

Asthma, hypersensitivity pneumonitis and cough

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Mould sensitization in asthmatic and non-asthmatic subjects diagnosed with extract- versus component-based allergens

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Background: Asthmatic patients are suspected to be at higher risk for development of allergic sensitization to moulds. In this study sensitization rates to moulds were investigated in asthmatic patients and non-asthmatic subjects. Additionally, extract-based mould allergy diagnosis was compared with *in-vitro* component-based diagnosis.

Methods: Two patient groups from a former multi-center study with (asthmatics: n=82) and without (non-asthmatics: n=57) self-reported asthma symptoms were re-investigated. Sensitization to *Aspergillus fumigatus* (Asp f), *Cladosporium herbarum* (Cla h), *Penicillium chrysogenum* (Pen ch), *Alternaria alternata* (Alt a) and *Aspergillus versicolor* (Asp v) were tested by extract-based tests in skin prick test (SPT) and specific IgE (sIgE) by ImmunoCAP. Patients' sera with sensitization for either Asp f or Alt a were additionally analyzed for sIgE to recombinant (r) single allergens like rAlt a 1, rAsp f 1 – 4 and rAsp f 6.

Results: Sensitization rate to at least one mould was in both patient groups comparable, with asthmatic symptoms 56% versus 52% without. Most frequent source of sensitization (positive in SPT and/or sIgE) was Alt a with 42% in asthmatic versus 32% in non-asthmatic subjects, followed by Pen ch with 41% versus 23%, Asp f with 32% versus 23%, Cla h with 26% versus 20% and Asp v with 21% versus 13%. Mould sensitization rates were always higher in subjects with asthmatic symptoms but significantly only for Pen ch. Concordance of extract-based diagnostic tests, SPT and sIgE, for Asp f was between 50% in asthmatic subjects versus 46% in non-asthmatics. Component-based *in-vitro* diagnosis (sum of rAsp f 1 – 4 and rAsp f 6) fitted to extract-based results (SPT and/or sIgE) in only 38% of asthmatics and 39% of non-asthmatic subjects. For Alt a concordance of extract-based diagnostic tests (SPT and sIgE) was 76% in asthmatics and 61% in non-asthmatics. *In-vitro* testing single Alt a component (rAlt a 1) 56% of extract-based positives were detected in asthmatics and 50% in non-asthmatics.

Conclusion: Sensitization rates to moulds were slightly higher in asthmatics compared to non-asthmatic but significantly only for *Penicillium chrysogenum*. Extract-based diagnosis performed as SPT detected more sensitization compared to extract-based sIgE. Component-based *in-vitro* diagnosis with rAlt a 1 or rAsp f components (rAsp f 1 – 4 and rAsp f 6) recovered about 80% of extract-based sIgE sensitization. So, current component-based *in-vitro* tests could substitute extract-based sIgE but not extract-based SPT.