The diagnosis of intraocular inflammation relies on history, clinical examination and investigations. Unfortunately, in many cases, the patients may present with atypical clinical features and the conventional investigations do not allow for a conclusive diagnosis. The direct sampling of the pathologic lesion would be the most desirable investigation for achieving the definite diagnosis in such cases.

Biopsy of the choroid and retina have been reported in many literatures as an investigation that can provide the definite diagnosis in chorioretinal diseases of unknown etiology. This article reports our experience with chorioretinal biopsy in a patient who presented with a progressive subretinal mass suspected to be of infectious origin. To the best of our knowledge, this is the first report of chorioretinal biopsy in Thailand.

CASE REPORT

A 59-year-old woman with systemic lupus erythematosus, idiopathic thrombocytopenic purpura and autoimmune hemolytic anemia treated by prednisolone 30 mg/day, chlorambucil and danazol had a rapid loss of vision in the left eye for 3 days. After the eye examination, a presumptive diagnosis of uveitis from SLE was given and prednisolone was increased to 60 mg/day. One week later, the clinical condition became worse, so after that the patient was referred to Siriraj hospital. The eye examination revealed a visual acuity of 6/9 in the right eye and light perception in the left eye. The left eye showed keratic precipitations and 3+ cells in the anterior chamber and vitreous. The relative afferent pupillary reflex was positive and fundoscopy showed a white-yellowish subretinal mass located at the inferotemporal area of the macular and along major vascular arcade. The provisional diagnosis was a subretinal mass of suspected infectious origin. Since the patient presented with subretinal mass, not retinitis or vasculitis, the viral infections such as cytomegalovirus, herpes simplex virus or herpes zoster virus were excluded. Intravitreal injection of vancomycin and amikacin was performed and the aqueous specimen was aspirated for PCR testing for TB and molecular identification of bacteria. One week later, the fundoscopy demonstrated increase of the subretinal mass and the laboratory results showed negative both PCR for TB and molecular identification of bacteria. Due to the inconclusive diagnosis, tissue biopsy was required for the definite diagnosis and appropriate management. An internal approach chorioretinal biopsy was performed by NR & ST. Standard 3-port pars plana vitrectomy was perfor-
med with 20-gauge instrumentation. Vitreous biopsy was obtained initially before the infusion was turned on. After the infusion line was turned on, the vitrectomy was performed and a posterior hyaloid was removed by vitrectomy probe. The biopsy site was created at the junction of the normal retina and the pathologic lesion. Endodiathermy was applied around the margin of the purposed biopsy area approximately 4x4 mm. After raising intraocular pressure by increasing the height of the infusion bottle, the biopsy specimen was cut with vertical microscissors. The tissue specimen was partially aspirated into a silicone tip extrusion by manual suction and removed from the eye via sclerotomy. Following fluid-air exchange, endolaser was performed around the biopsy area and the retina was tamponaded with silicone oil (Fig 1). The biopsy specimen was immediately fixed with formalin and processed for histology. The histopathology of the retinal and subretinal tissue biopsy revealed acute branching septate fungal hyphae which was morphologically consistent with the *Aspergillus* species and subretinal granuloma associated with the fungal infection (Fig 2). The treatment with intravenous voriconazole was started by the internist (6 mg/kg every 12 hours for 1 day and then 4 mg/kg every 12 hours). The protrusion and enlargement of the subretinal mass through the biopsy site was detected post-operatively. The second operation, pars plana vitrectomy with removal of the subretinal mass was performed 2 weeks after the treatment with intravenous voriconazole. After air-fluid exchange and endolaser were performed, the retina was tamponaded with heavy silicone oil and voriconazole 50 µg, was injected into the vitreous at the end of procedure. The subretinal tissue was divided for microbiological and histological examination. The tissue culture was negative for fungus and histologic findings of the biopsy specimen demonstrated tissue debris without bacteria or fungus. Voriconazole was discontinued 2 months after the initiation and the subretinal lesion subsided. At 1 month after the second operation, localized retinal detachment was found at the inferotemporal area to the biopsy site. The third operation was not attempted due to poor visual prognosis and the subretinal lesion had already subsided. The visual acuity in the left eye deteriorated to no light perception 2 months after the second operation nevertheless the eye appeared quiet with no medication.

**DISCUSSION**

Many diagnostic procedures, including vitreous aspiration, diagnostic vitrectomy, fine needle aspiration biopsy and chorioretinal biopsy, have been used for determining diagnosis of the patient with suspected intraocular inflammation or tumor of unknown etiology. Vitreous aspiration and fine needle aspiration biopsy have been shown to be effective in differentiating between infectious, inflammatory and malignant causes of uveitis. However, insufficient material for cytologic diagnosis is the limitation of these procedures. Donahue et al, reported the significant increase of positive culture from vitrectomy specimens compared with needle aspiration technique in endophthalmitis cases. Diagnostic vitrectomy has been found to be useful in identifying infection or malignancy in uveitic patients. In addition, it resulted in improvement of vision by diminished inflammatory debris in the vitreous. However, vitreous...
biopsy may not yield positive results in cases with deep retinitis or choroiditis. In our patient, *Aspergillus* was revealed in histopathology. Rao et al. reported the histopathologic study of Aspergillus endophthalmitis which showed primarily growth of organisms within the subretinal space or extending into the retina and choroid. They also found that vitreous abscesses were rarely noted in such cases which may affect false negative results in culture or cytology examinations by vitreous biopsy. Biopsy of the retina and choroid is a procedure that can provide tissue for microbiological and histological examination during the active stage of disease especially in cases with atypical clinical pictures in which noninvasive investigations cannot provide the diagnosis. The indications for this procedure included macular threatening lesions unresponsive to therapy, suspicion of malignancy or suspicion of infectious etiology. Since our patient had idiopathic thrombocytopenic purpura, we decided to perform an aqueous aspiration instead of vitreous biopsy to decrease the risk of hemorrhagic complications. Since the infectious origin was suspected, but conventional investigations were inconclusive and rapid progression of the disease with no response to the empirical intravitreal antibiotics treatment, the tissue specimen was required for subsequent management.

Chorioretinal biopsy surgical techniques were described in the previous literatures including the transscleral approaches and the internal approaches. In our patient, we performed an internal approach as we described above. We modified the surgical technique in the step of removal tissue out of the eye by partially aspirating the tissue into a 20 gauge silicone-tipped extrusion because of 2 reasons (1) to avoid tissue damage from microforceps and (2) to prevent loss of tissue at the sclerotomy site because the silicone tip of the extrusion will protect the biopsy tissue from the vitreous base and sclera while passing the instrument through the sclerotomy.

The complications that were reported in the literatures included cataract, retinal detachment, vitreous hemorrhage, subretinal hemorrhage, proliferative vitreoretinopathy and phthisis bulbi. In our report, the patient developed localized retinal detachment at the inferotemporal area to the biopsy site. Although the eye became blind, we can preserve the globe and provide the definite diagnosis in this patient. Consistent with the appropriate treatment with systemic and intravitreous voriconazole, the infection was controlled and the patient has been healthy until now.

**CONCLUSION**

Chorioretinal biopsy, although related with serious complications, can provide the definite diagnosis and subsequent treatment in selected patients with progressive chorioretinal lesions of unknown etiology. According to the relatively high frequency of postoperative complications, this invasive procedure is recommended in cases in which less invasive investigations cannot provide the diagnosis. The cooperation between retinal surgeons, pathologists and microbiologists is very important in this procedure to provide the accurate results.

**REFERENCES**

3. Johnston RL, Tufail A, Lightman S, Luthert PJ, Pavesio CE, Cooling RJ, et al. Retinal and choroidal biopsies are helpful in suspecte... loss of tissue at the sclerotomy site because the silicone tip of the extrusion will protect the biopsy tissue from the vitreous base and sclera while passing the instrument through the sclerotomy.

The complications that were reported in the literatures included cataract, retinal detachment, vitreous hemorrhage, subretinal hemorrhage, proliferative vitreoretinopathy and phthisis bulbi. In our report, the patient developed localized retinal detachment at the inferotemporal area to the biopsy site. Although the eye became blind, we can preserve the globe and provide the definite diagnosis in this patient. Consistent with the appropriate treatment with systemic and intravitreous voriconazole, the infection was controlled and the patient has been healthy until now.

**CONCLUSION**

Chorioretinal biopsy, although related with serious complications, can provide the definite diagnosis and subsequent treatment in selected patients with progressive chorioretinal lesions of unknown etiology. According to the relatively high frequency of postoperative complications, this invasive procedure is recommended in cases in which less invasive investigations cannot provide the diagnosis. The cooperation between retinal surgeons, pathologists and microbiologists is very important in this procedure to provide the accurate results.

**REFERENCES**

3. Johnston RL, Tufail A, Lightman S, Luthert PJ, Pavesio CE, Cooling RJ, et al. Retinal and choroidal biopsies are helpful in suspecte... loss of tissue at the sclerotomy site because the silicone tip of the extrusion will protect the biopsy tissue from the vitreous base and sclera while passing the instrument through the sclerotomy.

The complications that were reported in the literatures included cataract, retinal detachment, vitreous hemorrhage, subretinal hemorrhage, proliferative vitreoretinopathy and phthisis bulbi. In our report, the patient developed localized retinal detachment at the inferotemporal area to the biopsy site. Although the eye became blind, we can preserve the globe and provide the definite diagnosis in this patient. Consistent with the appropriate treatment with systemic and intravitreous voriconazole, the infection was controlled and the patient has been healthy until now.

**CONCLUSION**

Chorioretinal biopsy, although related with serious complications, can provide the definite diagnosis and subsequent treatment in selected patients with progressive chorioretinal lesions of unknown etiology. According to the relatively high frequency of postoperative complications, this invasive procedure is recommended in cases in which less invasive investigations cannot provide the diagnosis. The cooperation between retinal surgeons, pathologists and microbiologists is very important in this procedure to provide the accurate results.

**REFERENCES**

3. Johnston RL, Tufail A, Lightman S, Luthert PJ, Pavesio CE, Cooling RJ, et al. Retinal and choroidal biopsies are helpful in suspecte... loss of tissue at the sclerotomy site because the silicone tip of the extrusion will protect the biopsy tissue from the vitreous base and sclera while passing the instrument through the sclerotomy.

The complications that were reported in the literatures included cataract, retinal detachment, vitreous hemorrhage, subretinal hemorrhage, proliferative vitreoretinopathy and phthisis bulbi. In our report, the patient developed localized retinal detachment at the inferotemporal area to the biopsy site. Although the eye became blind, we can preserve the globe and provide the definite diagnosis in this patient. Consistent with the appropriate treatment with systemic and intravitreous voriconazole, the infection was controlled and the patient has been healthy until now.

**CONCLUSION**

Chorioretinal biopsy, although related with serious complications, can provide the definite diagnosis and subsequent treatment in selected patients with progressive chorioretinal lesions of unknown etiology. According to the relatively high frequency of postoperative complications, this invasive procedure is recommended in cases in which less invasive investigations cannot provide the diagnosis. The cooperation between retinal surgeons, pathologists and microbiologists is very important in this procedure to provide the accurate results.

**REFERENCES**

3. Johnston RL, Tufail A, Lightman S, Luthert PJ, Pavesio CE, Cooling RJ, et al. Retinal and choroidal biopsies are helpful in suspecte... loss of tissue at the sclerotomy site because the silicone tip of the extrusion will protect the biopsy tissue from the vitreous base and sclera while passing the instrument through the sclerotomy.

The complications that were reported in the literatures included cataract, retinal detachment, vitreous hemorrhage, subretinal hemorrhage, proliferative vitreoretinopathy and phthisis bulbi. In our report, the patient developed localized retinal detachment at the inferotemporal area to the biopsy site. Although the eye became blind, we can preserve the globe and provide the definite diagnosis in this patient. Consistent with the appropriate treatment with systemic and intravitreous voriconazole, the infection was controlled and the patient has been healthy until now.