

1562. Diagnostic Performance of the (1–3)-β-D-Glucan Assay in *Pneumocystis jirovecii*, Invasive Aspergillosis, Mucormycosis, Tuberculosis and Healthy Volunteers

Hyo-Ju Son, MD¹; Heungsup Sung, MD, PhD²; Se Yoon Park, MD³; Taejun Kim, MD³; Hyun-Jeong Lee, RN³; Sun-Mi Kim, Bachelor's Degree³; Yong Pil Chong, MD⁴; Sang-Oh Lee, MD⁴; Sang-Ho Choi, MD⁵; Yang Soo Kim, MD⁵; Jun Hee Woo, MD⁵; Sung-Han Kim, MD⁵; ¹Departments of Infectious Diseases, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea, The Republic of; ²Department of Laboratory Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, South Korea; ³Department of Infectious Diseases, Asan Medical Center, University of Ulsan College of Medicine, Seoul, South Korea; ⁴Department of Infectious Diseases, Asan Medical Center, University of Ulsan College of Medicine, Seoul, South Korea; ⁵Department of Infectious Diseases, Asan Medical Center, University of Ulsan College of Medicine, Seoul, The Republic of Korea

Session: 161. Mycology: Diagnostic
Friday, October 28, 2016: 12:30 PM

Background. The diagnosis of *Pneumocystis pneumonia* (PCP) relies on microscopic visualization of *Pneumocystis jirovecii* or DNA detection in respiratory specimens, which needs invasive procedure such as bronchoalveolar lavage. The (1–3)-beta-D-glucan (BG) assay has been proposed as a less invasive and inexpensive diagnostic test to rule out PCP. We thus compared the blood level of BG in patients with PCP, invasive aspergillosis, mucormycosis, and tuberculosis and healthy volunteers.

Methods. All adult patients who were diagnosed with PCP, invasive aspergillosis, and mucormycosis whose blood samples were available were enrolled in a tertiary hospital in Seoul, South Korea, between January 2015 and December 2015. In addition, blood samples were obtained from healthy volunteers and from randomly selected patients with TB whose stored blood samples during the study period were available. The Goldstream Fungus (1–3)-beta-D-glucan test (Era Biology Engineering Co, Ltd, Tianjin, China) was performed by using these blood samples.

Results. A total 83 patients with 49 *P. jirovecii*, 9 invasive aspergillosis, 6 mucormycosis and 19 controls including 9 patients with tuberculosis and 10 healthy volunteers were included in the analysis. The median BG level in patients with PCP was significantly higher than in those with invasive aspergillosis, with mucormycosis, with tuberculosis, and healthy volunteers, respectively (figure 1). At a cutoff value of >32 pg/mL, which is high sensitivity at the expense of specificity for PCP versus TB plus healthy volunteers, the BG assay had a sensitivity of 92% (95% CI 80%–98%) and a specificity of 47% (95% CI 24%–71%). At a cutoff value of >60 pg/mL on the basis of the manufacturer's recommendation, the BG assay had a sensitivity of 86%

Table 1. Diagnostic performance of the (1–3)-β-D-glucan in *Pneumocystis jirovecii* vs TB plus healthy volunteer

	Sensitivity % (n/N ^a ; 95% CI)	Specificity % (n/N ^b ; 95% CI)	PPV (95% CI)	NPV (95% CI)	Positive likelihood ratio (95% CI)	Negative likelihood ratio (95% CI)
NDG >32 ^c	92 (45/49, 88-98)	47 (9/19, 24-71)	82 (69-91)	69 (39-91)	1.74 (1.12-2.69)	0.17 (0.06-0.49)
NDG >60 ^d	86 (42/49, 73-94)	58 (11/19, 34-80)	84 (71-93)	61 (36-83)	2.04 (1.19-3.49)	0.25 (0.11-0.54)
NDG >100 ^e	71 (35/49, 57-83)	79 (15/19, 54-94)	90 (76-97)	52 (33-71)	3.39 (1.88-6.25)	0.36 (0.22-0.60)
NDG >160 ^f	59 (29/49, 44-73)	95 (18/19, 74-100)	97 (83-100)	47 (31-64)	11.24 (1.62-76.84)	0.43 (0.30-0.61)

Abbreviations: PCP, *Pneumocystis pneumonia*; TB, tuberculosis; CI, confidence interval; NDG, (1–3)-β-D-glucan. Data are no. (%) patients unless otherwise indicated.
^aSensitivity was determined by dividing the no. of patients with a positive test results by the number of patients with PCP tested
^bSpecificity was determined by dividing the no. of patients with a negative test results by the number of healthy control tested
^cOptimal cut-off value with high sensitivity at the expense of specificity for PCP versus TB plus healthy control
^dManufacturer-recommended cut-off point for the negative value of the (1–3)-β-D-glucan
^eManufacturer-recommended cut-off point for the positive value of the (1–3)-β-D-glucan
^fOptimal cut-off value as the point of the ROC curve farthest from the diagonal line for PCP versus TB plus healthy control

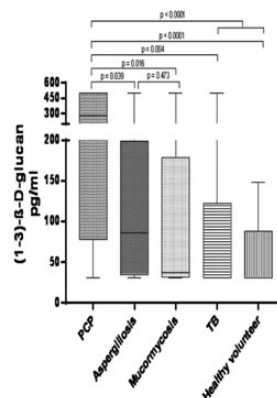


Figure 1. (1–3)-β-D-glucan comparing *Pneumocystis jirovecii*, aspergillosis, mucormycosis, tuberculosis, and healthy volunteers

Conclusion. The BG assay appears to be a useful adjunct test for diagnosing PCP.
Disclosures. All authors: No reported disclosures.