Possible Endogenous Candida Endophthalmitis Following Postcovid Intensive Care Hospitalisation

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ABSTRACT

Purpose: The patient charachtheristics, treatment and results of a 75 years old male patient who was referred with a diagnosis of intraocular inflammation after covid infection and who had pars plana vitrectomy and antifungal therapy for possible endogen candida endophthalmitis are presented.

Case Report: Endogenous fungal endophthalmitis is a potentially blinding condition. Longer hospital stays and the need for more intensive care, use of steroids and antibiotics due to covid 19 are associated with an increased risk for fungal endophthalmitis. The 75 years old male patient who had vitrectomy and silicone oil injection together with intravitral and peroral antifungal treatment has lost vision due to retinal detachment and PVR. However we think that general health status of the patient recovered and a potentially lethal condition was prevented.

Conclusion: Since fungal infection may cause choroidal- retinal and vitreal lesions, a careful eye examination should be performed in patients with vision complaints after Covid.

Keywords: Endophthalmitis, covid-19, intensive care

INTRODUCTION

Endogenous endophthalmitis is found in less than 0.5% of patients with fungemia and 0.04% of patients with bacteremia. Diseases such as human immunodeficiency virus (HIV) infection, endocarditis, meningitis, lymphoma or leukemia, and organ or joint abscess are risk factors for endogenous endophthalmitis[1,2]. Long term hospital and intensive care stays are also associated with an increased risk[2].

In the case series of a large number of COVID-19 patients with ocular involvement, chemosis, epiphora, ocular secretions and only minor reports of conjunctival hyperaemia were reported. RNA of SARS-CoV-2 in conjunctival samples of patients could be demonstrated in two patients. Ocular complication from SARS-CoV-2 is likely to occur in more severe COVID-19[3].

During intensive care treatment, patients are usually given systemic steroids against cytokine storm. Antibiotics are also frequently used. Together with the viral disease, this therapy possibly lowers patients's immunity and can cause systemic fungal infections. Postcovid endogenous candida endophthalmitis may be a result of this clinical picture.

CASE REPORT

A 75 years old male patient was referred to us for postcovid intraocular inflammation. His past ophthalmic history revealed that he had cataract surgery with PC-IOL implantation without complication 3 years ago. He had no systemic diseases like diabetes, hypertension or malignancy. He reported a severe covid pneumonia and he was treated in hospital intensive care for one month. He had intubation, oxygen therapy and high dose steroid together with anti-covid drugs. Following hospital discharge he noticed low visual acuity in the right eye and was referred to us with a diagnosis of intraocular inflammation . He was already on antibiotic eyedrops and ciprofloxacin perorally on admission.

He had light perception visual acuity in OD, full vision OS. Anterior segment examination was conjunctival hyperemia, chemosis and pseudophakia in the right eye, nuclear sclerosis in the left eye. Ultrasonography

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showed severe intraocular inflammation and membranes connected with retinal surface. He immediately had tap-inject (vancomycin-ceftazidime) on the same day and was prepared for vitrectomy. He had core vitrectomy, samples were taken and silicone oil was injected. Intraoperatively we have seen subretinal abcess peripherally. Clinical picture and round fluffy candida balls led us to a diagnosis of endogenous candida endophthalmitis. At the end of the operation varicanosole was injected intravitreally (Figure 1,2,3,4).

The patient had blood cultures, chest and liver examination and cranial CT but we did not find any primary site of fungal infection. He continued treatment with peroral fluconasole and had moderate response on the first week follow up. He is still under control and had a cranial MR examination for headaches which was unrevealing. On control examinations, vision was no light perception with a detached retina and retinal fibrosis so we did not offer a reoperation. After using peroral flucanasole for 3 months,

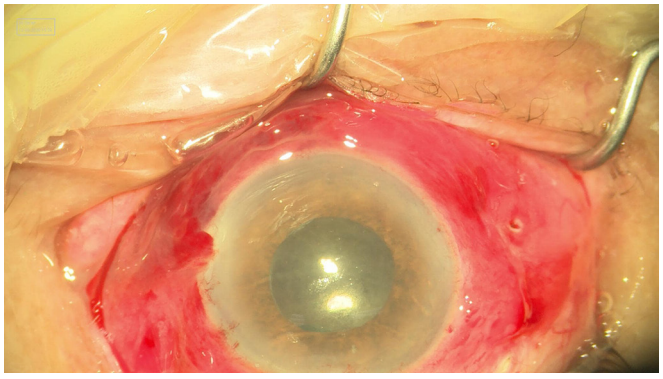

Figure 1-2: *Conjunctival hyperemia, edema in the corneal stroma and anterior chamber reaction in biomicroscopy picture of the eye.*

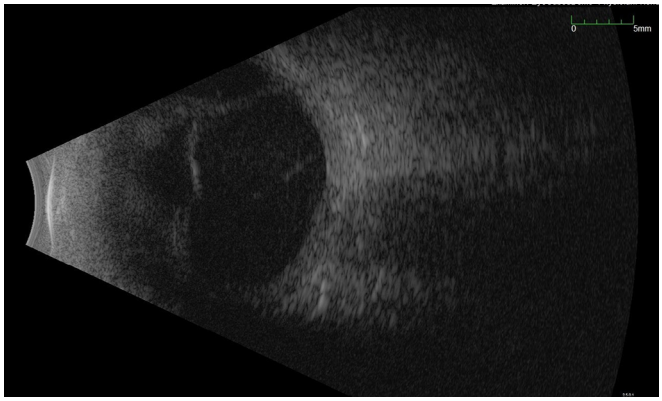

Figure 3: *Severe intraocular inflammation and membranes connected with retinal surface in Ultrasonography.*

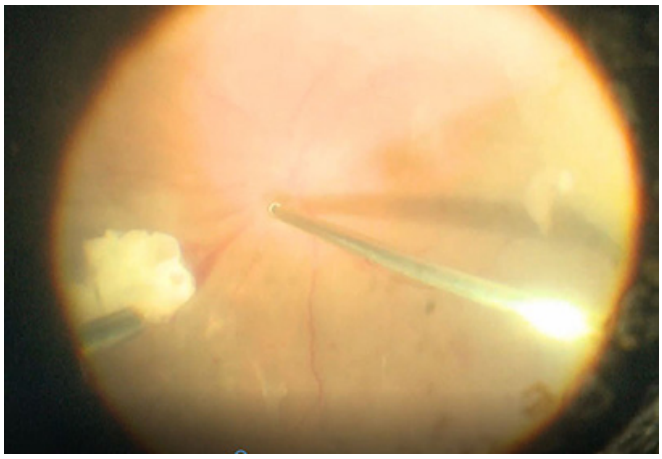

Figure 4: *Round raised candida balls in the retina in pars plana vitrectomy.*

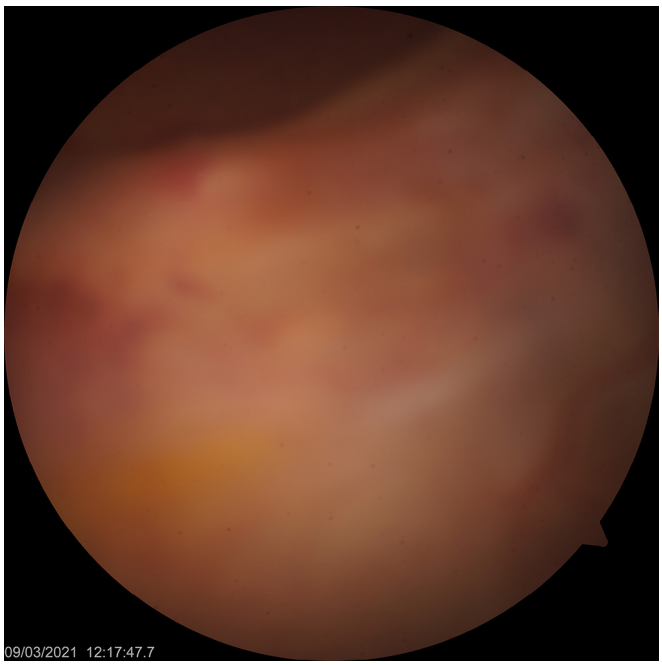

Figure 5: *Superior large tear and detached retina, retinal fibrosis under silicone oil*

antifungal therapy was stopped, both eyes had no residual infection, and the patient is still on periodic follow up.

DISCUSSION

Covid-19 infection is an RNA virus which results in a pandemia since early months of 2020. It first originated in China and then spread worldwide. There are still many people infected in all countries but patients with pneumonia and cardiac involvement suffer the most severe disease, which necessitates long-term hospitalization and intensive care, possibly intubation to cope with low arterial oxygen levels[4].

One-third of patients with COVID-19 have ocular abnormalities, which frequently occurred in patients with more severe COVID-19. But there is a low prevalence of SARS-CoV-2 in tears[3,5]. Ocular manifestations of patients with covid 19 are consistent with conjunctivitis, including conjunctival hyperemia, chemosis, epiphora, or increased secretions[3].

The most common cause of bacterial endogenous endophthalmitis in the West is Gram-positive infection[6]. Gram-negative infections are seen more commonly in Asia[7]. Candida is the most common fungal cause of endogenous endophthalmitis[2]. In the literature, reported rates of endogenous endophthalmitis is 7.7-13.2% among all causes [8,9].

The most common ocular findings of endogenous candida endophthalmitis contain blurred vision, pain, photophobia, and conjunctival hyperemia[10]. Other ocular findings may contain episcleritis/scleritis, keratic precipitates, hypopyon, and optic nerve head edema[11].

Central venous catheter presence, intravenous drug use, immunosuppression, total parenteral nutrition recipient, race, old age, and male gender are risk factors for developing Candida endophthalmitis. Candida albicans is more likely causative agent to result in Candida endophthalmitis[12].

We speculate that our patient's old age, a long stay in intensive care and intravenous steroid and antibiotic drug administration caused candida endophthalmitis.

Marinho et al. have reported evidence of posterior eye involvement in SARS-CoV-2 infection which hyperreflective lesions at the level of ganglion cell and inner plexiform layers more prominently at the papillomacular bundle in both eyes. Other findings are cotton wool spots and micro-hemorrhages along the retinal arcade[13]. Also Serpiginous choroiditis occurring after SARS-CoV-2 infection has been reported[14].

Although typical candida endophthalmitis foci have been shown localize to the inner choroid, which extends through Bruch's membrane and the retina, occasional isolated retinal lesions can be identified (approximately 14%)[15-18].

Early treatment is more likely to result in better visual outcome[19]. All cases of fungal endophthalmitis must be treated promptly and appropriately to prevent severe infection. Early vitrectomy is suggested for possible fungal infection, waiting for definite diagnosis may result in poor visual acuity[20,21].

We applied immediately tap-inject (vancomycin-ceftazidime) on the same day and were prepared for vitrectomy. We applied core vitrectomy, samples were taken and silicone oil was injected. However, the disease was at a very late, irreversible stage with a subretinal abcess formation. At the end of the operation varicanosole was injected intravitreally. The patient continued treatment with peroral flucanazole and had moderate response on the first week follow up. The final result was eradication of infection, but loss of function with a no light perception vision.

Although there are no post-covid endophthalmitis cases reported in the literature so far, some colleagues also operated on similar cases (unpublished data). Diagnostic yield for endogenous endophthalmitis is not very high[22]. Regan et al. have showed that Endophthalmitis is secondary to an endogenous source in 23.5% of all endophthalmitis cases. Intraocular culture positivity is 28.6% overall. Coagulase-negative Staphylococcus and Candida are most commonly identified[22] . Unfortunately we could not have a diagnostic sonfirmation of candida from the obtained specimens.

In our case we have seen a subretinal accumulation of a whitish infiltrate-abcess in the inferoperipheral retina, and this may show that candida first infiltrated choroidal and subretinal areas as mentioned in classic teaching.

We can speculate that with the more virulent and mutant viral stains hospitalization may prolong and more cases may be seen by ophthalmologists. Covid infection and subsequent treatment strategies may be a risk factor for candida endophthalmitis[12]. A careful eye examination should be performed in patients with vision complaints after Covid, especially during the pandemic period

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