Different colonization patterns of Aspergillus terreus in patients with cystic fibrosis

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Résumé en anglais	Patients with cystic fibrosis (CF) are at high risk of colonization of the respiratory tract by filamentous fungi, mainly Aspergillus fumigatus, but also other Aspergillus species including A. terreus. In our experience, this last fungus ranks the third among the filamentous fungi colonizing the respiratory tract of CF patients. Additionally, although uncommon, infections caused by A. terreus present a high mortality rate due to its usually low susceptibility to systemic antifungals. The recent development of a microsatellite typing system allowed us to investigate the molecular epidemiology of the airway colonization by this fungus in CF. Nine short tandem repeats of A. terreus were used to genotype multiple and sequential isolates from sputum samples from CF patients followed-up in Angers and Giens hospitals (France). Sputum samples were collected over a 2 month to 7 year period, and for each sample, all the obtained isolates were studied, with a maximum of five per sample. Thus a total of 122 isolates was studied, corresponding to 47 samples collected from 5 distinct patients. Three colonization patterns were observed. The first one consisted of a chronic colonization (presence of the same genotype in at least two successive samples collected over a minimum period of two months) by a largely dominant genotype associated with two or three other genotypes found occasionally (patient 1) or over a short period (patient 2). The second pattern consisted of a chronic colonization by two distinct genotypes simultaneously detected (patients 3 and 4). For the last patient (patient 5), 16 isolates recovered from 6 sputum samples collected during four years were analyzed, corresponding to 8 distinct genotypes which succeeded to each other. Numerous questions rise from these different colonization patterns, relatively uncommon environmental fungus; and (ii) differences between genotypes in their ability to chronically colonize the airways of the CF patients or differences between CF patients in their individual susceptibility to same genotypes. Strikingly, some genotypes shared by some patients were responsible for a chronic colonization in some patients while they rapidly disappear in other patients. A multicenter study should be conducted combining genetic study of the host and genotyping of fungal isolates, searching for predisposing factors to the airway colonization by A. terreus.
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