No PCV lesions were seen before macular translocation surgery, and large polypoidal lesions involved the new macula 5 years postoperatively. The incidence of PCV is higher in Japanese than in Caucasian patients, and PCV lesions are observed primarily at the macula. In our case, PCV developed toward the displaced new macula from the original CNV, as it did in a case of recurrent CNV after translocation surgery, indicating that the new macula may be associated with lesion development.

PCV lesions tend to bleed easily. Chan et al. reported the effectiveness of PDT for treating PCV; however, four eyes (18%) in his study developed subretinal hemorrhage, with one having a massive subretinal hemorrhage and decreased vision. Although the mechanism of acute subretinal hemorrhages after PDT is unclear, PDT may occlude drainage vessels and PCV feeder vessels, causing rupture of polypoidal lesions as a result of blood overpooling.

The VA of most patients with PCV accompanying subretinal hemorrhage after PDT is maintained because hemorrhaging is mild. However, in our case, PDT caused serious visual deterioration owing to massive subretinal hemorrhaging. An animal study showed that translocation surgery, in which the entire retina is detached from the RPE, might cause morphologic damage to the outer retinal layer, including a partial defect of the outer photoreceptor segments. Bleeding into the subretinal space may expand through the weaker adhesion between the damaged outer segment and RPE and because of lack of vitreous tamponade.

Ophthalmologists should be aware of the risk of massive subretinal hemorrhage after PDT for PCV, especially after translocation or subretinal surgery. Even in cases without PCV lesions at baseline, PCV might develop during lengthy follow-up. Therefore, ICGA should be performed regularly in Japanese patients with AMD.

**Key Words:** macular translocation surgery, photodynamic therapy, polypoidal choroidal vasculopathy, subretinal hemorrhage

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**References**


**Retrobulbar Amphotericin B Injections for Treatment of Invasive Sino-orbital Aspergillosis**

Invasive aspergillosis is well documented in immunocompromised patients, but invasive sino-orbital aspergillosis is rare in immunocompetent patients. Despite treatment by surgical debridement and maximal systemic antifungal therapy, the visual prognosis of invasive sino-orbital aspergillosis remains grave and mortality is high.

Since 1966, there has been only one case in the English literature of invasive sino-orbital aspergillosis in a healthy individual who survived with good vision. We present a case of invasive sino-orbital aspergillosis in an immunocompetent patient who survived with good vision following retrobulbar amphotericin B injections as an adjunct to surgical debridement and maximal systemic antifungal therapy.

**Case Report**

A healthy 68-year-old woman presented with right nasal stuffiness and was diagnosed with chronic paranasal sinusitis, which was relieved by oral antibiotics. Four months later, she developed dull right retrobulbar pain. Biopsy of the ethmoid sinuses demonstrated only inflamed fibrous tissue. One month later, computed tomography (CT) demonstrated ethmoid opacification and sphenoid sinusitis on the right side, with destruction of the medial orbital bone.

On referral to our hospital, her visual acuity was 1.0 OU with good pupillary responses and no relative afferent pupillary defect. She exhibited a right orbital apex syndrome characterized by slight ptosis and decreased motility in all directions. CT scanning demonstrated a focal inhomogeneous mass extending from the right ethmoid and sphenoid sinuses into the orbit and pterygopalatine fossa with orbital and maxillary bone destruction (Fig. 1).

After consultation with otorhinolaryngologists, oral prednisone (30 mg) was initiated, but the laboratory work-
up revealed an elevated serum β-d-glucan level (37.2 pg/ml). Because of the possibility of fungal infection, oral steroids were stopped, and the patient was started on daily intravenous fluconazole (800 mg/day). Endoscopic sinus surgery for repeat biopsy and debridement was performed via the nasal cavity and maxillary sinuses. Fungal organisms were observed on frozen sections, and Aspergillus fumigatus grew in culture.

Intravenous fluconazole was discontinued, and intravenous micafungin (250 mg/day) and amphotericin B (0.6 mg/kg per day) were initiated. Despite treatment, imaging findings and serum β-d-glucan levels remained unchanged (Fig. 2). One week after the patient started amphotericin B, surgical debridement was performed, and the serum β-d-glucan level decreased. However, 3 weeks after a third surgery, the serum β-d-glucan levels increased again.

The patient had already received maximal systemic antifungal therapy, and had undergone surgery once at another hospital and twice at our hospital. The option of extensive surgical resection, with enucleation, was considered, but because of her normal visual acuity, we chose to try a retrobulbar amphotericin B injection. The serum β-d-glucan level decreased immediately. Therefore, we continued with four courses of retrobulbar amphotericin B injections (3.5 mg/week), and the serum β-d-glucan level gradually recovered to normal. After these injections, there was a gradual improvement of ptosis and motility in all directions, with slightly better improvement horizontally.

Seven weeks after the treatment with intravenous amphotericin B, the patient exhibited pancytopenia, and intravenous amphotericin B was stopped. Medication was

Figure 1A–C. Computed tomography (CT) scans of sino-orbital aspergillosis in an otherwise healthy 68-year-old female patient. A Axial CT demonstrating a focal, inhomogeneous mass located in the right pterygopalatine fossa. B Axial CT demonstrating a mass lesion located in the right ethmoid and sphenoid sinuses with destruction of the medial orbital bone. C Coronal CT demonstrating a mass in the right ethmoid sinus extending into the orbit, with orbital and maxillary bone erosion.