Abstracts of Outstanding Presentation (2)

Fungemia at Our Hospital

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Background and Objective

Tests of the susceptibility of *Candida* species to antifungal agents have been performed at our hospital since 2011. Our attention has been focused on patients with *Candida* endophthalmitis in whom *Candida* species have been detected with cultures of blood. However, the percentage of these patients who undergo ophthalmoscopy remains unknown. Therefore, in the present study, the follow-up of endophthalmitis and drug selection in patients with fungi detected with blood culture were examined in a clinical setting.

Subjects and Methods

Fungal species, drug treatments, and prognoses were retrospectively studied in 64 patients with fungi detected with blood cultures from January 2011 through February 2013. Patients who lived for more than 1 month after fungal detection were considered to have survived, whereas patients who did not survive for more than 1 month were considered to have died.

Results

Causative fungal species were *Candida albicans*, *Candida glabrata*, *Candida parapsilosis*, and *Candida tropicalis* **(Fig. 1)**. Endophthalmitis was evaluated with ophthalmoscopy in 16 (73%) of 22 surviving patients, and endophthalmitis caused by *Candida* species was detected in 2 (12%) patients. The outcomes were death in 42 (66%) cases and survival in 22 (34%) cases. Seven patients (11% of all patients; 17% of patients who died) had already died at the time of fungal detection, and 71% of the patients who died had done so within 2 weeks after fungal detection. Of these patients, 67% died owing to fungemia. First-line agents were micafungin for 20 (43%) patients, fosfluconazole for 11 (23%) patients, fluconazole for 9 (20%) patients, liposomal amphotericin B for 5 (11%) patients, amphotericin B for 2 (4%) patients, and combinations of 2 agents for 4 (9%) patients. None of the major fungal strains detected showed azole resistance. No significant difference was noted in the agents used between patients who died and patients who survived **(Table 1 and 2)**.

Discussion and Conclusions

The most common causative fungal species was *C. albicans*. The second most common causative fungal species in a survey conducted 3 years previously, *C. parapsilosis*, decreased to about 50% of detection. The *C. parapsilosis* infections had occurred exogenously and suggest that our measures against nosocomial infections

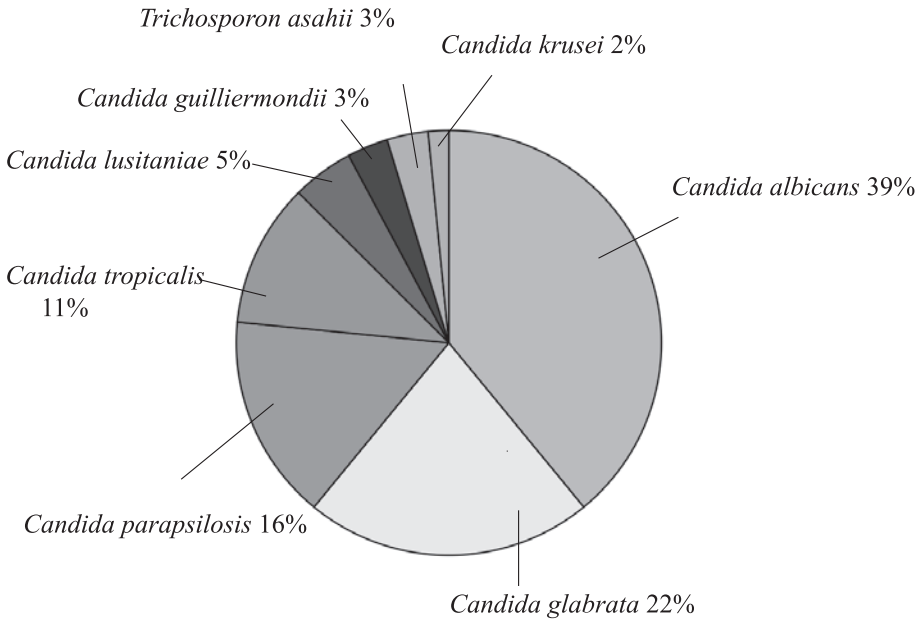

Fig. 1 Fungal species detected

Table 1 Fungal susceptibility tests (minimum inhibitory concentration*: μg/mL)

Fungal species	Amphoteracin B (Liposomal amphoteracin)	Fluconazole (Fosfluconazole)	Micafungin	Voriconazole
Candida albicans	0.125–1	0.125–1	<0.03–0.06	<0.015–0.03
Candida glabrata	0.5–2	0.25–32	<0.03–0.5	0.125–1
Candida parapsilosis	0.25–1	0.5–2	0.125–4	<0.015–0.06
Candida tropicalis	0.25–1	0.5–8	<0.03–0.125	0.03–0.5
Candida lusitaniae	0.25–1	1–2	0.125–1	<0.015–0.03
Candida guilliermondii	0.5	4–64	0.25–0.5	0.125–4
Trichosporon asahii	1–2	16–32	>16	0.25–1

*Minimum inhibitory concentrations were determined with the broth microdilution method according to supplement document M27-S2 of the Clinical and Laboratory Standards Institute.

Table 2 Dosages of antifungal agents

Fungal species	Amphoteracin B (Liposomal amphoteracin)	Fluconazole (Fosfluconazole)	Micafungin
Candida albicans	150 mg	200–400 mg *with 75 mg of micafungin for 1 case	50–150 mg
Candida glabrata	Unknown	100 mg *with 75 mg of micafungin for 1 case	50–300 mg
Candida parapsilosis		100–400 mg *with 50 mg of micafungin for 1 case	150 mg
Candida tropicalis	150 mg	100–200 mg *with 50 mg of micafungin for 1 case	
Candida lusitaniae			150 mg
Candida guilliermondii			50–150 mg
Trichosporon asahii	150 mg		

have been effective. Endophthalmitis was evaluated with ophthalmoscopy in more than 50% of surviving patients. However, the disappearance of *Candida* species was confirmed by means of negative blood cultures in less than 50% of cases. The method of submitting 2 sets of blood cultures has gradually been recognized, but 2

sets are not submitted in a sufficient percentage of cases. Thus, educational campaigns should be continued because of the difficulties in distinguishing fungal infection from contamination. The tests of susceptibility to antifungal agents demonstrated no azole resistance among the major fungal species. However, the dosages of antifungal agents used were less than those recommended in the guidelines of Japanese Society of Chemotherapy and suggest that treatment is often insufficient. Fungemia has a high mortality rate. In fact, more than half of our patients died. For some severely ill patients, test results may be reported too late to allow appropriate treatment or to prevent death. Thus, the first drugs administered for fungal infections at an institution should be selected on the basis of the detection statuses and antibiograms of *Candida* species.