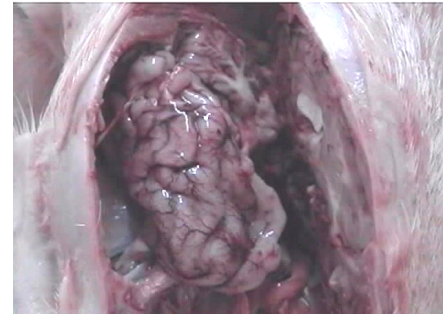
MENINGITIS

Causal agent	The classical cause of meningitis in piglets, weaners, and growers is <i>Streptococcus suis</i> II. However, several other bacteria can cause meningitis, namely <i>Glaesserella parasuis</i> and septicaemic <i>Escherichia coli</i> or Bowel Oedema	
Age group	Any. Meningitis classically occurs between 3 and 60 kg. <i>G. parasuis</i> in naive finishing and adult pigs can cause a devastating acute fatal meningitis	
Clinical signs		
Acute	The pig becomes incoordinated, often with uncontrolled eye movements. Rectal temperature is increased to 40-41°C As the condition progresses, the pig will fall over and thrash with all four legs on the floor. The pig may traumatise itself during these thrashing movements Death can occur quickly, especially if the pig is stressed. In the farrowing house, the condition can then be misdiagnosed as an overlaid pig If treatment is late, a neurologically damaged pig may result	
Normal pig	No clinical signs, the organism lives on the tonsils and upper respiratory tract of the normal healthy pig	
		Two growing pigs with meningitis
Infectivity		
	Most pigs are infected	
Transmission		
	From the mother at birth through nose contact. Between pigs by nose-to-nose contact.	
Post-mortem Lesions		



Happy pigs, happy farmers

None particularly obvious. Meningeal congestion and tags are suspicious, but most veterinarians examine so few brains that it would be difficult for them to differentiate between the normal range of meningeal changes. The picture shows the brain in a sectioned head



Diagnosis

Culture of *Streptococcus suis* II from cerebrospinal fluid (CSF)

Using an 18-gauge 1.5-inch needle. Place the pig in a dorsal position. Flex the head over the edge of the post-mortem table. Feel for the atlas occipital junction. Swab the skin with surgical spirit. Insert the needle and 'walk' the needle down the brain case off the occipital joint. Attach a sterile 2 ml syringe. 1 ml of clear CSF should be readily extractable.

The reason for using CSF is that *Strep.Suis* is widespread on the skin and upper respiratory tract, and post-mortem knives are easily contaminated, leading to a misdiagnosis

Histological examination of the meninges including a Gram stain

Treatment and Control

Individual

The pig is dying

Treatment must be rapid and vigorous

Ceftiofur injection 3mg/kg. Or penicillin. 80% strains are tetracycline resistant

Treat with ceftiofur or penicillin every 12 hours until clinical signs subside

Provision for pain relief should be considered: Meloxicam 0.4 mg/kg

A few pigs can develop a procaine allergy and go into anaphylactic shock

If weaned, isolate the pig. If not weaned, place in the creep area.

Keep in a dark room

If fits are extreme, give a sedative as necessary

Providing water by mouth from a syringe is necessary. Note a pig drinks 1 litre per 10 kg per day, so a few syringes full is not sufficient.

Control

Most pigs carry *Strep. suis* on their tonsils and upper respiratory tracts. The causal factor that results in the clinical signs is that the pig is subjected to too much stress or another disease.

Draughts, particularly in farrowing houses and nurseries.



	<p>Wet and cold environments are common if weaners are placed into cleaned houses. In outdoor situations, the use of damp, mouldy straw often precipitates a meningitis outbreak.</p>
	<p>Excessive change in temperature in the pigs' sleeping area</p>
	<p>Pigs being moved and mixed, resulting in a disturbed social hierarchy.</p>
	<p>Gas levels are too high. Carbon monoxide poisoning from gas heaters</p>
	<p>Medication with amoxycillin at weaning in the water supply and tetracycline at 800ppm post-weaning to 18 kg liveweight</p>
<p>Common differentials</p>	
	<p><i>Glaesserella parasuis</i>, septicaemic <i>E.coli</i>, and Bowel Oedema. Intoxication with brewer products. Water deprivation. Porcine Stress Syndrome. Trauma to the head. Aujeszky's Disease.</p>
<p>Zoonotic Implications</p>	
	<p><i>Strep.Suis</i> can rarely cause a fatal meningitis in humans following infection through a cut from the pig's skin, typically following cutting a finger or injection of a pig. It is an occupational hazard. Particular problem for splenectomised people.</p>