



## CLINICAL CASE

# Blindness due to a systemic fungal infection in a patient with a ureteral catheter



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### PALABRAS CLAVE

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### Abstract

**Introduction:** In patients with an indwelling urinary catheter presenting with candiduria and risk factors that favor its spread, the sudden onset of ocular symptoms with a decrease in visual acuity should lead us to suspect this organism as a causal agent.

**Clinical case:** A 56-year-old Caucasian man with risk factors for Candida colonization and spread began to have floaters, photopsia, and decreased visual acuity ten days after the insertion of a double-J stent.

**Conclusions:** Antifungal therapy should be considered in patients that have undergone a urologic procedure and that present with candiduria and associated risk factors, in order to prevent the spread of infections and their subsequent complications.

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### Ceguera en paciente portador de catéter doble J

#### Resumen

**Antecedentes:** En pacientes portadores de un cateter urinario, la presencia de Candiduria y factores de riesgo asociados favorecen la propagación de este germen. La aparición repentina en estos pacientes, de síntomas oculares con una disminución de la agudeza visual conduce a pensar hacia la afectación ocular por dicho germen.

**Caso clínico:** Presentamos el caso de un paciente de 56 años de edad, de raza caucásica con factores de riesgo para la colonización por Candida y la posterior propagación de este microorganismo, que comenzó a tener miodesopsias, fotopsia y disminución de la agudeza visual diez días después de la inserción de un catéter doble J.

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**Conclusiones:** La necesidad de iniciar el tratamiento antifúngico debe ser considerado en pacientes con candiduria y factores de riesgo asociados, y que se someten a un procedimiento urológico, con el fin de evitar la propagación de infecciones y las complicaciones provocadas por estos.

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## Introduction

*Candida* colonization does not pose a threat to health in a healthy host. The systemic repercussions resulting from *Candida* occur in patients with baseline comorbidities or in those undergoing certain procedures, such as ureteral catheterization, since they increase the persistence of the microbe. We report herein the case of a patient that presented with bilateral *Candida* endophthalmitis after the insertion of a double-J ureteral stent for obstructive uropathy.

## Case report

A 56-year-old man presented with overweight, dyslipidemia, poorly controlled type 2 diabetes mellitus, and lack of treatment adherence. He received cefixime during the previous week for a urine infection. The patient came to our unit with complicated renal colic, which required the insertion of a left-side ureteral catheter. The urine culture was positive for *Streptococcus peroris*. Intravenous linezolid treatment was started, but fever persisted after 5 days. New urine and blood cultures were positive for *Candida albicans* and so fluconazole was added to the treatment. Ten days later, the fever persisted and the patient presented with photophobia, photopsia, and blurred vision. Because the blood cultures remained positive for *Candida albicans*, linezolid therapy was suspended and treatment with fluconazole was continued. The patient was evaluated by the ophthalmology service and a funduscopy examination revealed multiple bilateral, whitish, intra-retinal and well-circumscribed infiltrations consistent with *Candida* chorioretinitis. Systemic antibiotic treatment was continued.

Three weeks later, the blood culture was still positive and the eye disorders did not improve.

Treatment with voriconazole was prescribed and even though the fever disappeared, the eye alterations worsened. Intravitreal voriconazole therapy was introduced, but the situation progressed with no eye infection improvement. Bilateral endophthalmitis was diagnosed. Pars plana vitrectomy was then performed and the infectious process was completely resolved.

## Discussion

Patients colonized with *Candida* and that present with immunosuppressive states, improperly controlled diabetes mellitus, long-term antibiotic treatment, or urine catheters,

favor the survival and persistence of the fungus, with its subsequent hematogenous dissemination.<sup>1-3</sup> *Candida* forms a biofilm over medical devices (such as urinary catheters), which leads to the adhesion of the microorganism and the formation of extracellular polymers that provide a structural matrix, thus increasing the power of adhesion and persistence of the microorganism.<sup>4-6</sup> Tumbarello et al. describe two risk factors for biofilm formation: diabetes mellitus and urinary catheterization.<sup>5</sup> Our patient had both.

Microbes in biofilms have a more virulent behavior because they change the composition of their own cells and are refractory to medical treatment due to the difficulty in penetrating the structural matrix. Therefore, biofilms are associated with increased morbidity and mortality.<sup>7,8</sup>

When a patient with candiduria presents with associated risk factors, candidemia is triggered.<sup>8</sup> The microbe is more virulent because the biofilm infects the adjacent tissue and hence the passage into the bloodstream is immediate. The background risks that trigger fungemia are: antimicrobial or corticosteroid therapy at least one week before the start of fungemia and manipulation of the urinary tract.<sup>8</sup> Our patient had several of these factors (he had double-J stent insertion and a week before this event he was treated with cefixime for 7 days).

After entering the bloodstream, the microorganism can reach the eye and cause endogenous fungal endophthalmitis. Fungal endophthalmitis occurs in 2–10% of all cases of endophthalmitis. It is bilateral in 65% of the cases and appears in patients with immunosuppressive risk factors. The most common primary origins are gastrointestinal abscesses, urinary tract infections, and endocarditis.<sup>4,5</sup>

The development of symptoms in our patient coincides with that described in the literature: sudden reduction of visual acuity, myodesopsia, and pain in the eyes. Initially, the retinal lesions are focal, deep, white, and have a cotton-like appearance. This begins with chorioretinitis, which is contiguous and extends to the vitreous, leading to vitritis, and consequently to endophthalmitis.

The diagnosis is clinical: patient history, symptoms, and the lesions revealed in the funduscopy study. It is confirmed through vitreous culture, but involves many false positive results and a high level of complications. The majority of authors opt to conduct a pars plana vitrectomy, which is both diagnostic and therapeutic. Fungal endophthalmitis is an uncommon condition, but it is one of the main infectious causes of loss of visual acuity. The visual prognosis is very poor, and is associated with the virulence of the microbe, bilateral involvement, and the delay in diagnosis and treatment.<sup>6</sup> The case presented herein is a severe

bilateral case with a very virulent microorganism that did not respond to systemic or intravitreal treatment.

Initial treatment consists of systemic therapy with amphotericin B or fluconazole for a period of three weeks. The second step requires intra-vitreous administration of amphotericin B 5–10 µg/0.1 ml or voriconazole 100 µg/0.1 ml, and in persistent cases, a vitrectomy must be performed.<sup>5</sup> Our patient required a bilateral vitrectomy, which resolved the infection. He presently has a visual acuity of 0.3 in the right eye and 0.4 in the left eye.

## Conclusion

Given the serious outcome of our patient, we consider it necessary to begin antifungal therapy in all patients with candiduria and associated risk factors. The urologic procedures that may predispose to fungemia are: open surgery, cystoscopy, stent placement, and intermittent urinary catheterization. This was also proposed by Toshikuni et al.,<sup>9</sup> who suggested the administration of antifungal agents before shockwave lithotripsy (SWL) to prevent fungemia in patients with funguria, and by Vaidyanathan et al.,<sup>10</sup> in regard to the administration of antifungal treatment in patients with spinal cord injury and candiduria. Particular attention should be paid to the appearance of ocular symptoms, and particularly to a possible fungal endophthalmitis, with its devastating prognosis. According to the medical literature, up to 50% of hospital antibiotic use is inappropriate.<sup>7</sup> It is very important to adjust treatments according to antibiograms. In our case, linezolid was chosen to treat the *Streptococcus peroris* for 10 days and was not changed after the results of the antibiogram. One week later, our patient received cefixime for 7 days. All of this favored the spread of the microorganisms and helped develop the eye problem.

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## Ethical responsibilities

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this investigation.

**Confidentiality of data.** The authors declare that they have followed the protocols of their work centre on the publication of patient data.

**Right to privacy and informed consent.** The authors must have obtained the informed consent of the patients and/or subjects mentioned in the article. The author for correspondence must be in possession of this document.

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