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Assessment of Molecular Signalling Mechanisms for Eosinophilia in Rottweilers

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Author(s)

Nathalee Prakash, Michael J. Day, Phil Stumbles, Iain R. Peters, Mellora Sharman, Amanda Paul, Caroline Mansfield

ABSTRACT

Rottweilers are predisposed to eosinophilic diseases, including hypereosinophilic syndrome. The immunopathogenesis of idiopathic eosinophilia is poorly characterised in dogs and man. Studies in people have suggested cytokines, particularly interleukin (IL)-5, play a role in instigating and perpetuating eosinophilia. This study sought to establish whether differences in gene expression, and concentration of selected, cytokines and chemokines were associated with eosinophilia in Rottweilers. Quantitative real-time reverse transcriptase polymerase chain reaction (qRT-PCR) assays were used to quantify messenger ribonucleic acid (mRNA) encoding cytokines IL-4, -5, -10, -12p19, -12p35, -12p40, -18, interferon gamma (IFN- γ) and chemokines eotaxin-2 and -3 from peripheral blood mononuclear cell (PMBC) samples obtained from healthy dogs (breeds other than Rottweiler) with normal eosinophil blood counts (n = 5) and Rottweilers with normal (n = 6), mildly increased (n = 7) and high (n = 3) eosinophil blood counts. Quantification of plasma IFN- γ and IL-5 was performed using commercially available canine-specific enzyme-linked immunosorbent assays ELISAs. Cytokine mRNA was measurable in all samples, although eotaxin-2 and -3 were not detected. No significant differences in gene expression of any cytokine were found between groups (based on eosinophil count or breed). No significant difference in plasma IL-5 or IFN- γ concentration was present between groups. In conclusion, there were no significant differences in cytokine mRNA profiles or plasma IL-5 and IFN- γ levels between Rottweilers with increased eosinophil counts and Rottweiler and non-Rottweiler dogs with normal eosinophil counts.

KEYWORDS

Cytokines; Dogs; IL-5; IFN- γ ; Hypereosinophilic Syndrome

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