

# Liver Abscess Presenting with Klebsiella Endophthalmitis as the First and the Only Sign

## Karaciğer Apsesinin İlk ve Tek Bulgusu Olarak Klebsiella Endoftalmisi

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**ABSTRACT** This report aimed to present an endogenous endophthalmitis case occurred as an embolic complication of a liver abscess without any signs other than ocular symptoms. A 58-year-old man was admitted to ophthalmology clinic due to acute onset severe pain and loss of vision in the left eye. With no history of any ocular trauma or surgery, the patient underwent a thorough evaluation including blood sampling, cultures, and abdominal imaging as per the recommendations of the consultation to general surgery department. Computed tomography revealed a hepatic abscess, and an ultrasonography guided drainage was performed for treatment. The purulent drainage fluid culture was positive for *Klebsiella pneumoniae*. Ocular infection was managed by intravitreal antibiotic and steroid injections in addition to topical fortified and intravenous antibiotic therapy. After medical therapy, a vitrectomy was performed for the sequel such as fibrotic membranes but there was no improvement in the vision.

**ÖZET** Bu olgu sunumunda, karaciğer apsesinin embolik bir komplikasyonu olarak, oküler semptom dışında herhangi bir belirti olmaksızın ortaya çıkan bir endojen endoftalmi olgusunu bildirmek amaçlanmaktadır. Elli sekiz yaşındaki erkek hasta, sol gözde akut başlangıçlı şiddetli ağrı ve görme kaybı nedeniyle göz kliniğine başvurdu. Herhangi bir oküler travma veya cerrahi öyküsü olmayan hastaya, detaylı oftalmolojik muayenenin yanında, periferik kan ve kültür örnekleme yapıldı. Hasta genel cerrahi branşının önerisiyle abdominal görüntülemeye tabi tutuldu. Bilgisayarlı tomografi görüntülerinde hepatic apse görüldü, tanı ve tedavi amacıyla ultrasonografi eşliğinde drenaj yapıldı. Pürülan drenaj sıvısı kültüründe *Klebsiella pneumoniae* pozitif saptandı. Oküler bulgular için topikal fortifiye ve intravenöz antibiyotik tedavisine ek olarak intravitreal antibiyotik ve steroid tedavileri uygulandı. Medikal tedaviyle bulguları kontrol altına alınan hastaya, vitre içi fibrotik membranların uzaklaştırılması amacıyla vitrektomi uygulandı, ancak görme keskinliğinde artış olmadı.

**Keywords:** Endophthalmitis; *Klebsiella* infections; liver abscess

**Anahtar Kelimeler:** Endoftalmi; *Klebsiella* enfeksiyonları; karaciğer apsesi

Endophthalmitis is a devastating condition generally caused by bacterial agents. It usually occurs as a complication of trauma, surgery, or intravitreal injection.<sup>1</sup> *Klebsiella* Endogenous Endophthalmitis (KEE) is unusual and may occur in patients with immunosuppression, diabetes, or liver abscess. Septic embolism caused by KEE is a complication of liver abscess with a risk of 3 to 7.8%.<sup>2,3</sup> The prognosis of the disease is poor and generally visual acuity does not exceed the level of hand motion, despite all systemic and topical treatments, including vitrectomy.<sup>3,4</sup>

In this report, we would like to present an endogenous endophthalmitis case caused by an embolic complication of a liver abscess without any signs other than ocular symptoms.

### CASE REPORT

The written informed consent of the patient was obtained.

A 58-year-old man was referred to our ophthalmology clinic with acute severe pain, loss of vision in the left eye, and swelling of the eyelids. The patient

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had no history of ocular surgery, trauma, or intravitreal injection, and no symptoms of systemic illness were reported with no medical history of diabetes or high blood pressure. The visual acuity was hand motions, and the intraocular pressure was 20 mmHg. The anterior segment evaluation revealed a severe anterior chamber reaction with 1 mm of hypopyon accompanied with ciliary injection and eyelids edema. Fundus could not be visualized (Figure 1a,b). The B-scan ultrasonography showed multiple dense membranes accompanied by vitritis (Figure 2a,b). The anterior and posterior segment examination of the right eye was normal. In the systemic evaluation, the patient was afebrile, alert, and normotensive without any symptoms. Blood sampling proved elevated liver functions. The computed tomography of orbits revealed intraocular inflammatory changes including the preseptal area (Figure 3).

The patient was suspected of endophthalmitis and hospitalized. A vitreous tap for sampling following with the injections of vancomycin (1 mg/0.1 mL), ceftazidime (2.25 mg/0.1 mL) and dexamethasone (0.4 mg/0.1 mL) was performed. Hourly fortified vancomycin (25 mg/mL) and ceftazidime (50 mg/mL) eye drops were initiated with intravenous vancomycin 1 gr and ceftazidime 1 gr, twice daily.

During follow-up, the patient developed fever and blood-urine sampling for culture revealed no significant results. After a thorough investigation, the patient mentioned that he had a history of high alcohol consumption and had nausea with vomiting 1 week ago. The patient was consulted with the general surgery department. As per their recommendation, abdomen ultrasonography and magnetic resonance imaging were performed which revealed a hepatic mass suspected as pyogenic abscess (Figure 4). An ultrasound guided biopsy was performed.

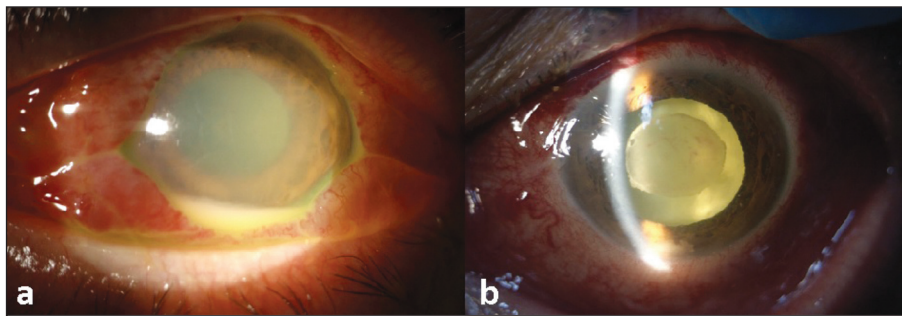


FIGURE 1: a) The initial anterior segment findings with 1mm hypopyon, severe chemosis and conjunctival injection. b) After treatment the hypopyon regressed and remained as a small fibrotic membrane in front of the lens, cornea was clear, chemosis regressed.

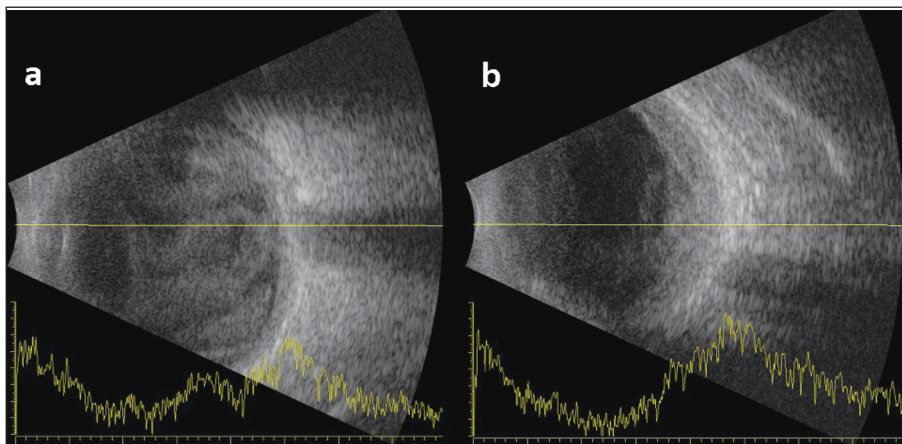


FIGURE 2: The B-scan ultrasonography of the globe. a) Initial ultrasonography. b) After treatment.



FIGURE 3: The orbital computed tomography scan of the patient showing inflammatory changes especially in the preseptal area.

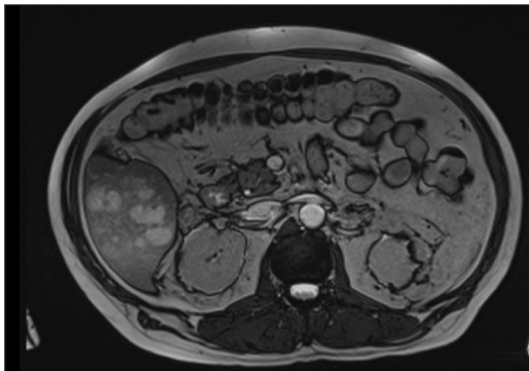


FIGURE 4: The abdominal magnetic resonance imaging of the patient revealed large multiloculated-cystic fluid collection hepatic mass.

The purulent drainage fluid was positive for *Klebsiella pneumoniae* (KP). It was concluded that endophthalmitis occurred endogenously secondary to liver abscess. Systemic antibiotic treatment was rearranged as meropenem (1gr) intravenous twice daily according to culture antibiogram results. During hospitalization, the blood infection parameters and the liver functions return to normal without any other complications.

Despite all treatments, the visual acuity was light perception with no signs of inflammation in the anterior chamber (Figure 1a,b) and regressed membranes in the vitreous (Figure 2a,b). The patient underwent a vitrectomy approximately the 2<sup>nd</sup> week of the diagnosis. Surgery revealed an atrophic retina after the removal of the opaque vitreous with condensed membranes at the anterior vitreous. No improvement in visual acuity was gained after the vitrectomy. The patient was discharged with topical antibiotic therapy and a close follow-up with ophthalmology and general surgery departments continued.

## DISCUSSION

Endogenous endophthalmitis is a relatively rare disease that requires immunodeficient circumstances.<sup>3,4</sup> Diabetes, malignancies, and intravenous drug use are the most frequently associated conditions. Other risk factors include indwelling catheter (urinary or intravenous), acquired immunodeficiency syndrome, organ transplants, renal failure, liver cirrhosis, endocarditis, and urinary tract infections.<sup>5</sup> *Klebsiella*, *Staphylococcus*, *Streptococcus*, *Pseudomonas*, *Candida* are all reported as the most common pathogens in various studies from all around the world.<sup>6,7</sup> While the ophthalmological examination is recommended in patients with candidemia, in cases with sepsis caused by other microbial agents, ophthalmological screening is not necessary.<sup>8</sup>

In this report, we presented a male patient with no familiar risk factors for endogenous endophthalmitis. The patient did not have diabetes and blood sugar levels remained normal during follow up. Also, there was no history of systemic diseases or abdominal surgery. The only finding in the patient's medical history was high alcohol consumption (20 cl, 45%, daily), which might be the predisposing factor for a liver abscess.<sup>1</sup> While the most common presenting symptoms of a liver abscess are fever, chills and abdominal pain, ocular pain with loss of vision was only complain in our case. Endogenous endophthalmitis is the most common embolic complication of liver abscess with a prevalence of 3% to 7.8% but it is relatively rare for endophthalmitis to be the first and the only sign.<sup>3</sup>

Various agents declared as "the most" in various studies for endogenous endophthalmitis. In series from India, USA, Europe, KP has a rare occurrence (1.5% to 6.2%) however in Asian studies, KP is the prominent agent (26.8% to 53%).<sup>9</sup> Although with a suspicious diagnosis of endogenous endophthalmitis, blood and vitreous samplings are crucial, the reported results are variable.<sup>9,10</sup> In the current case, both vitreous and recurrent blood cultures were negative.

The rapid initiation of the treatment is crucial to slow progression and to protect the other eye.<sup>11</sup> Two intravitreal injections with 5 days interval, in addition to intravenous and topical antibiotic treatment were enough to regress the ocular findings of the current patient.

The typical clinical outcome of the disease is fulminant progressive vision loss and most of the time surgical or medical treatments cannot affect the course of the disease as in this patient.<sup>4</sup> In an animal model of *KP* endophthalmitis, irreversible retinal photoreceptor damage has been shown as early as 2 days after infection.<sup>12</sup> This could explain the lack of increased visual acuity despite the improvement in media opacity and regression of the disease.

There are only a few cases reported to have an improvement in vision after vitrectomy.<sup>13</sup> In this patient, a surgical approach at the admission time was not preferred because of the rapid response to topical and intravitreal treatment, and systemic disorders. After the stabilization of the general health of patient, vitrectomy was performed with no significant improvement.

Successful management of the patient depends on handling the systemic causative lesion. Prolonged antibiotic therapy and internal medicine and ophthalmologic follow-up are crucial. All physicians should be aware that systemic *KP* infections may develop endogenous endophthalmitis especially in patients with comorbid diseases. This case suggests us to consider chronic- high dose alcohol consumption as a risk fac-

tor for endogenous endophthalmitis. To the best of our knowledge, this is the first reported case of KEE without any comorbid diseases or any other presenting symptoms other than ocular ones.

### Source of Finance

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### Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### Authorship Contributions

**Idea/Concept:** Suzan Güven Yılmaz, Serhad Nalçacı; **Design:** Suzan Güven Yılmaz, Serhad Nalçacı; **Control/Supervision:** Suzan Güven Yılmaz; **Data Collection and/or Processing:** Onur Furundaoturan, Mine Esen Barış; **Analysis and/or Interpretation:** Onur Furundaoturan, Mine Esen Barış; **Literature Review:** Onur Furundaoturan, Mine Esen Barış; **Writing the Article:** Onur Furundaoturan, Mine Esen Barış; **Critical Review:** Onur Furundaoturan, Mine Esen Barış, Serhad Nalçacı, Suzan Güven Yılmaz.

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