

# Candidemia Requires Routine Ophthalmologic Evaluation!

## Medical History

Age: 72 year-old Sex: Male Weight: 60 kg Ulcerative colitis. Total gastrectomy, splenectomy, and cholecystectomy for gastric cancer

## Postoperative Course

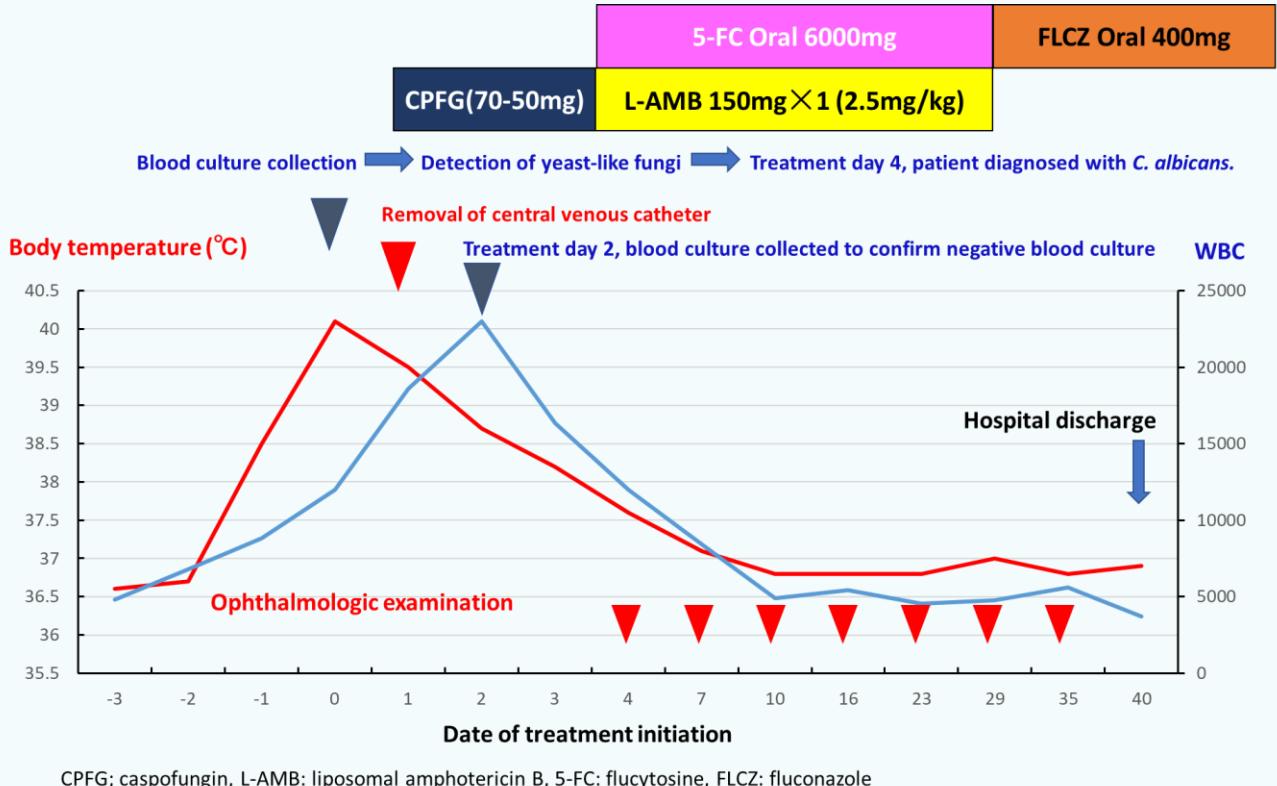
**Postoperative day 4:** esophagojejunostomy anastomotic leakage occurred, and fasting management was performed.  
**Postoperative day 15:** a central venous catheter was inserted and nutritional management was started. **Postoperative day 24:** pyrexia of 39.8 °C was noted and 2 sets of blood cultures were collected. **Postoperative day 4 (day 1 of treatment):** detection of yeast-like fungi from blood culture, initiation of caspofungin (CPFG), removal of central venous catheter due to candidemia from central venous catheter

### <Day 1 of Treatment Physical Examination>

Body temperature: 39.5 °C, blood pressure: 93/52 mmHg, pulse: 98 beats/min, WBC: 18600/μL, Plt: 188000/μL, T-Bil: 0.4 mg/dL, AST: 32 U/L, ALT: 31 U/L, CRP: 12.3 mg/dL, eGFR: 60 mL/min/1.73 m<sup>2</sup>, β-D glucan: 100.5 pg/mL

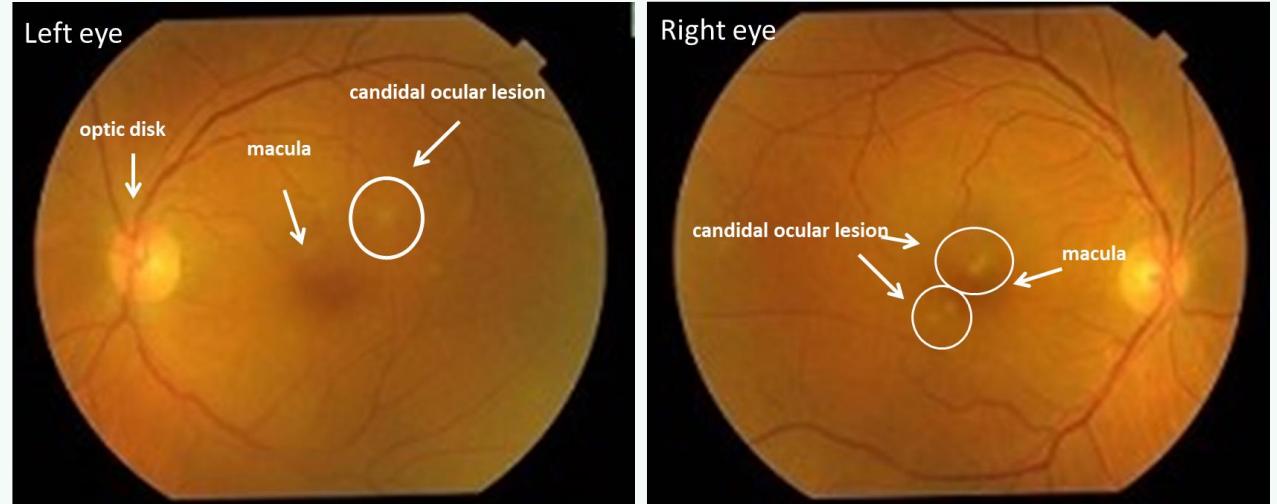
## Course of Treatment

**Treatment day 2:** two sets of blood cultures were taken to confirm negative blood cultures. **Treatment day 4:** yeast-like fungus detected in the blood culture was identified as *C. albicans*, and patient presented subjective symptoms of "black matter flickering in the right eye." Eye lesion was diagnosed by ophthalmic examination, CPFG was discontinued, and switched to amphotericin B ribosome preparation (L-AMB) and flucytosine (5-FC). **Treatment day 10:** improvements in subjective symptoms in the right eye. **Treatment day 16:** improvements seen in fundus findings from ophthalmic examination. **Treatment day 29:** although fungal mass in the fundus oculi remained during the ophthalmologic examination, diagnosed as suitable for oral drugs and fluconazole (FLCZ) was substituted. **Treatment day 44:** the patient was discharged from the hospital (oral administration of FLCZ was continued). **Treatment day 72:** treatment was discontinued due to improvement in findings of ocular fundus during an outpatient ophthalmologic examination.



## Treatment Day 4: Ophthalmological Findings

Diagnosis of ocular candidiasis (both eyes, particularly the right eye)  
 Right eye: subjective symptom of vitiligo within 1 disc diameter of macula and "black flickering in the right eye"  
 Left eye: light vitiligo in arcade



Lesions near the macula are associated with visual abnormalities.  
 Lesions extending beyond the retinochoroid membrane into vitreous humor (vitreous infiltration) may decrease vision.

## Points for diagnosis and treatment of ocular lesions in candidemia

Diagnosis: the incidence of ocular lesions in candidemia ranged from 12.8% to 19.5%, and progressive lesions such as vitreous infiltration were found in approximately 40% of cases of ocular lesions in a nationwide survey in Japan ⇒ **candidemia requires routine ophthalmologic examinations**

**Treatment: choice of antifungal drug by ocular migration**

**Amphotericin B :**  
 Low ocular migration but treatment outcomes good in severe cases such as vitreous infiltration. Currently, liposomal amphotericin B is recommended, which has fewer side effects.

**Candice fungus-type (micafungin and caspofungin) :**  
 Not recommended for treating eye lesions due to poor ocular migration.

**Discuss surgical indications with an ophthalmologist.**

Ocular migration for each systemically administered antifungal agent

	Blood Concentration (μg/ml)	Intravitreal Concentration (μg/ml)
Amphotericin B	0.6~1.5	0.10~0.23
Flucytosine	10~35	22.2
Fluconazole	17.4	12.1
Voriconazole	2.13	0.81
Micafungin	21.02	0.1
Caspofungin	4.7	-

**Treatment duration:** 2 weeks after negative blood culture for candidemia without disseminated disease. Treatment of ocular candidiasis is continued for at least 4 ~ 6 weeks with regular ophthalmologic examinations until the lesion has healed. In particular, it is recommended to check with an ophthalmologist during the treatment period because the treatment is prolonged in cases of vitreous infiltration.

**Antimicrobial resistance problem:** Since increasing the use of candidin antifungal drugs leads to more candidin-resistant *Candida* spp, it is necessary to select an appropriate antifungal drug that considers tissue penetration.