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P30

Ultrasonographic diagnosis of intra-partum death in stillborn piglets; preliminary results

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High perinatal mortality has clear economic and ethical issues in modern pig farms. Stillbirths often occur at high rate but may be misdiagnosed in the absence of supervision and necropsies. The objective of this work was to evaluate possible use of ultrasonography as a rapid alternative to necropsies. The study was conducted on 50 piglets collected from 19 spontaneous farrowings. They were found dead at birth (excluding mummies) or within first 12 h. Thoracic ultrasonographic examinations were performed in the inter-costal spaces, using 5 MHz linear probe (Imago®, ECM). Piglets were weighed, necropsied and lung flotation tests were carried on to identify cause and time of death (intra-partum vs. post-partum). Average (± SD) litter size was 16.5 ± 1.5 live-born, with 1.5 ± 1.1 stillborn. According to lung flotation test, 58% dead piglets were truly stillborn (intra-partum death). Early post-partum death was mainly attributed to crushing (75%), weakness (14%) or euthanasia (10%). In case of post-partum death, presence of air in the lungs prevented clear visualization of pulmonary tissues but generated typical reverberation artifacts on ultrasound pictures (A-Lines, B-lines, comet tails). By contrast, non-ventilated lungs of intra-partum dead piglets clearly appeared as echogenic hepatized organs, without reverberation artifacts. Because of agreement with flotation test (100% accuracy), the absence of such artifact could be used for rapid real-time diagnosis of intra-partum death. Birth weights (0.903 ± 0.343 kg) varied within a large range, but high proportion of small piglets (36% <0.800 kg) did not impact the accuracy. These preliminary results suggest possible new applications for research and farm investigations.