
CASE REPORT

SURGICAL TREATMENT OF BILATERAL BULLOUS EXUDATIVE RETINAL DETACHMENT FOLLOWING SYSTEMIC CORTICOSTEROID THERAPY: A CASE REPORT FROM ACEH**Lia Meuthia Zaini¹***¹Medicine Faculty, University of Syiah Kuala, Banda Aceh, Indonesia
Email: lia_mzaini@unsyiah.ac.id***ABSTRACT**

Introduction: Exudative retinal detachment refers to elevation of the neural retina caused by subretinal fluid accumulation in the absence of a retinal break or significant preretinal traction. Management of exudative retinal detachment should include management of the underlying disease. When the fluid is not resolved, surgical intervention is planned after failure of conventional treatment. We demonstrated the successful surgical management of exudative bullous retinal detachment using the internal drainage technique.

Case Presentation: A 45 years old man presented with complaint of blurred vision since 5 months before admission. Worsening occurred mainly after administration of high dose methylprednisolone infusion therapy. Visual acuity of the right eye was hand motion, and left eye was 1 meter finger counting. Fundus examination revealed exudative bullous retinal detachment in both eyes.

Discussion: Surgery can be considered as a treatment of choice for exudative retinal detachment if medical management is unsuccessful. A complete examination to determine the cause of the disease is needed before carrying out surgery. External and internal drainage techniques have been reported to be successful in managing subretinal fluid in chronic exudative retinal detachment. We chose vitrectomy with internal drainage because large amount of dense subretinal fluid can make transscleral drainage very difficult.

Conclusions: Surgical management (vitrectomy with internal drainage) can provide good results in chronic exudative retinal detachment, but should not be used as first-line therapy.

Key words: Bullous exudative retinal detachment, central serous chorioretinopathy

INTRODUCTION

Exudative retinal detachment refers to elevation of the neural retina caused by the accumulation of subretinal fluid (SRF) in the absence of a retinal break or significant preretinal traction.¹ The causes of serous retinal detachment are classified as idiopathic, congenital, postsurgical, inflammatory, uveitic, hematologic, vascular and neoplastic.² Exudation of material into the sub-retinal space from abnormal retinal vessels such as hypertension, central retinal vein occlusion, vasculitis, ocular tumors and inflammations which

characterized by a broken blood retinal barrier may result in bullous retinal detachment. Moreover, steroid may also play a role in impeding the healing of retinal pigment epithelium tear and increasing choriocapillaris permeability. Corticosteroids are known to be one of the major risk factors in the development of Central Serous Chorioretinopathy (CSR).^{3,4} Exudative Retinal Detachment has also been reported to be associated with preeclampsia.⁵⁻⁷ Nishikawa et al, reported 3 cases of Bullous Exudative Retinal Detachment (BERD) that developed after pattern scanning laser photocoagulation in diabetic retinopathy.⁸ Other cause of BERD is idiopathic central serous chorioretinopathy (ICSC). This disease firstly reported probably by Von Graefe.⁹ Klein and Maumenee postulated that the fluid trapped in the sub-retina originated from choriocapillaris through the retinal pigment epithelium (RPE). At that time, they determine it without the aid of fluorescein angiography. In ICSC, choriocapillary and RPE permeability damage occur in one or more focal areas in the posterior fundus. This causes fluid to gain access to the sub-retinal space and thus results in detachment of the overlying retina.⁹

Management of BERD should include management of the underlying local or systemic disease. Management for the underlying disease are antibiotic therapy for retinal and choroidal infections, steroid to reduce inflammation from uveitic cases, or other systemic immunosuppression for posterior scleritis, vasculitis, autoimmune disease like Vogt-Koyanagi-Harada disease, and sympathetic ophthalmia. Laser photocoagulation used in the treatment of vascular anomalies such as Coats disease, tumors and capillary hemangioma. In CSR that is not resolved spontaneously, focal laser can also be applied to sites of RPE leakage that are quite far from the fovea. As for leaks directly under the fovea, photodynamic therapy (PDT) / micropulse diode lasers can be used.^{1,10}

When the fluid is not resolved in chronic and bullous retinal detachment, permanent damage to RPE as well as outer retinal structure occurs, and the presence of subretinal fibrin may lead to subretinal fibrotic scar formation. To avoid these complication, surgical intervention is planned after failure of conventional treatment.¹⁰ There are two methods for draining SRF, known as external and internal approaches. Both methods are reported to be quite successful in draining SRF in chronic BERD. In this paper, we report surgical management of BERD using an internal approach.

CASE PRESENTATION

A 45-year-old man presented with complaints of gradually blurred vision of both eyes since 5 months before admission. Vision became worse mainly after the patient was given systemic (intravenous) corticosteroid therapy in a hospital. No pain, redness, itching, or

discharge was found in this patient. From the ophthalmological examination, it was found that the visual acuity of the right eye was hand motion while the left eye was 1 meter finger counting. The anterior segment was within normal limits, but the retina was detached on both eyes with no break was found.

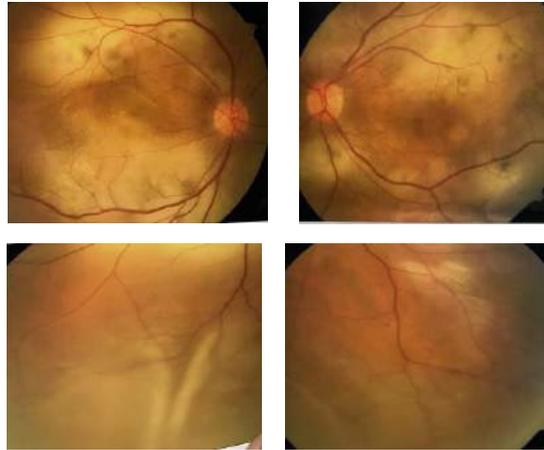


Figure 1. Fundus photograph at the first consultation in a hospital

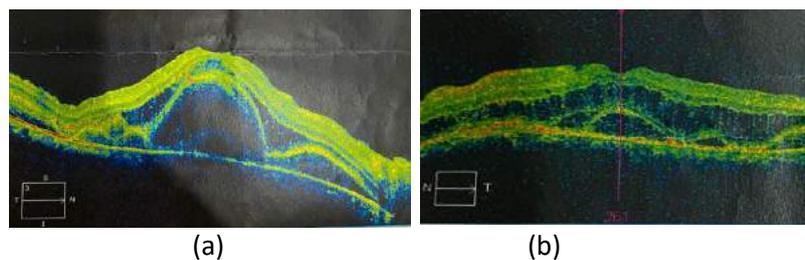


Figure 2. Right (a) and left (b) OCT examination revealed a large amount of fluid

Before coming to our hospital, the patient stated that he had come for treatment in several places. Until the last visit, the patient came to a hospital abroad. The patient said, before, his vision was not as bad as recently. Laboratory and imaging examinations were carried out at the time, but no positive results were found. Examination of Complete Periphery Blood Count, antinuclear antibody, serum complement (C3 and C4), acid fast bacilli, rheumatoid factor, VDRL, IgG and IgM anti Toxoplasma, also IgG and IgM anti CMV showed negative results. Head Scan showed no abnormalities in the cerebral parenchyma, only left maxillary sinusitis was found. The ophthalmologist at the hospital gave a high dose of methylprednisolone infusion. But after that, his visual acuity worsened, he couldn't see anything with his both eyes.

Due to financial reasons the patient had to move his treatment plans to our hospital. When he came to our hospital, his vision continued to deteriorate to hand motions on right eye, and 1meter finger counting on the left eye. Because all laboratory and imaging examination showed negative results, we suspected that the patient had CSR. We discontinued the patient's oral

steroids and plan to perform vitrectomy surgery on the right eye in the next month if the fluid is not resolved.

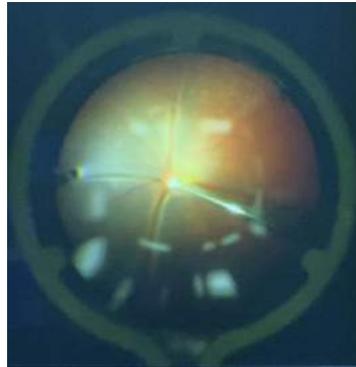


Figure 3. Retina of the right eye, during vitrectomy

There were no major difficulties during surgery, apart from the difficulty of performing mechanical PVD and fluid air exchange to remove the fluid under the retina through the retinotomy. However, the surgery ended well and the retina was completely attached, with silicone oil as a tamponade.

One day after surgery, his vision remained hand movement. Systemic and local antibiotics as well as anti-inflammatory were still given. One week after, the patient came and said that his vision started to improve. From ophthalmological examination, it was found that visual acuity was 1 meter finger counting on both eyes. The retina was completely attached on the right eye, but not on the left eye. Intra ocular pressure was 27 mmHg on the right eye, and 14 mmHg on the left eye.

One month after surgery, visual acuity was still 1 meter finger counting on both eyes. OCT examination of the right eye showed that the retina is attached, there is no SRF. Meanwhile, the left eye showed a small amount of fluid under the retina.

Six months after surgery, retina on both eyes were still completely attached. Best corrected visual acuity of the right eye was 6/40 and the left eye was 6/20.

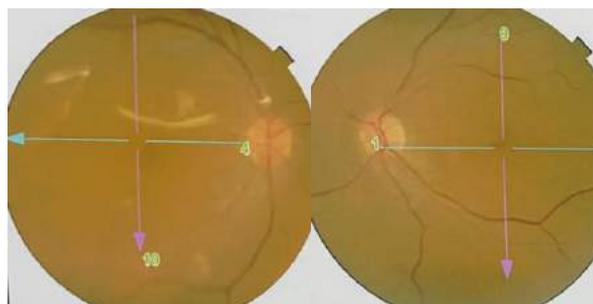


Figure 4. Retina of both eyes 1 month after surgery

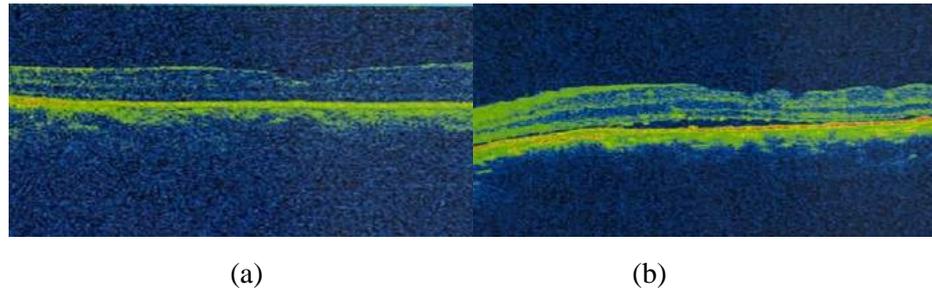


Figure 5. OCT finding of right eye (a), and left eye (b) 1 month after surgery. There was still minimal sub-retinal fluid on the left eye

DISCUSSION

Bullous exudative retinal detachment has been reported several times. Many factors can cause this disease. As noted earlier, exudation of material into the sub-retinal space from abnormal retinal vessels such as hypertension, central retinal vein occlusion, vasculitis, or papil edema may also result in BERD. Proper diagnosis is needed in the management of this case. Since most cases of exudative retinal detachment are uveitis cases, a complete laboratory and imaging examination should be carried out before starting treatment.

In this patient, all laboratory imaging examination showed negative results. Our next suspicion is CSR which worsens after the administration of high doses of methylprednisolone, because there is a history of deteriorating vision after administration of methylprednisolone infusion a hospital. Bullous exudative retinal detachment associated with CSR has been reported several times, but remains a rare clinical entity. Several cases of CSR were reported after administration of systemic corticosteroids.^{4,11}

The presence of serous retinal detachment is most easily detected by clinical examination using indirect ophthalmoscopy, unless obstructed by hazy ocular media. Initial examination should include careful evaluation for retinal breaks or tractional membranes. Observation of fluid shifting with changes in head position, as well as the absence of retinal corrugations or tractional membranes, are important diagnostic clue.¹ Laboratory and imaging examination may help to look for other underlying diseases, as well as fluorescent angiography confirm the diagnosis.¹⁰ Therefore, it is certainly difficult to state that this is a CSR without fundus fluorescein angiography examination. This examination is currently not available in hospitals in Aceh and most other hospitals in Indonesia.

In this patient, because the fluid was not absorbed with any kind of medicine, we decided to do vitrectomy and internal drainage to attach the retina, while the left eye did not take any action, only discontinuing methylprednisolone tablets given by ophthalmologists abroad. Treatment for this case is actually lifestyle modification, avoidance of steroids, focal laser

photocoagulation for leaks that appear on angiographic examination, or photodynamic therapy for sub foveal leaks. Due to the unavailability of fluorescein angiography and PDT, to prevent poor vision due to longstanding CSR, we decided to perform vitrectomy and internal SRF drainage. It is known that longstanding CSR can cause severe vision loss due to significant photoreceptor damage and ultimately lead to the formation of subretinal fibrotic scars and foveal scarring.

Multiple therapeutic approaches have been described for treating BERD, which mainly involves laser photocoagulation or surgical drainage. However, Nishikawa, et al⁸ and Entezari, et al¹¹ have reported some cases of BERD resolved completely without any treatment. Another treatment that has recently proven to be useful in chronic CSR is the administration of mineralocorticoid antagonist, known as eplerenon.¹²

Surgical options can be divided into two categories: external (transscleral) drainage and internal drainage. The simplest technique is external drainage through the sclera in the inferior area. Bondalapati et al¹³, demonstrated the successful management of exudative retinal detachment secondary to CSR with external drainage without any complication. In the study, they used conventional external drainage and Chandelier-assisted external drainage. Maggio et al¹⁴, also reported a complete RD resolution after scleral thinning surgery for bullous retinal detachment with retinal pigment epithelial tear in central serous chorioretinopathy. Those reports and several other reports have demonstrated the success of external drainage techniques in some cases of BERD. However, when there is a large amount of dense subretinal fluid and fluid-shifting to a dependent position (as in this case), complete transscleral drainage is very difficult.

In this case, we performed an internal drainage technique using pars plana vitrectomy, drainage retinotomy, fluid-air exchange, then endolaser photocoagulation during surgery. The procedure went well and no significant problem occurred during the surgery. This internal drainage technique has also been described in several reports. Kannan et al,¹⁵ reported the successful of vitrectomy with internal drainage in bullous CSR associated with retinal pigment epithelial tear. John VJ et al,¹⁶ demonstrated successful long-term reattachment of the serous retinal detachment without any additional complications from the surgery.

CONCLUSION

Complete ophthalmological, laboratory, and fluorescein angiography examination are required to confirm the diagnosis of BERD. It is also very important to determine the right management. Surgical therapy may be considered to avoid further damage due to longstanding RD, but not as a first-line therapy.

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