Antifungal prophylaxis and treatment with micafungin in critically ill patients

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Introduction: Invasive fungal diseases are known to cause significant morbimortality in critically ill patients in spite of the development of new antifungal agents. Micafungin, a new echinocandin, has very good antifungal activity with a favorable pharmacokinetic profile, few drug-drug interactions, and rare reports of resistance.

Method: Observational retrospective study aimed to describe the epidemiologic data and variables of patients treated with micafungin in our Intensive Care Unit from 01/01/2010 until 01/07/2012.

Results: a total of 39 patients were analysed (28 males (52%) and 11 females (21%)), with an average age of 59 ± 14 years, APACHE II on ICU admission 21 ± 9, SOFA 8,5 ± 4 and CS 3,5±1 at the beginning of antifungal therapy.

The cause of ICU admission was classified in medical origin: 16 patients (41%) or surgical 22 patients (59%). 19 patients (48,7%) were reoperated. The average of surgical proceedings was 1,4 ± 1,3 per patient.

Abdominal surgery was the main cause of surgical proceedings and perforation of SB the most frequent among them.

Microbiologic results: Patients were classified in three groups depending on microbiologic results as: i) non colonized patients nor infected (NCNI): 14 patients (36%), ii) colonized patients with Candida without confirmed infection: 16 patients (41%) (abridged results in table 1 and graphic 2) y iii) patients infected with Candida (IFI): 9 patients (23%) (abridged results in table 2 and graphic 3).
Most frequently colonized samples were tracheal aspiration with 22 isolations (56.4%) and rectal smear with 7 isolations (17.9%). The species more frequently isolated was *C. albicans* followed by *C. parasilopsis*. Most of colonized patients presented multifocal colonization (62.5% vs 37%). A high rate of infected patients presented simultaneously multifocal fungal colonization (6 out of 9).

All patients with IFI and colonization had a CS >= 3 at the beginning of treatment. The cause of using Micafungin was: 46% CS >= 3, immunosuppression 15.4%, rescue (bad evolution) 30.8%, multifocal isolation 7.7%. Treatment was held for 10±6 days. De-escalation was only used in 2 patients.

100% of patients needed mechanical ventilation for an average of 20±14 days. RRT was used in 16 patients (41%) (mean 8±16 days). ICU average length of stay: 22±15 days. Mortality 27 patients (69.2%).

**CONCLUSIONS:**

1. Mortality observed (69.2%) was higher than expected according to the average APACHE II (38.9%), but similar to mortality rates reported in other studies. Delay in diagnosis and the beginning of therapy increase significantly the mortality.

2. 41% of patients were treated with micafungin without presenting colonization nor fungal infection. Obtaining fungal marks will avoid many not well justified treatments and will cut down costs.

3. We observed an scarce de-escalation strategy in spite of being effective as demonstrated in many studies. High rate of severity illness could have influenced this finding.

4. Most frequently colonized samples were tracheal aspiration and rectal smear, being *C. albicans* the most prevalent species.