Peran sitokin TNF-, IFN-, IL-10, TREG(CD4+CD25+) dan indoleamine 2,3-dioxygenase pada granuloma akibat suntikan silikon di dagu = The role of TNF-, IFN-, IL-10, TREG(CD4+CD25+) and indoleamine 2,3-dioxygenase in chin granuloma caused by silicone injection

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Abstrak

Pendahuluan: Di Indonesia belum ada penelitian tentang injeksi silikon dan komplikasinya, walaupun kasusnya banyak. Patogenesis granuloma silikon masih belum jelas. Beberapa penelitian mengemukakan peran sel T dan sitokin, namun belum ada yang meneliti tentang toleransi imun.
Metode: Penelitian ini merupakan penelitian deskriptif analitik meliputi rancangan potong lintang membandingkan 3 kelompok, yaitu 31 jaringan granuloma dan 31 kulit submental pasien dengan suntikan silikon di dagu (kasus) dan 37 kulit normal (kontrol), terhadap gambaran klinis, histopatologis, dan respons imun melalui ekspresi sitokin TNF-a, IFN-g, IL-10, enzim IDO, serta sel Treg (CD4+CD25+); Penelitian eksperimental membiakkan darah penuh kasus dan orang normal, pada RPMI, dan RPMI yang distimulasi PHA, dan silikon. Dilanjutkan dengan mengukur kadar sitokin TNF-a, IFN-g, IL-10 dan IDO supernatan biakan darah. Penelitian dilakukan di klinik spesialis JMB, FMIPA, FKUI, FKUNAIR, dan lembaga Eijkman, tahun 2012 - 2014.
Hasil Penelitian: Sebanyak 31 pasien granuloma akibat suntikan silikon di dagu umumnya datang berobat 12,5 tahun setelah penyuntikan, perubahan bentuk dagu terjadi pada tahun ke-4, perubahan warna pada tahun ke-5. Kadar sitokin proinflamasi di supernatan biakan darah lebih tinggi pada pasien granuloma daripada normal. Terdapat korelasi bermakna antara TNF-a di supernatan biakan darah dengan ekspresi TNF-a di jaringan granuloma. Enzim IDO, Treg, IL-10 di kulit submental berkorelasi bermakna dengan sitokin di granuloma. Sitokin anti inflamasi berperan pada kulit submental. Rasio TNF-a/IL-10 di supernatan biakan darah berkorelasi terbalik dengan ekspresi sel Treg di granuloma, membuktikan fungsi Treg sebagai toleransi imun, bekerja melalui IL-10. Enzim IDO di granuloma berkolerasi bermakna dengan rasio TNF-a/IL-10 di supernatan biakan darah dan Treg kulit submental.
Simpulan: Enzim IDO bekerja sama dengan fungsi sel Treg dalam toleransi imun pada granuloma akibat suntikan silikon. TNF-a di supernatan biakan darah dan sitokin anti inflamasi di kulit submental dapat dijadikan prediktor untuk menilai respons imun yang terjadi akibat suntikan silikon.
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Background: There is no study on silicone injections and its complications in Indonesia, yet, although the number of cases increased. The pathogenesis of silicone granulomas is still unclear. A few studies have been made to investigate the role of T cells and cytokines, however, none investigates the role of immune tolerance.
Method: An analytical descriptive study encompassing cross sectional research was designed to compare 3 groups of 31 granuloma tissue and 31 submental skin of the patients with silicone injection in the chin (case) and 37 normal skin (control) on the clinical pictures, histopathological features and immune response through the expression of TNF-a, IFN-g, IL-10 cytokines, IDO enzyme, and Treg cells (CD4+CD25+). The experimental study cultured whole blood of the case and control patients and measured the level of TNF-a,

IFN-g, IL-10 cytokines and IDO enzyme. The study was conducted in JMB specialist clinics, FMIPA, FKUI, FKUA, and Eijkman foundation from the year 2012 to 2014.

Result: Thirty one patients with granuloma caused by silicone injection in the chin commonly seek medical advice 12.5 years after the injection, the chin shape changed on the fourth year and the skin color changed on the fifth year. Patients with granuloma had higher level of proinflammatory cytokines in their blood cultured supernatant. There was a significant correlation between TNF-a in blood cultured supernatant with the expression of TNF-a in the granuloma tissue. IDO enzyme, Treg cells, IL-10 in the submental skin significantly correlated with the cytokines in the granulomas. Anti inflammatory cytokines played a role on the submental skin. The ratio of TNF-a/IL-10 in blood cultured supernatant reversely correlated with the expression of Treg cells in the granuloma, demonstrating the function of Treg cells as an immune tolerance working through IL-10. IDO enzyme in the granulomas significantly correlated with the ratio of TNF-a/IL-10 in blood cultured supernatant and Treg in the submental skin.

Conclusion: IDO enzyme collaborates with Treg cells in the immune tolerance caused by silicone injection. TNF-a in blood cultured supernatant and anti inflammatory cytokines in the submental skin can be utilized as predictors to assess the resulting immune response due to silicone injection.