Proteomic profiling of serological responses to *Aspergillus fumigatus* antigens in patients with invasive aspergillosis.

Teutschbein J, Simon S, Lother J, Springer J, Hortschansky P, Morton CO, Löffler J, Einsele H, Conneally E, Rogers TR, Guthke R, Brakhage AA, Kniemeyer O (2016) Proteomic profiling of serological responses to *Aspergillus fumigatus* antigens in patients with invasive aspergillosis. *J Proteome Res* 15(5), 1580-1591.

Details

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Abstract

Aspergillus fumigatus is the species that most commonly causes the opportunistic infection invasive aspergillosis (IA) in patients being treated for haematological malignancies. Little is known about the *A. fumigatus* proteins that trigger the production of Aspergillus-specific IgG antibodies during the course of IA. In order to characterise the serological response to *A. fumigatus* protein antigens mycelial proteins were separated by 2-D gel electrophoresis. The gels were immunoblotted with sera from patients with probable and proven IA, and control patients without IA. We identified 49 different fungal proteins, which gave a positive IgG antibody signal. Most of these antigens play a role in primary metabolism and stress responses. Overall, our analysis identified 18 novel protein antigens from *A. fumigatus*. To determine whether these antigens can be used as diagnostic or prognostic markers or exhibit a protective activity we employed supervised machine learning with decision trees. We identified two candidates for

further analysis, the protein antigens CpcB, and Shm2. Heterologously-produced Shm2 induced a strongly proinflammatory response in human peripheral blood mononuclear cells after in vitro stimulation. In contrast, CpcB did not activate the immune response of PBMCs. These findings could serve as the basis for the development of an immunotherapy of IA.

Involved units

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Topics

Networks of host- fungal pathogen interaction

Identifier

PMID: 26974881