

INTRODUCTION AND AIM

- ❖ Invasive Pulmonary Aspergillosis (IPA) is a serious disease with a very high morbidity and mortality rate. Diagnosis of IPA remains troublesome and challenging despite the many diagnostic tools available today (e.g., radiological, culture, serological, and molecular methods).
- ❖ Direct examination of clinical specimens under fluorescence microscope using calcofluor white staining (CFWS) is simple, fast, and reliable; however, no studies have assessed the ability of this approach to distinguish IPA from colonization.
- ❖ **The aim of the study was to evaluate the utility of CFWS as a rapid and cheap tool for the diagnosis of IPA.**

METHODS

- ❖ We reviewed retrospectively microbiology databases and clinical reports of patients hospitalized at Hospital General Universitario Gregorio Marañón from January 1st, 2008 to December 31st, 2012 for samples with *Aspergillus* isolates.
- ❖ Patients were classified as having IPA if they fulfilled the criteria of proven, probable, or possible IPA according to the European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group and National Institute of Allergy and Infectious Diseases Mycoses Study Group. They were classified as colonized if they did not fulfill these criteria.
- ❖ We included all cases with an *Aspergillus*-positive culture and CFWS performed. CFWS was considered positive or negative according to the visualization of septate hyphae.

RESULTS

- From 2008 to 2012, *Aspergillus* species was cultured in 316 respiratory samples (209 sputum samples, 52 bronchoalveolar lavage samples, and 55 bronchoalveolar lavage samples) from 227 patients (71.4% men, mean age 65.9 ± 14.86 years [range, 0-90 years]).
- Of these patients, 45 (19.8%, 75 samples) fulfilled the criteria for IPA, and 182 (80.1%, 241 samples) were considered colonized (Fig. 1).

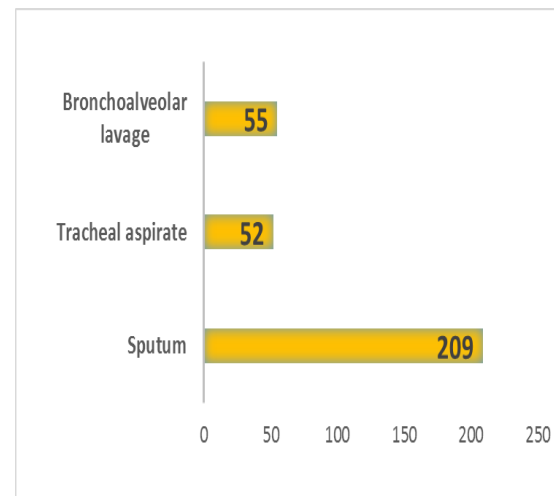


Fig. 2.- Types of respiratory sample

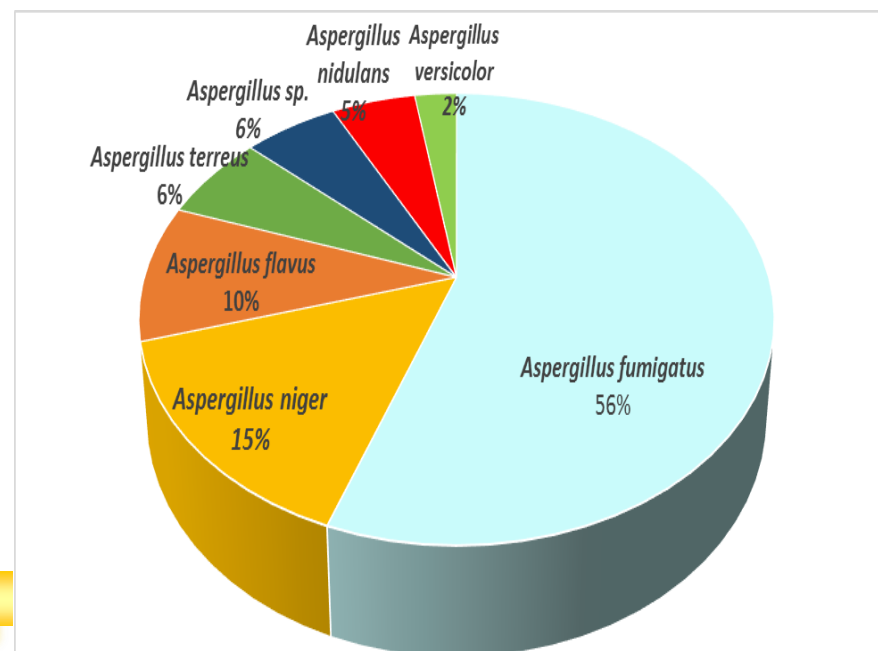


Fig. 3.- *Aspergillus* species distribution in all respiratory samples

- CFWS revealed septated hyphae in a total of 145 respiratory samples and yielded negative results in 171.
- Among the 75 samples obtained from IPA patients, CFWS revealed that 60 samples (80.0%) were positive for fungal elements and 15 (20.0%) yielded negative results.
- Among the 241 samples obtained from colonized patients, CFWS revealed that 85 samples (35.3%) were positive for fungal elements and 156 (64.7%) yielded negative results.

Table 2. Performance of CWS in our study population

Sensitivity	80%
Specificity	64%
Negative Predictive Value	91%
Positive Predictive Value	41%

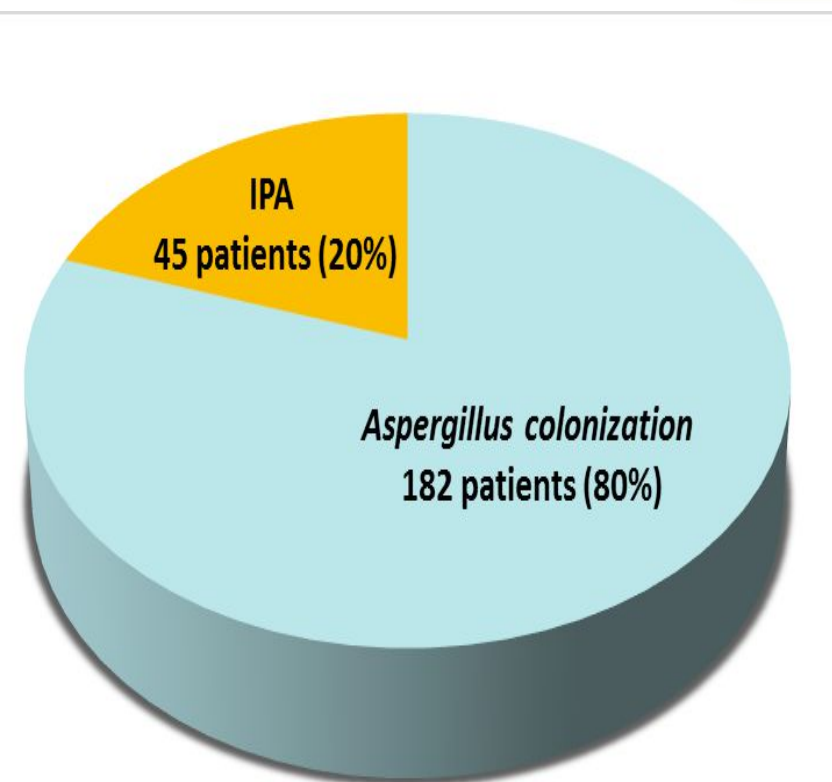
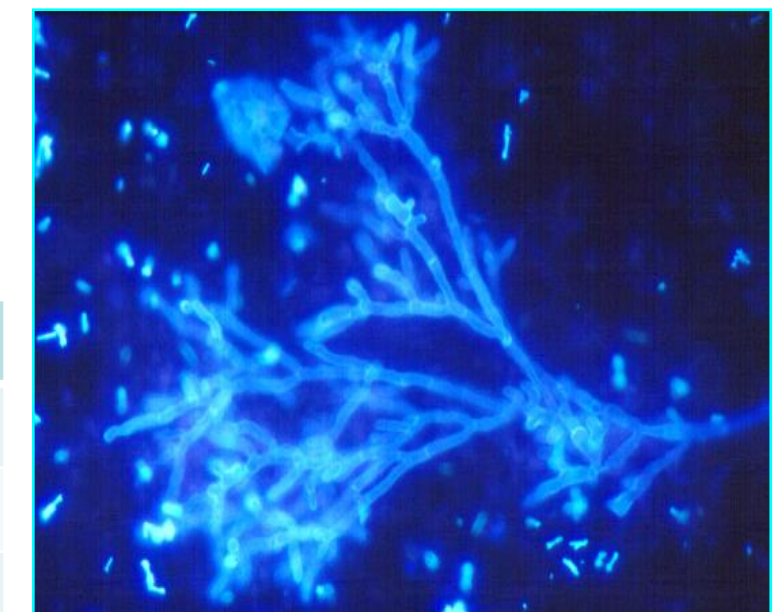


Fig. 1.- Distribution of patients with isolation of *Aspergillus* in respiratory simple.

- *Aspergillus fumigatus* was the most commonly isolated species in patients with IPA (64.0%) followed by *A. flavus* (10.7%), *A. niger* (10.7%), and *A. terreus* (2.7%).
- The remaining 12.0% included several *Aspergillus* spp.

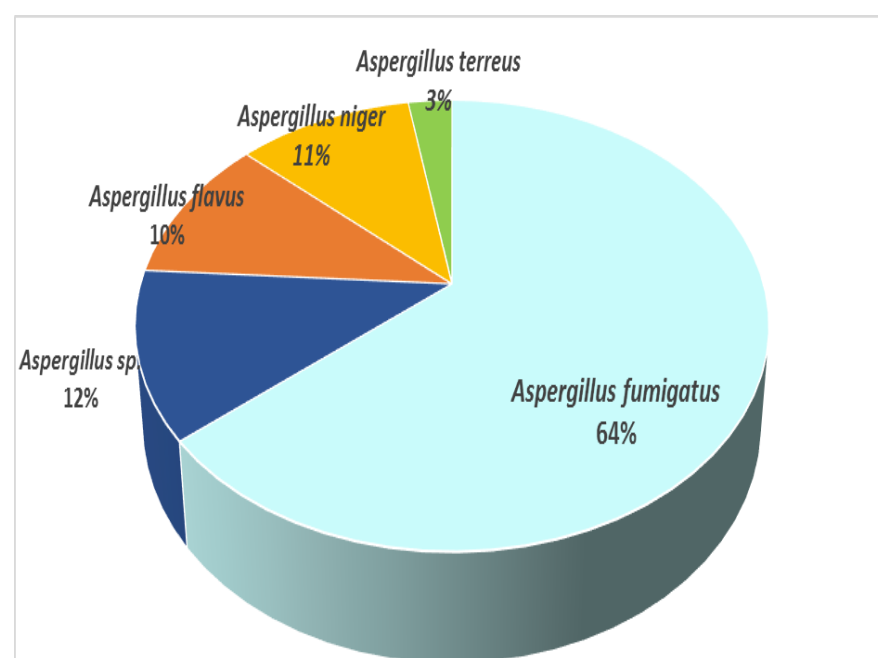


Fig. 3.- *Aspergillus* species distribution in patients with IPA

Table 1. CFWS in patients with and without IPA

CFWS	IPA	NO IPA	Total
POSITIVE	60	85	145
NEGATIVE	15	156	171
Total	75	241	316

CONCLUSIONS

- When *Aspergillus* species is present in the respiratory tract, a negative calcofluor result is suggestive of colonization with a high negative predictive value.
- Direct examination of clinical respiratory specimens using calcofluor white continue to be, in the molecular diagnosis era, a rapid, cheap and useful tool that could help in the diagnosis of IPA.