P0053
Poster Session I
How to improve fungal diagnosis

PERFORMANCE OF GALACTOMANNAN, ASPERGILLUS LATERAL FLOW DEVICE TEST, BETA-D-GLUCAN, CONVENTIONAL CULTURE AND PCR FOR DIAGNOSIS OF INVASIVE PULMONARY ASPERGILLOSIS IN BRONCHOALVEOLAR LAVAGE: A COHORT STUDY

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Objectives: Bronchoalveolar lavage (BAL) fluid galactomannan (GM) is currently the gold standard for the early diagnosis of invasive pulmonary aspergillosis (IPA). Limitations of GM testing, however, are varying turnaround time and availability. We compared performance of GM, with that of conventional culture, Aspergillus Lateral- Flow Device test (LFD), Beta D Glucan (BDG) and an Aspergillus PCR assay in BAL samples from immunocompromised patients.
Methods: A total of 68 BAL samples from 68 patients (64 samples from Graz, 4 from Mannheim) were included between December 2012 and May 2013 at two University hospitals in Austria and Germany. 3 patients had proven IPA, 7 probable, 17 possible and 41 patients no IPA. Diagnostic accuracy of all 4 methods (BDG in samples from Graz only) for probable/proven IPA was evaluated. For IPA grading fungal cultures as well as BAL GM (cut-off 1.0 U/L) were used.
Results: Sensitivity, specificity, positive and negative predictive value as well as diagnostic odds ratio (DOR) of all 5 tests for probable/proven IPA are depicted in the table.
Combination of GM (>1.0) with LFD increased the sensitivity to 90% while combination of GM (>1.0) with PCR resulted in a 100% sensitivity (specificity for propable/proven IPA 95%, specificity after exclusion of possible IPA 98%).
One invasive mould infection other than aspergillosis was observed during the study period. In this patient with invasive fusariosis only culture and BDG (398 pg/ml) resulted positive.

Diagnostic performance of BAL GM, culture, BDG, LFD and PCR for probable and proven IPA versus no IPA and no IPA plus possible IPA (in brackets if differing). Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and diagnostic odds ratio (DOR) displayed

	Sensitivity	Specificity	PPV	NPV	DOR; 95% confidence intervall
GM >1.0 U/L	70%	98%	88%	93% (95%)	93.3; 95%CI 8.5-1030 (133; 95% CI 12.1-1459)
GM >0.5 U/L	80%	98% (90%)	89% (57%)	95% (96%)	160; 95%CI 12.9-1984 (34.7; 95%CI 5.9-203)
Mycological Culture	50%	95% (97%)	71%	89% (92%)	19.5; 95%CI 3-129 (28; 95%CI 4.3-183)
BDG >80 pg/ml	86%	75% (67%)	38% (24%)	97%	18; 95%CI 1.9-168 (12; 95%CI 1.3-107)
BDG >200 pg/ml	71%	88% (75%)	50% (26%)	95% (96%)	17.5; 95%CI 2.7-116 (7.7; 95%CI 1.3-44.1)
LFD	80%	95% (84%)	80% (47%)	95% (96%)	78; 95%CI 9.5-639 (21.8; 95%CI 4-120)
PCR	70%	100% (96%)	100% (78%)	93% (95%)	161; 95%CI 7.5-3445 (60.7; 95%CI 8.6-429)

Conclusions: We evaluated established and novel diagnostic methods for aspergillosis and found that the aspergillus PCR, LFD and GM are useful methods for diagnosis of IPA in BAL samples. Performance of conventional culture was limited by low sensitivity, while that of BDG was limited by

lower specificity.