Predictive cytokine profile for Invasive Aspergillosis in lung transplant recipients in the setting of pre-emptive prophylaxis

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Background

We studied cytokine patterns predictive of subsequent invasive aspergillosis (IA) in lung transplant recipients (LTRs) with *Aspergillus* spp (Asp) colonization post-transplant.

Methods

Retrospective, single center case-control study of LTRs transplanted between 2010- 2014. Surveillance broncho alveolar lavage (BAL) fluid samples were analyzed for cytokines a using Luminex ThermoFisher Multiplex Assay. The following cytokines were measured: EGF, Eotaxin, FGF-basic, G-CSF, GM-CSF, HGF, IFN-alpha, IFN-gamma, IL-1 beta, IL-1 alpha, IL-1RA, IL-2, IL-2R, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-12 (p40/p70) IL-13, IL-15, IL-17A, IL-17F, IL-22, IP-10, MCP-1, MIG, MIP-1 alpha, MIP-1 beta, RANTES, TNF-alpha, and VEGF (results expressed in pg/mL). Patients with positive cultures for *Aspergillus* spp. in BAL were divided into those who developed IA and those who did not. Both groups were compared to controls with no positive cultures matched by date of transplant. ISHLT definitions were used for IA. No patient received antifungal prophylaxis.

Results

A total of 30 LTRs were selected: 10 patients with Asp colonization who did not develop IA, 10 patients with Asp colonization who developed IA, and 10 controls

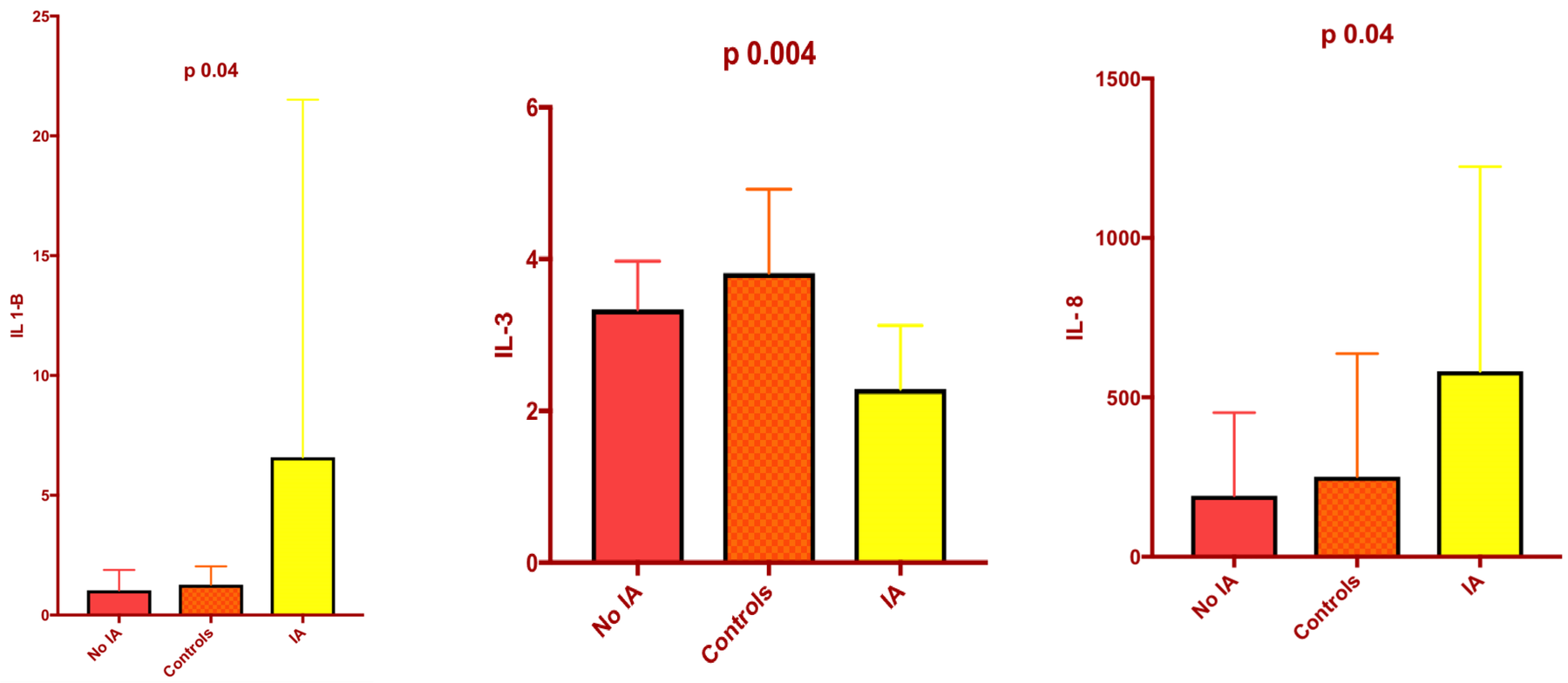

Fig 1. Distribution of cytokine levels between colonized patients who did not develop IA (red), colonized patients who did develop IA (yellow), and non-colonized controls (orange).

Conclusion

Our results suggest that higher BAL levels of IL-1B and IL-8 and lower levels of IL-3 are associated with the development of IA in LTRs with Asp colonization. IL-8 recruits and guides neutrophils to the lung epithelium. Overstimulation and dysfunction of these within the airways results in release of pro-inflammatory molecules and proteases resulting in further damage of lung tissue. IL 3 has an immunomodulatory role. Overstimulation of neutrophils with less immunomodulatory response might lead to lung injury and facilitate pathogenesis of *Aspergillus spp*

Disclosure: None

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