Outbreak of Invasive Aspergillus Infection in Surgical Patients, Associated With a Contaminated Air-Handling System

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Key Concepts/Context
Surgical Site Infections are a prominent concern Operating Room design. In this study a specific outbreak of aspergillus infection in a hospital was investigated and linked back to the air quality conditions in the O.R. The study is significant because typically Aspergillus species are ubiquitous thermotolerant molds that rarely cause invasive infection.

Methods
The study was initiated with an index case of a 52 year old woman, who was readmitted to the hospital for surgery. Mold was identified on her open wound post-surgery. Given the unusual nature of the wound infection, and concerns about patient-to-patient transmission, an outbreak investigation was begun. Inpatients were included in the study based on consensus definitions for deep-tissue fungal infections over a 2 year period. Pathology databases and clinical microbiology laboratory records were analyzed. Additionally, medical history, diagnosis, culture and pathological evidence of disease, therapy, therapeutic outcome, dates of hospitalization, room location, evidence of procedures or surgeries, and dates and locations of procedures or surgeries were abstracted. In addition, engineering records were reviewed during the same 2-year period to identify construction or renovation projects.

To assess contaminated operating theater air quality, particle counts were measured as markers for Aspergillus conidia. A confined space video camera...
SYNOPSIS

identified moisture and contamination of insulating material in ductwork and variable airflow volume units downstream of final filters.

Findings

- A substantial increase in the proportion of airborne particles was observed in many operating rooms.
- No additional invasive Aspergillus wound infections were identified after the operating theater air-handling systems were remediated, suggesting that the unusual outbreak was due to the deterioration of insulating material in variable airflow volume units.

Limitations

- No limitations were identified by the study.
- Study investigated one instance of Aspergillus conidia caused infections and cannot be generalized.