Characterization of canine CD4+CD8α+ double-positive (dp) T cells in lymphatic and non-lymphatic organs

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CANINE CD4+CD8α+ DOUBLE-POSITIVE (DP) T CELLS OF THE PERIPHERAL BLOOD

- are mature extrathymic T cells with a frequency of ~ 2% of all T cells
- originate from both CD4+ and CD8α+ single-positive (sp) T cells, but CD4+ sp T cells are the more potent progenitors
- have features of activated T cells (≥ 50% CD25+)

AIM OF THE STUDY

Analysis of CD4+CD8α+ double-positive T cells in lymphatic and non-lymphatic organs of the dog

RESULTS

1. Canine CD4+CD8α+ dp T cells are present in secondary lymphatic organs as well as in non-lymphatic tissues.

2. Canine double-positive T cells are mature T cells lacking the thymic marker CD1a.

3. CD4+CD8α+ dp T cells of lymphatic and non-lymphatic tissue predominantly display a CD8αα phenotype in contrast to CD8α+ sp T cells and CD4+CD8αβ thymocytes.

4. Only in LN and PP a minority of CD4+CD8α+ dp T cells expresses Foxp3.

5. Similarly to blood, CD4+CD8α+ dp T cells in different organs are mainly CD25+.

Conclusions

CD4+CD8α+ dp T cells are present in secondary lymphatic and non-lymphatic organs. All dp T cells are mature CD4+CD8αα T cells indicating an extrathymic origin.

In the Peyer’s Patches more CD4+CD8α+ dp T cells than in any other analyzed organs could be found, which might be a hint to unique migratory properties in mucosa-associated lymphatic tissue.

Dp T cells constitutively express more CD25 than their CD4+ sp and CD8α+ sp counterparts characterizing them as activated T cells. Underlining the exceptional features of the gut immune system, these findings can not be confirmed for the intestinal intraepithelial lymphocytes.

Further investigations are needed to clarify the functional role of this exceptional T cell population in health and diseases of dogs.