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Abstract (oral session)

Bronchoalveolar lavage lateral-flow device test for diagnosing invasive pulmonary aspergillosis: a cohort study

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Objectives: Due to the crude mortality of 80-90% in absence of adequate treatment, timely diagnosis and early start of antifungal therapy are key factors in successful treatment of invasive pulmonary aspergillosis (IPA). Diagnosis of IPA, however, remains difficult as clinical signs and symptoms as well as radiological findings are often unspecific and conventional culture methods lack sensitivity. In recent years galactomannan (GM) testing has therefore become one of the cornerstones of IFI diagnostics, even though tests are limited by varying turnaround time and availability. These limitations may be overcome by the Lateral- Flow Device (LFD) test, a single sample point-of-care test that is based on the detection of an Aspergillus extracellular glycoprotein antigen by monoclonal antibody JF5. This retrospective study evaluates the LFD test by using bronchoalveolar lavage (BAL) samples. Methods: This retrospective cohort study comprises BAL samples from patients that were tested routinely for GM between June 2011 and October 2012 at the Medical University Hospital Graz, Austria. 56 BAL samples from 54 patients were included (34 samples haematological malignancies, 10 solid organ transplantation, 2 HIV, 9 COPD, 1 H1N1 influenza; 15 probable IPA, 13 possible IPA, 28 no IPA). Diagnostic accuracy of LFD for probable IPA was evaluated. For IPA grading a BAL GM cut-off of 1.0 optical density index was used. Results: Sensitivity and specificity of BAL LFD test for probable IPA were 100% and 80%, respectively. GM levels in cases with negative LFD were significantly lower than in patients with positive LFD ($P < 0.0001$). While no false negatives were observed, LFD resulted positive in a total of eight patients with possible IPA. In four of these cases corresponding GM values were 0.6, 0.61, 0.63 and 0.7 ODI and LFD results were weakly to moderately positive. The LFD also gave positive results in three possible IPA cases with GM values <0.4. All eight patients with divergent results had received mould active antifungal therapy at the time of BAL sampling. In one patient with probable IA and a slightly positive LFD the corresponding BAL GM resulted negative, however, serum GM resulted repeatedly positive from 3 days after BAL sampling. Conclusion: The LFD test of BAL specimens is performed easily and provides accurate and rapidly available results. Therefore, this new point-of-care test may be a very promising diagnostic approach for detecting IPA in BAL specimens.