Title:
Aspergillus spp. prevalence in one Portuguese hospital. A reason to be worried?

Authors & Affiliations:
Carla Viegas*, Marta Dias, Beatriz Almeida, Inês Paciência, João Cavaleiro Rufo, João Paulo Teixeira, Cristiana Pereira

1 H&TRC- Health & Technology Research Center, ESTeSL- Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Portugal; 2 Centro de Investigação em Saúde Pública, Universidade NOVA de Lisboa, Portugal; 3 Imunologia Básica e Clínica, Departamento de Patologia, Faculdade de Medicina, Universidade do Porto, Porto, Portugal; 4 EPIUnit - Instituto de Saúde Pública, Universidade do Porto, Porto, Portugal; 5 Institute of Science and Innovation in Mechanical Engineering and Industrial Management (INEGI), Porto, Portugal; 6 INSA – Instituto Nacional de Saúde Dr. Ricardo Jorge, Departamento de Saúde Ambiental, Porto, Portugal
carla.viegas@estesl.ipl.pt

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Aspergillus genus is responsible for over 80% of pulmonary invasive fungal infections in humans. Invasive aspergillosis, caused by Aspergillus fumigatus in 80% of the cases, is the most common invasive fungal infection. The aim of this study was to assess prevalence of Aspergillus genus in a Portuguese hospital, using a wide sampling approach combining active and passive methods. A total of 15 sampling sites were defined, distributed by the different hospital areas - emergency room, day hospital, internment ward, operating room and outpatient area. Active (air impaction) and passive (surfaces swabs, settled dust, filters from heating, ventilation and air conditioning (HVAC) systems and electrostatic dust collectors (EDC) sampling methods were applied. Samples were impacted/washed and seeded on: malt extract agar (MEA) supplemented with chloramphenicol (0.05%) and dichloran-glycerol agar (DG18). The samples collected by air impaction presented the higher fungal diversity, yet Aspergillus sp. was not the most prevalent genera (2.69% MEA; 15.41% DG18). Within Aspergillus genus, section Fumigati was the one with highest prevalence in both culture media (86.67% MEA; 45.09% DG18) with other sections (Aspergilli, Candidi, Nigri, Restricti, Versicolores and Usti), presenting lower counts in both culture media. Surface swabs were the only sampling method recovering Aspergillus section Circumdati, and on DG18. Concerning the settled dust samples, Aspergillus sp. was not the most prevalent (25% MEA; 9.26% DG18), with Fumigati section the only isolated on MEA and Aspergilli (35.71%) and Versicolores (64.82%) sections on DG18. On the EDC and HVAC filters samples Aspergillus sp. was not found. Overall, the results of this study highlight Aspergillus sp. presence in the assessed premises. The Aspergillus section Fumigati, with increased clinical relevance, was often detected in this clinical environment. The observed levels and distribution of Aspergillus suggest the need to implement corrective measures not only due to Aspergillus counts, but also due to the toxigenic potential of some Aspergillus sections. The different fungal prevalence found with the different methods applied, validates the utility of having multiple sampling strategies when defining a regular routine assessment in clinical environments.

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