Outbreak of Prototheca wickerhamii algaemia and sepsis in a tertiary care chemotherapy oncology unit

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**Background:** Prototheca is an emerging, rare, opportunistic, pathogenic, achlorophyllous green alga known to cause protothecosis which is a zoonotic disease. Earlier interpreted as contaminants in blood and faeces, Prototheca is expanding its pathogenicity and host range. An outbreak of protothecosis by Prototheca wickerhamii in a tertiary care chemotherapy oncology unit is being discussed.

**Material/methods:** All patients detected to have algaemia were operationally included in the case definition. Clinicodemographic profile, diagnosis, duration of stay, treatment protocol and neutrophil count were correlated. After isolation on sheep blood and Sabouraud's agars, urease, Germ tube formation and automated identification through VITEK 2 (bioMérieux, France) were attempted. Colony characteristics, micromorphology, substrate utilization and antifungal susceptibility were interpreted. All patients were initiated on liposomal amphotericin B (5 mg/kg body weight/day). Fecal cultures of affected patients, environmental surveillance and healthcare staff were screened while continuing surveillance for one year post outbreak.

**Results:** The outbreak lasted approximately 50 days during which the average occupancy was 26 patients (86.67%) and mean hospital stay was 60 days. Mean age of affected patients was 37 ± 10.74 years with male: female:: 5: 1. Mean neutrophil count in affected patients was 150 per dl. The attack rate was 7.69. Prototheca wickerhamii was isolated on sheep blood and Sabouraud's agars as yeast-like colonies having Gram positive 3-11 µ non-capsulated spherical yeast-like cells without budding and pseudohyphae. All isolates were negative for urease and Germ tube formation. VITEK 2 compact provided 99% identification probability. MICs in µg/ml for Amphotericin B and Voriconazole were 0.5 and 2 respectively. All isolates were similar for biochemical reactions and susceptibility patterns. All patients responded to liposomal amphotericin B. One patient detected to have algaemia went into sepsis with serum procalcitonin levels between 2-4 ng/ml with subsequent fatal outcome under intensive care. Surveillance studies were not contributory.

**Conclusions:** Immunocompromised neutropenic patients having protothecosis may not manifest clinical features leaving detection to intuitive clinical acumen. Outbreaks are difficult to detect and control as incubation period is variable. Such hospital outbreaks re-emphasize the need to strengthen hospital and laboratory based surveillance to ensure adequate preparedness, rapid detection and response to outbreaks.