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TITLE

CELL DEATH PHENOMENA ASSESSMENT IN THE THYMUS OF PIGLETS INFECTED WITH PRRSV-1 STRAINS OF DIFFERENT VIRULENCE

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CONTENT

Background and Objectives

In the last decade, the number of outbreaks caused by virulent PRRSV strains has increased in Europe, Asia and North America. The virulence of these strains is not only evident in the lung, but also in the lymphoid organs, mainly in thymus and bone marrow. The present study aims to evaluate the impact of PRRSV-1 strains of different virulence in the thymus of infected piglets.

Material & Methods

To carry out this study, 70 four-week old piglets were distributed in three different groups: control, 3249 strain (low virulent; 105 TCDI50 intranasal) and Lena strain (high virulent; 105 TCDI50 intranasal). Animals were euthanized at 1, 3, 6, 8 and 13 days post-infection (dpi) and thymus samples were collected and fixed in 10% formalin for histopathology, histomorphometry and inmunohistochemistry analyses to detect PRRSV N-protein, TUNEL and iNOS labelling.

Results

Both infected groups exhibited a progressive increase in the severity of the lesions in the thymus, especially in Lena-group at 8dpi. PRRSV positive cells were detected in Lena-infected pigs as soon as 1dpi, peaking at 8dpi in both groups but reaching highest values for Lena-infected animals. Similar kinetics were observed for TUNEL expression, which was mainly detected in the cortex of Lena group. In contrast, iNOS expression was principally detected in the medulla of thymuses. Compared to control animals, the expression of this marker was lower in case of both infected-groups, being more evident in Lena-infected pigs mainly in the cortex at 6 and 8dpi.

Discussion & Conclusion

According to our results, an earlier and stronger impact of virulent PRRSV strains on the development of cell death phenomena in the thymus was observed in association with virus antigen and indirect mediators, such as iNOS. More studies are needed to widen the knowledge of cell death phenomena in this organ.