P0043
Poster Session I
How to improve fungal diagnosis

DIAGNOSIS OF PNEUMOCYSTIS JIROVECII PNEUMONIA IN ONCO-HEMATOLOGICAL PATIENTS: EFFICIENCY OF COMBINED DETECTION OF (1-3)-BETA-D-GLUCAN IN THE SERUM AND PNEUMOCYSTIS JIROVECII DNA IN RESPIRATORY SAMPLES

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Objectives: *Pneumocystis jirovecii* (Pj) pneumonia (PjP) is increasingly observed among patients with solid tumors (ST) or hematological malignancies (HM) and associated with a high level of mortality (35 to 50%). The prognosis depends essentially on early accurate treatment, which also requests early diagnosis. As Pj burden in the lungs is often low in this context, the diagnosis by direct detection of Pj in respiratory samples (RS) is difficult. Other tests are available ? detection of fungal (1-3)-beta-D-Glucan (BG) in the serum or Pj DNA in respiratory samples ? but little is known about the intrinsic value of these tests used in combination in patients with ST or HM.

Methods: We analysed the data from 39 patients with ST (N=27) or HM (N=12) hospitalized with a pneumonia in a cancer center (Institut Gustave Roussy, Villejuif) between July 2012 and October 2013. Patients were prospectively included when both serum and RS were available for BG dosage and Pj DNA detection by real-time PCR (Pj-qPCR), respectively. An expert panel blindly reviewed each medical record to classify the patients into 3 groups: no PjP, possible PjP or clinical PjP. Then, the intrinsic value of the combination of BG and Pj-qPCR tests to diagnose or exclude PjP was determined.

Results: The median age of the patients was 60 and their sex ratio (H/F) 0.85. Nine patients had semi-invasive RS available (2 bronchoaspirations and 7 bronchoalveolar lavages) and 30 had non-invasive samples (10 sputum and 12 oropharyngeal lavages). Twenty-three (59%) were classified as patients with no PjP, 8 and 8 (21% each) had possible and clinical PjP. We analysed the performance of the combined positive test toward diagnosis of PjP and combined negative test toward exclusion of PjP (Table). First, we compared patients with no PjP vs patients with clinical PjP. The sensitivity of the combined positive test toward PjP was of 75% with a predictive negative value of 90% while the specificity and the predictive positive value of the combined negative test toward exclusion of PjP were both 100%. Similar results were obtained when analyses were performed using only the results of the patients with non-invasive respiratory samples. Second, we compared patients with no PjP vs patients with possible and clinical PjP and we observed lower performance for combined positive and negative tests (Table).

Conclusion: Altogether, these results show that the combination of detection of serum BG and respiratory Pj DNA does not allow efficient diagnosis of PjP in patients with ST or HM.

	Evaluation of the combined positive tests for the diagnosis of PjP: BG+/Pj-qPCR+			
	Comparison 1: Patients with no PjP (n_1) vs patients with clinical PjP (n_2)		Comparison 2: Patients with no PjP (n_1) vs patients with clinical or possible PjP (n_3)	
	All respiratory samples: n_1=23; n_2=8	Non-invasive respiratory samples only: n_1=18; n_2=12	All respiratory samples: n_1=23; n_3=8	Non-invasive respiratory samples only: n_1=18; n_3=12
Sensitivity %	75	80	50	50
Specificity %	83	78	83	78
Predictive positive value %	60	50	67	60
Predictive negative value %	90	93	70	70
	Evaluation of the combined negative tests for the exclusion of PjP: BG-/Pj-qPCR-			
Sensitivity %	48	44	47	44
Specificity %	100	100	75	80
Predictive positive value %	100	100	73	73
Predictive negative value %	40	33	50	55