Coinfection of mucormycosis and aspergillosis: case series

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Introduction

- Diagnosis of mixed fungal infections can be difficult and it becomes important to differentiate between commensal, co-infections and opportunistic infection.
- Diagnosis of invasive fungal infections can be challenging as almost half of the cases may lack a supporting microbiological evidence.
- Compromised immune response can predispose high risk patients to acquire multiple infections
- Through investigations need to be performed to correctly identify and treat them for a better patient outcome.
- Indian literature is scanty pertaining to this group of fungal diseases which co-infect patients with different underlying co-morbidities.
- The study aimed to review epidemiology of co-infection, associated risk factors, treatment and outcome in suspected invasive fungal infection cases.

Materials and Methods

- A prospective study for the duration of one year (January-December 2017) was performed at our tertiary care institute at All India Institute of Medical Sciences (AIIMS), New Delhi on suspected cases of invasive fungal infections.
- All samples were subjected to direct microscopy, KOH and Calcofluor mounts followed by culture on SDA with and without antibiotics.

Results

- Direct microscopy showed the presence of both septate and aseptate hyphae in 18 samples received from 12 cases.
- These cases included 7 males and 5 females.
- Age at presentation ranged from 17 to 65 years of age.

Fig. 1: Distribution of direct microscopy positive samples

Fig. 2: KOH and Calcofluor mount showing presence of septate and aseptate hyphae

- Culture showed either growth of aspergillus and/or mucorales in 83.3 % samples (15/18) and 17 isolates were obtained.
- *Aspergillus flavus* was the most common isolated spp (7/17)
- *Aspergillus niger* and *Lichtheimia corymbifera* (4/17) each
- One isolate each of *Rhizopus microsporus* and *Aspergillus fumigatus*.

Fig. 3: Isolates obtained from culture

- Diabetes mellitus was the most common underlying predisposing factor (8/12 cases)
- One case each of chronic kidney disease and sarcoidosis
- Underlying factor could not be ascertained in 2 cases

Fig. 4: Underlying risk factors

- Surgical debridement along with liposomal amphotericin B was the mainstay of treatment in all cases.
- Favorable outcome was achieved in all except one who succumbed to death.

Discussion

- Direct microscopy, histopathology or growth on culture remain the cornerstone to establish the diagnosis.
- Compromised immune response can predispose high risk patients to acquire multiple infections.
- Uncontrolled diabetes was the most common probable underlying factor amongst our cases
- High risk factors for invasive fungal infection are primary immunodeficiencies, long-term use of corticosteroids and/or antibiotics, prolonged neutropenia, AIDS, uncontrolled diabetes mellitus and malnutrition
- Angioinvasion and rapidly progressing nature of these infections warrants early diagnosis.
- Cautious interpretation of the diagnostic modalities should be done in order to ascertain the diagnosis so as to initiate prompt appropriate treatment.

Conclusions

- We emphasize need of a higher level of clinical suspicion of mixed fungal infections in immunocompromised individuals for early diagnosis and timely management.

References

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