ENDOGENOUS ENDOPHTHALMITIS WITH SUBRETINAL ABSCESS AFTER DENTAL PROCEDURES

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Abstract: Endogenous endophthalmitis with subretinal abscess is an extremely uncommon complication following dental procedures. An unsuspected source of infection or misdiagnosis of the condition as iridocyclitis may result in inadequate or delayed treatment leading to severe visual impairment. A high index of suspicion is required for accurate diagnosis and prompt treatment. A 49-year-old man was found to have endophthalmitis in his right eye after treatment of gingival abscess. Ophthalmoscopic examination revealed multiple septic emboli and a 4-disc diameter sized subretinal abscess in his retina. No other infectious origin could be found on systemic work-up. Cultures from blood, urine, aqueous and vitreous were all negative. Pars plana vitrectomy was performed 8 days after the initial presentation because of deterioration of visual acuity to finger counting despite intravitreal and systemic antibiotics administration. Visual acuity recovered to 20/25 one month postoperatively and the retina remained attached during follow-up for 1 year. Ophthalmologists should be aware of the possibility of transient septicemia-induced endophthalmitis and subretinal abscess after dental procedures. Prompt intervention with systemic and intravitreal antibiotics combined with pars plana vitrectomy can achieve successful visual and anatomic outcome.

Key words: Abscess; Endophthalmitis; Oral surgical procedures; Retinal diseases

Endogenous endophthalmitis is an ocular infection resulting from hematogenous spread of pathogens of a remote primary source which can lead to blindness. It is relatively rare, accounting for 2 to 8% of all cases of endophthalmitis, and is associated with immunocompromised states, debilitating diseases and invasive procedures. Formation of subretinal abscesses is a particularly severe manifestation of bacterial endophthalmitis. Various therapeutic approaches have been attempted, with limited visual success. We report a rare case of metastatic endophthalmitis with subretinal abscess following dental procedures that was successfully treated with systemic and intravitreal antibiotics and pars plana vitrectomy.

Case Report

A 49-year-old man presented to the emergency room with redness and blurry vision of his right eye for 1 day. He was in good general health and his medical history was unremarkable. He had received incision and drainage of a gingival abscess at his right upper first molar 3 days before. He was afebrile and had no signs of infective endocarditis. Blood test with differential count, chest X-ray, and electrocardiogram were all normal. Water’s view of skull X-ray revealed no sinusitis or orbital lesion. Abnormal liver function was found, which was consistent with his hepatitis B carrier status.

Ophthalmological examination showed a best-corrected visual acuity of 20/70 in his right eye and 20/20 in his left eye. There were 4+ cells in the anterior chamber and 3+ cells in the vitreous of his right eye. Fundus examination revealed multiple white emboli in the branches of the right inferotemporal retinal artery with superficial retinal hemorrhage and arterial sheathing. A subretinal abscess of 4-disc diameters in size was noticed in the inferotemporal peripheral retina (Fig. 1 and Fig. 2).

Ceftazidine 100 mg 12-hourly and clindamycin 300 mg 8-hourly were given intravenously after admission. Intravitreal injection of clindamycin (1 mg/0.1 mL) and ceftazidine (2 mg/0.1 mL) was performed as well. During hospitalization, a thorough medical work-up in search of non-ocular site of infection was performed. Echocardiogram showed no cardiac vegetation. Abdominal sonogram revealed no
admission. Repeated intravitreal antibiotic injection was performed; however, his visual acuity deteriorated to finger counting 8 days after initial presentation. Marked vitreous opacity developed obscuring the fundus detail. Anterior chamber irrigation and pars plana vitrectomy were performed with infusion fluid containing clindamycin (10 µg/mL) and ceftazidine (20 µg/mL). Bacterial culture of aqueous and vitreous specimens for aerobic and anaerobic pathogens with blood agar plate, and chocolate agar plate were negative. Fungal culture with IMS slant was also negative. Gram stain of aqueous and vitreous specimens revealed only polymorphous neutrophils with no bacteria or fungus. After surgery, intravenous ceftazidine and clindamycin were given continuously until discharge. Postoperatively, the inflammation subsided, retinal abscess resolved, and the retina remained attached. He was discharged 1 week later and maintained a regimen of oral clindamycin 150 mg 6-hourly for 2 weeks. Best-corrected visual acuity of his right eye recovered to 20/25 one month postoperatively. The subretinal abscess resolved, leaving a depigmented chorioretinal scar (Fig. 3). The visual acuity and condition of the retina remained stable during follow-up for 1 year.

Discussion

Metastatic endophthalmitis with retinal septic emboli is a rare complication of dental surgery. Delay in treatment due to unsuspected source of infection or misdiagnosis as iridocyclitis may lead to severe visual impairment. A high index of suspicion is required for accurate and prompt diagnosis in an immunocompetent individual without evidence of systemic infection. The clinical appearances in this patient strongly suggested infective emboli. The presumption that these emboli had a dental origin was based on liver or renal abscess. Bacterial cultures from blood, urine, and anti-human immunodeficiency virus test were negative.

Despite antimicrobial treatment, increased inflammatory reaction and the presence of exudative membrane on the lens surface were noted 3 days after
the facts that the ocular manifestation was closely associated with a dental procedure and no other focus was found despite a thorough systemic work-up. Inoculation of septic emboli in the retina might take place after an initial bacteremia. Transient bacteremia following dental surgery is not uncommon. It has been reported to occur in 15-55% of cases and the most common organism is viridans streptococci. Although this scenario might be the cause of endophthalmitis, coexisting subclinical endocarditis cannot be completely excluded.

Since no other infective source was found in this case, antibiotics were given empirically. Though viridans streptococci is the most common pathogen of endogenous endophthalmitis after dental surgery, mixed infection with other normal flora including anaerobic pathogens found in the oral cavity has been reported. Based on these considerations, empirical treatment with ceftazidine and clindamycin was administered systemically and intravitreally due to the broad-spectrum coverage of these agents. Because recurrent septic retinal emboli following dental surgery has been reported, oral clindamycin was prescribed for additional 2 weeks after the patient was discharged from the hospital.

The role of pars plana vitrectomy for the management of endogenous infectious endophthalmitis remains controversial. In this case, vitrectomy was initially postponed because the visual acuity was fairly good and the abscess was localized in the peripheral retina. Pars plana vitrectomy was undertaken only after the ocular inflammation increased and the visual acuity dropped to finger counting. There were several reasons for using vitrectomy for the treatment of infectious endophthalmitis in this case, including: to eliminate a culture media for the pathogen; to prevent vitreous abscess formation; to enable fundus visualization; to facilitate antibiotic administration; and to avoid onset of retinal detachment by removing vitreous traction and fibrosis around the abscess.

For this case, we did not perform external drainage or internal drainage, although both procedures have been advocated to treat subretinal abscess. External drainage through a posterior sclerotomy should be done at a relatively early stage of endophthalmitis before the anterior chamber reaction and the vitritis become too severe to interfere with fundus examination. Internal drainage through retinotomy or retinectomy may carry the risk of retinal detachment and the development of proliferative vitreoretinopathy. The procedure may also increase the possibility of spreading the pathogen to other parts of intraocular tissues. In this case, the subretinal abscess resolved without drainage. Pars plana vitrectomy may help eliminate pathogens from the vitreous. It facilitates antibiotic administration which may contribute greatly to the rapid resolution of subretinal abscess.

In conclusion, endogenous endophthalmitis with subretinal abscess formation as described in this report is quite rare. A high index of suspicion and prompt intervention with systemic and intravitreal antibiotics combined with pars plana vitrectomy resulted in a successful visual and anatomical outcome.

References