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TITLE

CHARACTERIZATION OF MACROPHAGE POPULATION OF THE THYMUS IN PIGS AFTER INFECTION WITH PRRSV STRAINS OF DIFFERENT IN VIVO VIRULENCE

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CONTENT

Background and objectives
The emergence of the so-called highly pathogenic isolates of porcine reproductive and respiratory syndrome (HP-PRRSV) has raised new concerns about the control of the disease. Cells from the porcine monocyte-macrophage lineage represent the target for this virus, which replicates mainly in the lung, and especially in virulent strains, also in lymphoid organs, such as the thymus. However, current commercial modified live virus vaccines confer partial cross-protection against virulent strains. The aim of the present study was to analyse the impact of PRRSV infection with isolates of different in vivo virulence on the macrophage population of the thymus as well as the effect of a heterologous vaccine in the thymus of animals infected with a virulent strain.
Material & Methods
After experimental infection with Italian PR11 (low virulent) and PR40 (high virulent) PRRSV-1 subtype 1 isolates samples from thymus were analysed by histopathology and immunohistochemistry for PRRSV antigen, TUNEL, CD172a, CD163, CD107a and BA4D5 expression.
Results
Mortality was similar in both infected groups, but lung lesions and thymus atrophy were more intense in PR40 group. Animals infected with either PR11 or PR40 that died at 10-14 dpi, showed the most severe histopathological lesions, with a strong inflammatory response of the stroma and extensive cell death phenomena in the cortex. These animals presented an increase in the number of PRRSV, CD172a, CD163 and BA4D5 positive cells together with a decrease in the number of CD107a positive cells.
Discussion & Conclusion
Our results highlight the recruitment of macrophages in the thymus, an increased expression of the major receptor of PRRSV and the regulation of the host cytotoxic activity by macrophages. No marked differences were observed between PR11- and PR40-infected animals. Heterologous vaccination was able to restrain virus spread as well as the extent of the lesions in PR40-infected animals.