

# Clinical observation of endogenous endophthalmitis caused by liver abscess

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## Abstract

• **AIM:** To analyze the clinical feature and treatment of endogenous endophthalmitis caused by liver abscess.

• **METHODS:** A total of 9 eyes (7 cases) with endogenous endophthalmitis caused by liver abscess in our hospital from 2005 to 2010 were analyzed retrospectively. Microorganism was cultivated with blood or vitreous in all patients. 4 eyes were performed vitrectomy. 2 eyes were injected antibiotics in vitreous cavity. 3 eyes were only treated with antibiotics.

• **RESULTS:** Two cases (2 eyes) were diagnosed with endophthalmitis firstly, then found liver abscess; 4 eyes were with diabetes mellitus, and 1 eye with abnormal glucose tolerance. Cultivation of microorganism was positive in 6 eyes (67%), including *Pneumonia crax-research*, *Candida albicans* and *Escherichia coli*. 5 eyes had useful vision after treatment, 1 eye had light perception, 3 eyes became blindness.

• **CONCLUSION:** As an ocular emergency, endogenous endophthalmitis caused by liver abscess can severely damage visual function. Timely consultation, early diagnosis, proper systemic and topical anti-infective and anti-inflammatory treatment are the most effective methods for controlling infection. Vitrectomy with intravitreal antibiotics plays an important role in preserving useful vision function in patients.

• **KEYWORDS:** endogenous endophthalmitis; liver abscess  
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## INTRODUCTION

Endogenous endophthalmitis refers to secondary infection of other organs, bacteria or fungi spreads into the ocular organization through blood circulation, and causes inflammation of the choroidal, retina and vitreous<sup>[1]</sup>. It can

damage the vision severely<sup>[2]</sup>. Now because of the extensive use of antibiotics and the popularization of all kinds of invasive technology, the incidence of endogenous endophthalmitis increases gradually. Jennifer reported that endogenous endophthalmitis accounted for 16% of infectious endophthalmitis<sup>[1]</sup>. From 2005 to 2010 in our hospital, nine eyes with endogenous endophthalmitis caused by liver abscess were analyzed retrospectively, in order to gain the best time for treatment and therapeutic effect.

## MATERIALS AND METHODS

**Materials** A total of 7 cases (9 eyes) with endogenous endophthalmitis caused by liver abscess in our hospital from 2005 to 2010 were treated. 5 cases were male and 2 cases were female, 33-68 years old, 2 cases were binocular, 5 cases were monocular. 4 eyes had diabetes mellitus (DM), among them 3 eyes had been for 10-15 years, 1 eye was diagnosed abnormal glucose tolerance after sickness. All patients had high fever before ocular signs, and vision was from light perception (LP) to 0.3 before treatment. Detailed contents (Table 1).

**Methods** Endogenous endophthalmitis diagnostic criteria<sup>[3]</sup>. Suppurative infection of uveal and retinal, excluding ocular trauma or surgery. All patients were checked by slit lamp, ophthalmoscope, intraocular pressure (IOP), B ultrasound and detail thorough examination, such as chest radiograph, blood biochemical and so on, in order to find out whether existing other infection disease or systemic disease besides liver abscess. Bacteria and fungi were cultivated with blood or vitreous in all patients. All patients were treated with systemic antibiotics, mydriatic, antibiotic and glucocorticoids eyedrops, used antifungal drugs while fungal infection, then adjusted drug appropriately according to cultivation result and drug susceptibility. 2 eyes merged pulmonary abscess were only injected with demethylvancomycin (1.0 mg) and amikacin (0.4 mg) in vitreous cavity. 3 eyes were treated with systemic and local antibiotics because the lesions were slight. Other 4 eyes were performed with vitrectomy and lens excision. In operation, we removed all vitreous as far as possible, and saw some hoar "frost sample" and exudative membrane on retinal surface, the vascular occlusion with different level and 3 eyes were filled with silicone oil.

## RESULTS

**Clinical Manifestations** Two eyes appeared eye pain and vision decreased firstly after fever of unknown reason, according to hypopyon and vitreous opacity, they were diagnosed

**Table 1 Patients' general data**

Case	Age/sex/eye	Systemic diseases	Cultivation	Vision( before/after treatment)	Treatment
1	54/F/L	Abnormal glucose tolerance	(-)	HM/0.3	Vitrectomy
2	44/M/O	(-)	<i>Candida albicans</i>	0.1-0.2/0.5-0.6	Antibiotics
3	39/M/L	DM	<i>Pneumonia crayresearch</i>	Lp(+)/Lp(-)	Vitrectomy
4	57/F/L	DM	(-)	Lp(+)/Lp(+)	Vitrectomy
5	33/M/L	(-)	(-)	0.3/0.7	Antibiotics
6	68/M/O	DM	<i>Pneumonia crayresearch</i>	HM/Lp(-)	Intravitreal antibiotics
7	62/M/L	(-)	<i>Escherichia coil</i>	Lp(+)/HM	Vitrectomy

endophthalmitis, then found liver abscess after detailed general check-up. While other 7 eyes were firstly diagnosed liver abscess, they were treated with anti-infection in medicine or surgery in our hospital, then appeared eye pain and vision decreased, finally they were diagnosed endophthalmitis by ophthalmic consultation. 1 eye was determined as abnormal glucose tolerance after check-up, and 4 eyes had diabetes mellitus, among them 3 eyes had been for 10-15 years.

**Cultural Results** Six eyes were positive in blood or vitreous cultivation, accounted for 67% (6/9). 4 eyes were bacteria infection (3 eyes were *Pneumonia crayresearch*, 1 eye was *Escherichia coli*), and 2 eyes were fungi (*Candida albicans*).

**Vision** They were followed up for 6-24 (mean 13.4) months, vision changed before and after treatment (Table 1). The prognosis of 5 eyes were good, vision obtained manual or above, even recovered to 0.6-0.7. 1 eye had light perception. 3 eyes became blindness and eyeball atrophy. In a word, visual acuity improved in 5 eyes (56%) and decreased in 3 eyes (33%) after treatment.

**DISCUSSION**

Endogenous endophthalmitis derives from other vivo spots or indwelling catheter's infection, bacteria or fungi spreads from blood circulation into the choroidal, retina and vitreous<sup>[4]</sup>. It generally occurs in immunocompromised patients or abusing drugs. Foreigners reported that diabetes mellitus and liver abscess were the most common risk factors of endogenous endophthalmitis<sup>[3,5]</sup>. 4 eyes were observed having DM, and 1 eye was confirmed abnormal glucose tolerance after sickness. When the patient decreases resistance, or fails timely to discover and control diabetes, bacteria embolus spread from blood circulation into intraocular and cause endophthalmitis. So the pyogenic liver abscess patients, especially those with DM or chronic diseases, should be classified as high-risk groups of endogenous endophthalmitis, they need to be followed up in time, diagnosed and treated timely. At the same time the patients with endogenous endophthalmitis should look for the primary lesion and other systemic diseases actively. 25%-30% of endogenous endophthalmitis were both eyes, so the monocular patients must check the contralateral eye. It is very important to diagnose and treat early. The prevalence rate of the left eye was higher than the right eye<sup>[4]</sup>. In our cases, 2 cases had endogenous endophthalmitis in both eyes, 4 eyes were left, 1 eye was right. Anatomically, the left

arteria carotis communis stems directly from the arch of the aorta, and it is the first level of branch, while the right one contacts indirectly with aortic arch through innominate artery, and it is the secondary branch, so the infective chance of the left eye is maybe higher.

Endogenous endophthalmitis damages vision seriously. When the eye appears obvious clinical symptoms, the patient's condition has already developed to a certain stage, even become more aggravated. In clinical, the patient's visual outcome is generally poor despite aggressive antibiotic therapy, some patients develop eye atrophy eventually. In our group, 3 eyes became blindness and eyeball atrophy. Therefore early diagnosis and treatments of endogenous endophthalmitis are especially essential.

The etiology inspection of endogenous endophthalmitis is the most valuable and reliable diagnostic method. But because of various factors, the cultivation positive rate is relatively low, for example, most patients have already used strong broad-spectrum antibiotics. Some experiments have shown the numbers of bacteria were the largest after invaded intraocular 24-48 hours, then reduced automatically, become negative after 72 hours. All patients had high fever before ocular signs appeared, we did blood or vitreous cultivation, 6 eyes were positive, accounted for 67%. If the cultivation is negative, we could not exclude endogenous endophthalmitis, we should diagnose correctly combining with clinical symptoms, signs and history, so as to decrease misdiagnosis.

In clinical we can select the efficient and harmless antibiotic when waiting for the cultivation result, then adjust drug appropriately based on the cultivation result and drug susceptibility. Even if the cultivation result is negative, we should also choose broad-spectrum and efficient antibiotics to achieve effective drug concentration. The patients whose clinical manifestation is lighter can be improved symptoms obviously only through intravenous drugs. 3 eyes in our group attributed to this kind of situation, the vision was recovered to 0.6-0.7 after treatment. As for the patients with heavier or worse condition, they were injected demethylvancomycin in vitreous cavity and used systemic antibiotics, or vitrectomy promptly was performed on them. These may be able to save the patients' eyes, even keep partial visual function. Vitrectomy can wipe out lots of pathogens, proinflammatory factors and toxic product produced in vitreous cavity. Filling

with silicone oil can be further needed to set the bacteriostatic effect, and avoid eyeball atrophy. In our group, 4 eyes were performed with vitrectomy and 2 eyes were injected with antibiotics in vitreous cavity. In the end, 2 eyes obtained manual or above, 1 eye had light perception, 3 eyes were blindness and eyeball atrophy because the illness was very serious.

In conclusion, clinically we should pay attention to the fever patients with ocular signs, alert endogenous endophthalmitis highly, especial the diabetes patients, and look for the primary lesion actively, so that we can diagnose and treat early with systemic and local antibiotics. Vitrectomy with intravitreal antibiotics can save the patient's partial vision.

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## 肝脓肿致内源性眼内炎的临床观察

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#### 摘要

**目的:**分析肝脓肿致内源性眼内炎的临床表现与治疗效果。

**方法:**对我院 2005/2010 年诊治的因肝脓肿致内源性眼内炎 7 例(9 眼)患者进行回顾性分析。所有患者取血或玻璃体标本行微生物培养;4 眼行玻璃体切割术,2 眼因全身状态差行玻璃体注药术,3 眼因眼内炎表现较轻仅应用广谱抗生素治疗。

**结果:**其中 2 眼以眼内炎为首诊,经全身检查后发现患有肝脓肿;4 眼伴有糖尿病,1 眼伴有糖耐量异常。血或玻璃体标本微生物培养阳性 6 眼(67%),其中肺炎克雷伯菌 3 眼,大肠埃希菌 1 眼,白色念珠菌 2 眼。经药物或手术治疗后,5 眼获得手动及以上视力,1 眼存有光感,3 眼失明。

**结论:**肝脓肿致眼内炎是一种严重危害视功能的眼科急症,及早就医、及时诊断、及时抗感染治疗是控制感染的最有效方法。玻璃体切割术联合抗生素治疗,有助于保存患者的部分视力。

**关键词:**内源性眼内炎;肝脓肿