Utility of Aspergillus Galactomannan Assay in Allogeneic Stem Cell Transplant Recipients

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Background

• Allogeneic hematopoietic stem cell transplantation (HSCT) is a valuable treatment option for patients with some blood/malignant disorders.
• HSCT patients are at highest risk of developing invasive Aspergillus (IA) in the first 100 days post-transplant.
• Diagnosis is challenging.
  • A previous meta-analysis estimated a sensitivity of 0.71 and specificity of 0.89 in immunocompromised patients for Aspergillus galactomannan (GM) in serum (Pfeffer C, CD, et al.2006).
  • A positive (+) GM result requires further workup for a definitive diagnosis.
  • False positives can lead to unnecessary treatment with expensive and potentially toxic antifungal medications.
  • Delays in treatment initiation are associated with poor outcomes.
• At UC San Diego Health, allogeneic HSCT patients not on mold-active agents for antifungal prophylaxis have GM tested weekly from day 7 to >100 post-HSCT.
• This study aims to describe the utility of routine GM assays in this HSCT population.

Objectives and Methods

Primary Objective
To determine the usefulness of the galactomannan assay at UC San Diego Health as a “preemptive” diagnostic tool to diagnose IA in allogeneic HSCT patients on fluconazole

Secondary Objectives
To quantify inappropriate use of the galactomannan assay (i.e. in patients on mold-active antifungal therapy).

Methods

This is a single center, retrospective chart review study of adult patients >18 years of age post-allogeneic HSCT at a large academic medical center from January 2015 - December 2016. Included subjects had GM results reported in the electronic medical record.

Results

• In total, 108 patients met criteria for enrollment in this study.
• There were a total of 1354 GM results, of which only 2.8% (38) were positive (> = 1 GM) in 25 patients (23% of all patients).
• Of these, 20 of 25 (80%) were found to be false positives.
• In total, 7 of 108 patients had a diagnosis of possible or probable IA as determined by Center for International Blood & Marrow Transplant Research (CIBMTR®)/EIDT criteria and identified by retrospective chart review.

Discussion and Conclusions

• The GM test was performed over 1,300 times over the course of 2 years:
  • Notably, only 7 of 108 patients were diagnosed with possible or probable IA.
  • The GM test helped lead to just 3 of these 7 diagnoses.
  • However, these 3 also had further work up and confirmatory lab tests, and were high risk patients.
• Notably, of the patients with a positive result GM, 80% did not have a true infection.

Overall Conclusion:
Routine GM testing adds to cost and is not a useful predictor of IA infection in the studied population. Studies to determine what populations, if any, would most benefit from routine preemptive GM or other fungal screening are needed.

References


Accreditations

• Connie Nelson
• Cathy Logan, MD