Congenital tremor in newborn piglets

Mateusz Malik

Budapest 09.05.2022

Farm characteristics

- Belgian closed system farm
- 500 Danbred sows - 100 sows/group
- Own breeding of gilts
- 4-week-batch production system
- Weaning 21 days
- Gilts and sows separated in insemination and gestation unit (no nose to nose contact)
- Own feed produced

- New stable since 2011 – feces provided to breeding animals but stopped

Case history

- **Jan 2020** – herd veterinarian report
  Three consecutive farrowing batches with shaking suckling piglets and high mortality. Problem disappears after weaning.

  PCR for PRRSV negative

  - In response - suggestion of a possibile Atypical porcine pestivius infection
- **Mar 2020** - herd veterinarian report
  The situation has improved, but again 6 shaking litters in last farrowing batch
  - Advise to take a closer look at the acclimatization process of the gilts, as well as at the colostrum management

Case history

- **Oct 2021-** herd veterinarian called the porcine health management (PHM) team from UGent for a visit because of new cases of shaking piglets
  - For more than a year, litters with congenital tremor – 5-6/group
  - Gilts and sows → similarly affected
  - Piglets try to suckle milk, but mortality reaches up to 25%
  - Problem disappears in nursery

- **Nov 2021-** herd visit PHM team

Clinical presentation

Possible causes of CT

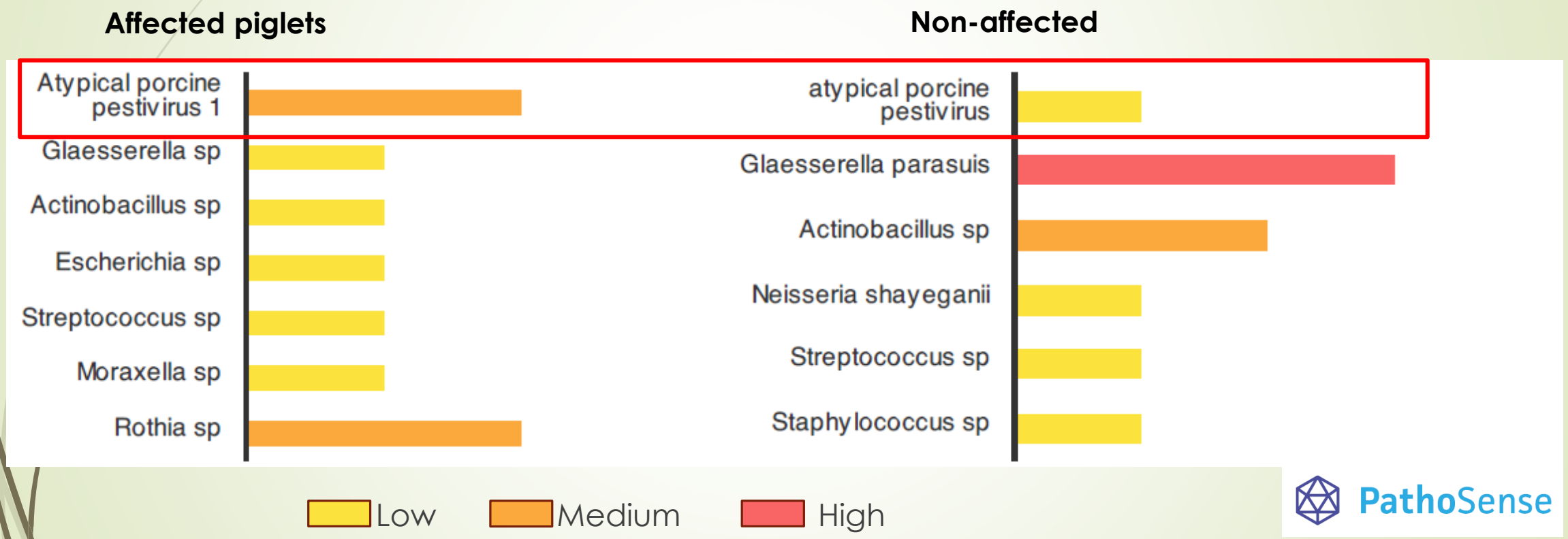
Table 19.9 Causes, key features, and reference for types of congenital tremors described.

Type	Cause	Key features	References
A1	Classical swine fever virus (CSF)	Dysgenesis, cerebellar hypoplasia, small cord, demyelination	Harding et al. (1966), Bradley et al. (1985), Done (1976b), Done et al. (1984)
AII	Atypical porcine pestivirus (APPV)	Endemic globally; few lesions; sporadic	Done (1986), Arruda et al. (2016), deGroof et al. (2016)
AIII	Genetic: sex-linked recessive (Landrace and males)	Demyelination, hypoplasia of the spinal cord	Harding et al. (1973)
AIV	Genetic: autosomal recessive (Saddleback and Landrace/Saddleback)	Demyelination; CNS hypoplasia	Berge et al. (1987), Kidd et al. (1986)
AV	Trichlorfon toxicity	Cerebellar hypoplasia at 65–79 days' gestation	Pope (1986)
B	Unknown	No special features	Gedde-Dahl and Standal (1970)

Diseases of Swine, 11th Edition, 2019

- Linda virus
- Suid herpesvirus 1
- Non-infectious: Hypoglycemia, Hypoxia, Vit A deficiency, cerebral hypoplasia

Diagnostics



*** Oral swap sample pooled out of 5**

Suspected problem

- Low immunity against APPV in sows and gilts
- Low circulation of APPV on farm, due to strict biosecurity measures and separation of sows and gilts

Recommendation

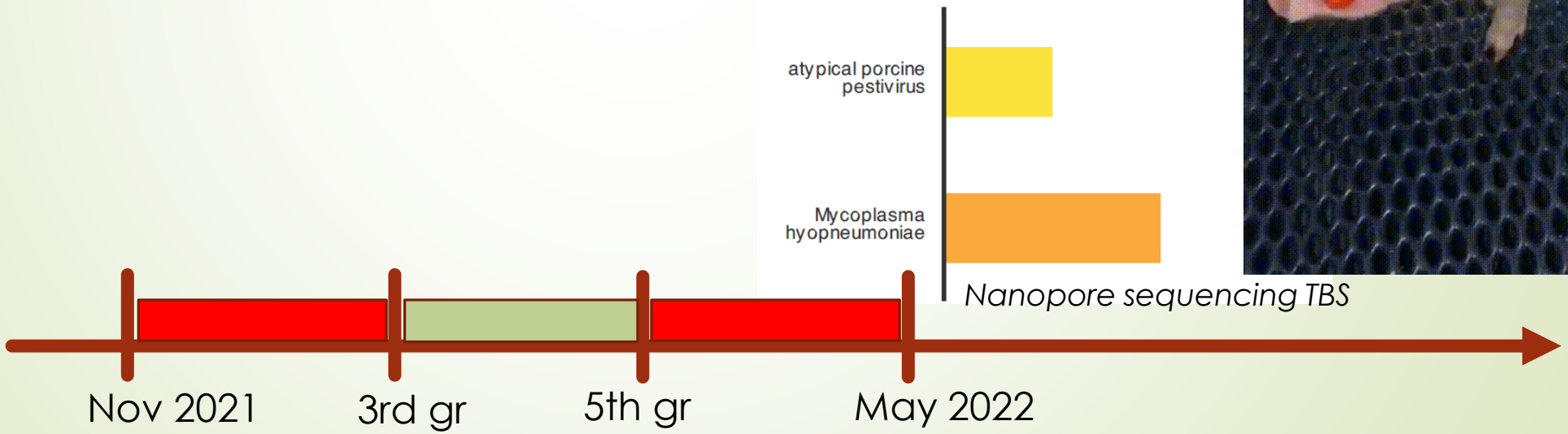
- To put the chewing ropes and jute bags in the nests of affected litters
- To transfer these (likely with APPV contamined) materials to the:

- Lactating sows in farrowing units
- Breeding gilts 2-3 weeks before insemination

Aim: to immunize gilts and sows against APPV prior to gestation

Follow up – April 2022

- **Feb-Mar '22**: 3rd and 4th farrowing group after the PHM team visit → no clinical signs
  - Farmer had switched from "Ropes and bags" to "tails and testicles"
- 5th farrowing group → mild signs in piglets. 2nd parity sows
- **Jan '22**: TBS of sows in gestation (coughing): APPV found



Nanopore sequencing TBS

Conclusions

- Severe CT may lead to high mortality
- Not all APPV positive piglets develop tremor
- Not clear why the problem occurred and also disappeared in 2020: Immunization with feces/ strict biosecurity/ virus introduced with semen?
- Immunization:
  - materials: feces, ropes vs tails and testicles?
  - timing: 2-3 weeks prior to AI
  - no commercial vaccine
- Diagnosis was made based on clinical signs and nanopore sequencing on affected and non-affected piglets (no histology)

- Ask the farmer/ veterinatian to make notes for easier diagnostic in the future

Literature

- Diseases of Swine, 11th Edition, p. 350
- De Groof A. et al., Atypical Porcine Pestivirus: A Possible Cause of Congenital Tremor Type A-II in Newborn Piglets. *Viruses*, 2016. 8(10): p.271
- Postel A. et al., Presence of atypical porcine pestivirus (APPV) genomes in newborn piglets correlates with congenital tremor. *Scientific reports*, 2016. 6: p.27735
- Schwarz L. et al., Congenital infection with atypical porcine pestivirus (APPV) is associated with disease and viral persistence. *Veterinary research*, 2017. 48(1): p.1
- Gatto, I.R.H et al. Detection of atypical porcine pestivirus in semen from commercial boar studs in the united states. Transbound. Emerg. Dis. 2017, 65, e339–e343.
- Denes et al., Detection and localization of atypical porcine pestivirus in the testicles of naturally infected, congenital tremor affected piglets. Transbound Emerg Dis. 2021;1–9.

Thank you for your attention