

ASPERGILLUS GALACTOMANNAN (GM) ANTIGEN IN THE BRONCHOALVEOLAR LAVAGE (BAL) FLUID FOR THE DIAGNOSIS OF INVASIVE PULMONARY ASPERGILLOSIS (IPA) IN HEMATOLOGICAL PATIENTS

Indre Vengalyte MD¹, Regina Pileckyte MD¹, Laimonas
Griskevicius MD PhD^{1, 2}

1 – Hematology, Oncology and Transfusion Medicine Center, Vilnius University
Hospital Santariskiu Clinics, Vilnius, Lithuania.

2 – Clinics of Internal, Family Medicine and Oncology, Faculty of Medicine,
Vilnius University, Vilnius, Lithuania.



ASPERGILLUS GENUS

- Consists of several hundred mold species found in various climates worldwide;
- The most common causing pathogenic species are *Aspergillus fumigatus* and *Aspergillus flavus*;
- It is an opportunistic infection.



GALACTOMANNAN (GM):

- It is a component of the cell wall of the mold *Aspergillus* and is released during growth;
- Is used in food stabilisers;
- Detection of GM in blood and BAL by ELISA assay is used to diagnose invasive aspergillosis infections (IPI) in humans.



FALSE NEGATIVE:

- Variable amounts of GM are released by different *Aspergillus* species. In some patients the levels of circulating GM are below the detection limit of the PA-ELISA.





FALSE POSITIVE:

In adults is approximately 2.5%;

In pediatric patients is approximately 10% and

The highest rates have been observed in neonates (83%);

Reasons:

- Cross- reaction;
- Dietary;
- β -lactam antibiotics: piperacillin/tazobactam, amoxicillin/clavulanic acid, ampicillin and phenoxymethylpenicillin;
- Others.



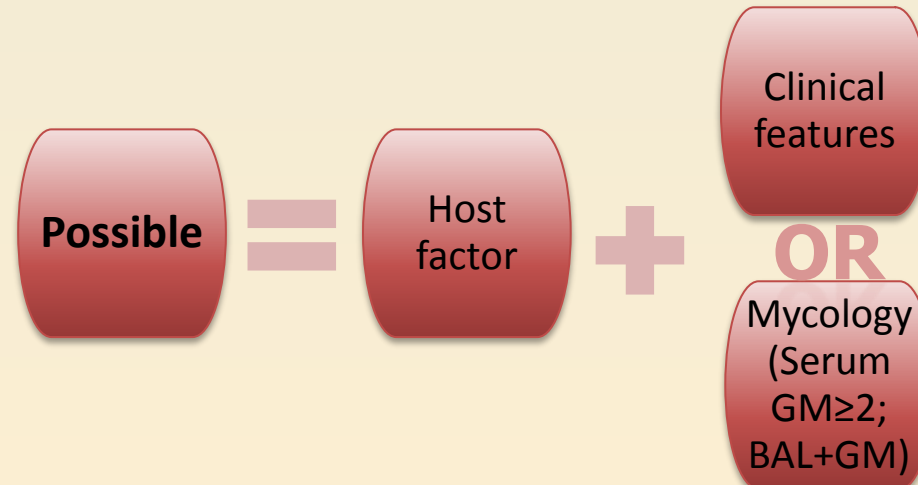
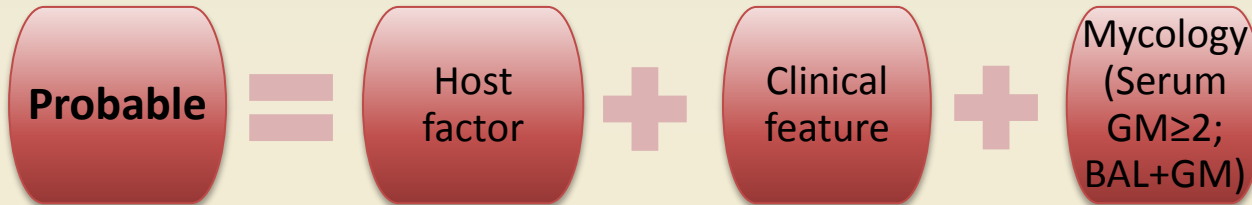
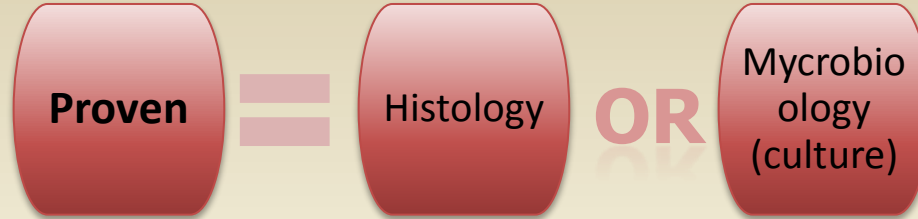
Defining Opportunistic Invasive Fungal Infections in Immunocompromised Patients with Cancer and Hematopoietic Stem Cell Transplants: An International Consensus

S. Ascioglu,¹ J. H. Rex,² B. de Pauw,¹ J. E. Bennett,² J. Bille,¹ F. Crokaert,¹ D. W. Denning,¹ J. P. Donnelly,¹ J. E. Edwards,² Z. Erjavec,¹ D. Fiere,¹ O. Lortholary,¹ J. Maertens,¹ J. F. Meis,¹ T. F. Patterson,² J. Ritter,¹ D. Selleslag,¹ P. M. Shah,¹ D. A. Stevens,² and T. J. Walsh,² on behalf of the Invasive Fungal Infections Cooperative Group of the European Organization for Research and Treatment of Cancer and Mycoses Study Group of the National Institute of Allergy and Infectious Diseases

¹European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group, Brussels; and ²National Institute of Allergy and Infectious Diseases Mycoses Study Group, National Institutes of Health, Bethesda, Maryland



Aspergillosis:



* S. Ascioglu, J. H. Rex, *Defining Opportunistic Invasive Fungal Infections in Immunocompromised Patients with Cancer and Hematopoietic Stem Cell Transplants: An International Consensus*, *Clinical Infectious Diseases* 2002; 34:7–14 .



AIM:

To investigate the role (specificity, sensitivity, positive predictive value, negative predictive value) of GM in BAL fluid as a tool for diagnosis of IPA in hematological patients.



METHODS:

- Prospectively collected clinical and laboratory data in patients who had BAL GM performed in Hematology Center between 2006 and 2009;
- Serum GM levels were measured and BAL fluid was obtained for direct examination, culture, and measurement of GM level;
- GM level was measured with monoclonal antibodies in a double-sandwich ELISA assay;



METHODS:

- Patients underwent biopsy of the bronchial lesions if present;
- Chest CT and (or) X-ray were performed to identify IPA associated lesions according to Consensus criteria
- Patients were categorized as having proven, probable, or possible IPA.





METHODS:

- The sensitivity, specificity, negative and positive predictive values of BAL GM were calculated with respect to proven or probable IPA.





RESULTS:

CHARACTERISTIC	NUMBER
PATIENTS	84
MEDIAN AGE (RANGE)	48 (18-84)
MALE	48 (57%)
FEMALE	36 (43%)
ALIVE	45 (53,5%)
TRANSPLANTS	32 (8 allo, 24 auto)
NEUTROPENIC	44 (52%)
CML	9 (10.7%)
Acute Leukemia	39 (46.4%)
CLL	9 (10.7%)
LYMPHOMA	13 (15.5%)
OTHER	14 (16.7%)



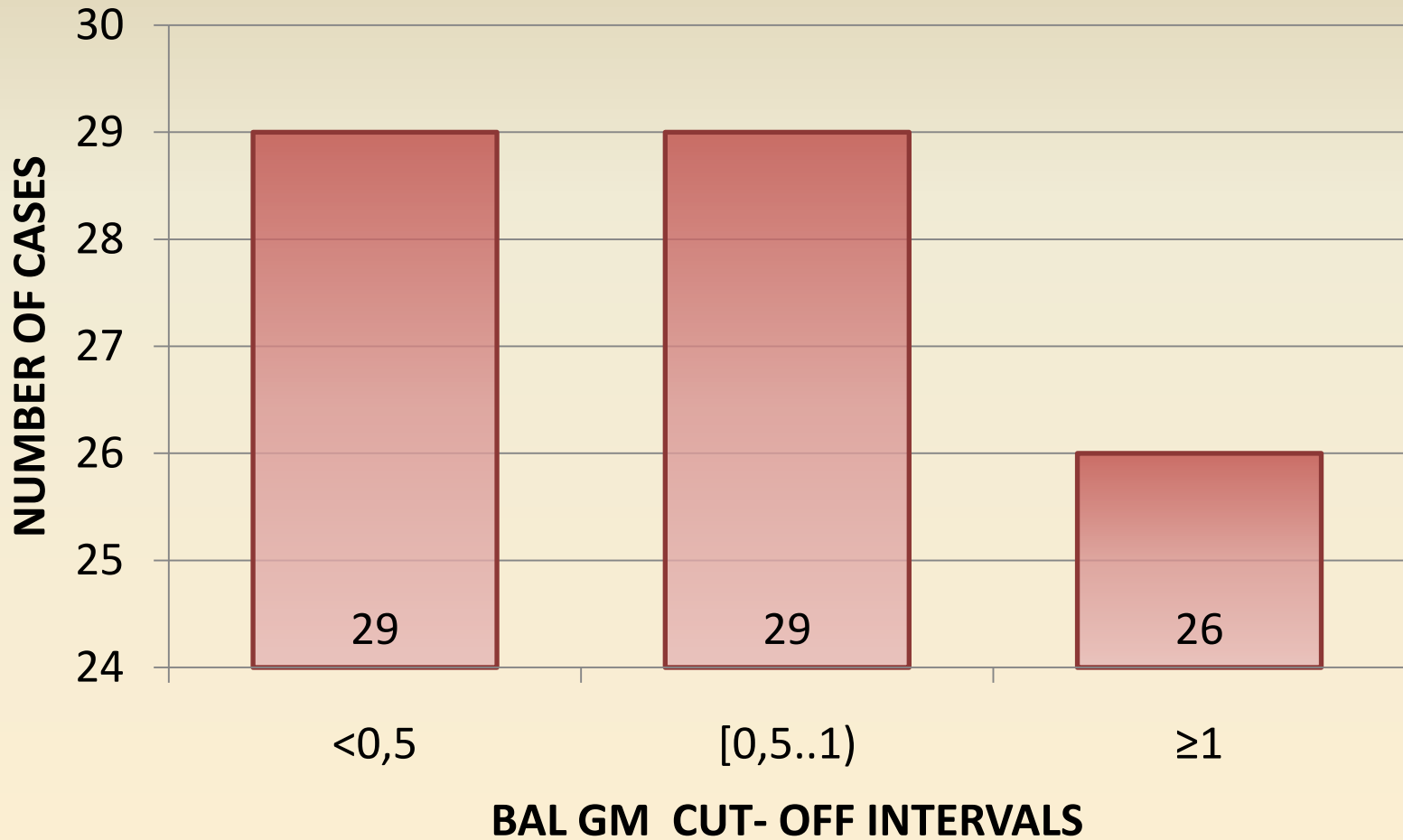


RESULTS:

CHARACTERISTIC	NO OF PATIENTS TESTED	NO POSITIVE (%)
Serum GM	47	6 (13%)
Chest CT	63	53 (84%)
BAL GM	84	55 (65%)
Culture	84	0 (0%)
Histology	2	2 (100%)



RESULTS:





RESULTS:

CHARACTERISTIC	NUMBER
PROVEN	2 (2.4%)
PROBABLE	41 (48.8%)
POSSIBLE	41 (48.8%)
TOTAL	84 (100%)





RESULTS:

	BAL GM +	BAL GM -
CHEST CT +	38	15
CHEST CT -	6	4





RESULTS:

	BAL GM +	BAL GM -
SERUM GM +	4	2
SERUM GM -	26	15



RESULTS:

CHARACTERISTIC	NUMBER
SENSITIVITY	100%
SPECIFICITY	70.7%
POSITIVE PREDICTIVE VALUE	77.8%
NEGATIVE PREDICTIVE VALUE	100%





CONCLUSIONS:

- BAL GM has a high negative but only moderate positive predictive value for proven or probable IPA.
- Serum GM is only rarely positive in proven or probable IPA.





Thank you for your attention