



Nagoya City University Academic Repository

| | |
|---------|--|
| 学位の種類 | 博士 (医学) |
| 報告番号 | 甲第1571号 |
| 学位記番号 | 第1126号 |
| 氏名 | 久保 良二 |
| 授与年月日 | 平成 29年 3月 24日 |
| 学位論文の題名 | <p>Bath-PUVA therapy improves impaired resting regulatory T cells and increases activated regulatory T cells in psoriasis (PUVA バス療法は乾癬患者において低下した resting の制御性 T 細胞 (rTreg) を改善し、そして活性化制御性 T 細胞 (aTreg) を増加させる)</p> <p>J Dermatol Sci, 86: 46-53, 2017</p> |
| 論文審査担当者 | 主査： 山崎 小百合 副査： 岡本 尚, 森田 明理 |

ABSTRACT

Background: Bath-psoralen plus ultraviolet light A (PUVA) therapy is an effective, safe, and inexpensive treatment for psoriasis. Psoriasis might be due to an unbalanced ratio of Th17 cells and regulatory T cells (Treg). The Treg functional ratio is significantly lower in patients with psoriasis compared with controls and is inversely correlated with the Psoriasis Area and Severity Index score¹⁾. We previously reported that bath-PUVA therapy significantly increases the number of Treg and restores Treg function to almost normal in most patients with psoriasis¹⁾²⁾.

Objectives:

Miyara *et al.* reported that CD4⁺ CD25⁺ Foxp3⁺ T cells can be divided into three subsets using the cell surface marker CD45RA³⁾. CD4⁺ CD25⁺ CD45RA⁻, and Foxp3^{high} lymphocytes are called activated Treg (aTreg), and have the strongest suppressive activity. CD4⁺ CD25⁺ CD45RA⁺ and Foxp3^{low} lymphocytes are called resting Treg (rTreg), and have mild suppressive activity compared with aTreg. CD4⁺ CD25⁺ CD45RA⁻ and Foxp3^{low} lymphocytes are called non-suppressive T cells (non-Treg), and have no suppressive activity. We examined the effects of bath-PUVA therapy on three distinct Foxp3⁺ subsets.

Methods: We enrolled 15 patients with psoriasis and 11 healthy controls. We examined aTreg, rTreg, and cytokine-secreting non-suppressive T cells in peripheral blood obtained from the psoriasis patients before and after every fifth bath-PUVA therapy session.

Results: Levels of aTreg, which are considered to have the strongest suppressive activity in patients with psoriasis, were significantly increased in the early bath-PUVA therapy sessions, and then diminished. Levels of rTreg were lower in psoriasis patients

than in healthy controls, and increased during bath-PUVA therapy.

Conclusions: Bath-PUVA therapy induced aTreg and rTreg concomitantly with an improvement in the psoriatic lesions, suggesting a mechanism for the effectiveness of bath-PUVA therapy for psoriasis patients.

- 1) T. Furuhashi, C. Saito, K. Torii, E. Nishida, S. Yamazaki, A. Morita, Photo(chemo)therapy reduces circulating Th17 cells and restores circulating regulatory T cells in psoriasis, PLoS One 8 (2013) e54895.
- 2) C. Saito, A. Maeda, A. Morita, Bath-PUVA therapy induces circulating regulatory T cells in patients with psoriasis, J. Dermatol. Sci. 53 (2009) 231-233.
- 3) M. Miyara, Y. Yoshioka, A. Kitoh T. Shima, K. Wing, A. Niwa, *et al.*, Functional delineation and differentiation dynamics of human CD4⁺ T cells expressing the FoxP3 transcription factor, Immunity 30 (2009) 899-911.