



ORAL PRESENTATION

Open Access

CD4⁺FOXP3⁺ regulatory T cells are abundantly present in inflamed muscle of patients with juvenile dermatomyositis

Yvonne Vercoulen^{1*}, Elisabeth F Elst¹, Jenny Meerding¹, Maud Plantinga¹, Hemlata Varsani², Christa van Schieven¹, Mette H Bakker¹, Mark Klein¹, Wim Spliet³, R de Weger³, Lucy Wedderburn², Annet van Royen-Kerkhof¹, Berent J Prakken¹

From 18th Pediatric Rheumatology European Society (PReS) Congress Bruges, Belgium. 14-18 September 2011

Background

Juvenile dermatomyositis (JDM) is an autoimmune disease caused by inflammation of the microvasculature, resulting in skin and muscle damage. CD4⁺CD25⁺FOXP3⁺ regulatory T cells (Treg) are key regulators of immune homeostasis, and potential therapeutic targets in T cell-driven inflammatory disorders. However, a role for Treg in JDM pathogenesis has not yet been established.

Aim

Here, we explored Treg presence and function in both peripheral blood mononuclear cells (PBMC) and muscle tissue of JDM patients.

Methods

We analyzed expression of CD4, CD25, FOXP3, GITR and CTLA-4 in PBMC from JDM patients and age-matched controls by flow cytometry. Treg functionality was established in in vitro suppression assays. Infiltrated lymphocytes in muscle biopsies were analyzed for CD3, CD4, CD8 and FOXP3 expression by immunohistochemistry, qPCR (FOXP3) and flow cytometry (CD3 and CD4).

Results

Overall, Treg number and phenotype of JDM patients was similar to age-matched controls. While JDM patients had increased numbers of Treg during active

disease compared to remission, this increase was only found in JDM patients treated with high doses of corticosteroids. Treg of remitting JDM patients, but not of all active JDM patients were able to suppress effector T cell activation in vitro. Furthermore, in inflamed muscle tissue we detected high numbers of CD4⁺ T cells, of which a large proportion expressed FOXP3.

Conclusion

Treg in peripheral blood of JDM patients had a similar phenotype and frequency as peripheral blood Treg from age-matched controls. Moreover, Treg were present in inflamed muscle tissue, and could therefore be targets for specific treatment of disease.

Author details

¹Center for Molecular and Cellular Intervention, Pediatric Immunology, Wilhelmina Children's Hospital, UMC Utrecht, The Netherlands. ²University College London, Institute of Child Health, London, UK. ³Department of Pathology, UMC Utrecht, The Netherlands.

Published: 14 September 2011

doi:10.1186/1546-0096-9-S1-O2

Cite this article as: Vercoulen et al.: CD4⁺FOXP3⁺ regulatory T cells are abundantly present in inflamed muscle of patients with juvenile dermatomyositis. *Pediatric Rheumatology* 2011 **9**(Suppl 1):O2.

* Correspondence: y.vercoulen@umcutrecht.nl

¹Center for Molecular and Cellular Intervention, Pediatric Immunology, Wilhelmina Children's Hospital, UMC Utrecht, The Netherlands
Full list of author information is available at the end of the article