In vitro effects of lithium chloride on the production of pro-inflammatory cytokines by monocytes of bipolar patients with or without lithium-induced psoriasis

*Knijff EM**, Kupka RW**, Ruwhof C*, Breunis MN*, Prens EP*/***, Nolen WA**, Drexhage HA*
*Dept of Immunology, Erasmus MC Rotterdam, Rotterdam, **Altrecht Institute for Mental Health Care and University Medical Center Utrecht, Utrecht, ***Dept of Dermatology, Walcheren Hospital, Vlissingen

Rationale. Pro-inflammatory cytokines (IL-1b, TNFa and IL-6) are mainly produced by monocytes/macrophages and are able to influence neurotransmitter production and the HPA axis. There are indications that the immune system, including monocytes/macrophages, is activated in bipolar disorder. Lithium is a first-line treatment of bipolar disorder. Adversely it may elicit psoriasis, an immune skin disorder.
Objectives. To study the effects of lithium on the production of IL-1b, TNFa and IL-6 by monocytes of healthy controls, bipolar and psoriasis patients.
Methods. Lipopolysaccharide (LPS) and non-LPS stimulated monocytes of healthy individuals (n=27), outpatients with DSM-IV bipolar disorder (n=22, of whom 6 had a history of lithium-induced psoriasis) and psoriasis patients (n=16) were incubated with lithiumchloride (LiCl), and the effects on the production of IL-1b, TNFa and IL-6 were assessed.
Results. (1) LiCl reduced the production of IL-1b and TNFa from LPS-stimulated purified monocytes of healthy controls and bipolar patients at in vitro dosages of 1-5 mM; (2) Monocytes of psoriatic patients had a very high production of pro-inflammatory cytokines (that could not be suppressed by LiCl); (3) In contrast: Monocytes of bipolar patients with a Li-induced psoriasis had a normal production of these cytokines, similar to bipolar patients without a Li-induced psoriasis. In fact LPS-stimulated monocytes of bipolar patients with a Li-induced psoriasis showed the lowest IL-1b and TNFa production after in vitro exposure to LiCl.
Conclusions. Our study does not lend support to the concept that a raised production of pro-inflammatory cytokines is a hallmark of bipolar disorder. LiCl did, however, reduce the production of IL-1b and TNFa from LPS-stimulated “bipolar” monocytes, particularly in patients with Li-induced psoriasis. The contrasting high and not by lithium suppressible production of pro-inflammatory cytokines by monocytes of regular psoriatic patients suggests that the pathogenesis of regular psoriasis is different from that of Li-induced psoriasis.

Esther M. Knijff, Dept of Immunology, ErasmusMC, P.O. Box 1738, 3000 DR Rotterdam, t 010-4638024, e-mail e.knijff@erasmusmc.nl

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