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SUMMER 2010

Visual Outcomes After Vitreous Hemorrhage with AMD

Although rare, vitreous hemorrhage can be a serious complication of exudative age-related macular degeneration (AMD) that contributes to vision loss and is a sign of AMD progression. Pars plana vitrectomy, which may be necessary to remove the hemorrhage, provides a relatively good visual prognosis. But the factors that affect the clinical course of the disease in eyes with vitreous hemorrhage remain unknown.

Hasegawa et al from Kyoto University Graduate School of Medicine, Japan, conducted a retrospective case study of 31 patients (mean age, 73.8 ± 7.7 years; age range, 55–86 years) who were diagnosed with vitreous hemorrhage secondary to exudative AMD. Patients fell into 3 groups:

- **Gas group:** Pneumatic displacement with SF_6 (sulfur hexafluoride) gas used to treat massive submacular hemorrhage before the occurrence of vitreous hemorrhage (7 patients)
- **PDT group:** Photodynamic therapy (PDT) used to treat exudative AMD before the occurrence of vitreous hemorrhage (9 patients)
- **Untreated group:** No treatment before the occurrence of vitreous hemorrhage (15 patients)

Each patient underwent measurement of best-corrected visual acuity (BCVA), binocular ophthalmoscopy, slit-lamp biomicroscopy with a contact lens, color fundus photography, fluorescein angiography, indocyanine green angiography and optical coherence tomography. Vitreous hemorrhage (Figure 1) was removed in all patients through a standard 3-port pars plana vitrectomy. Patients were assessed at baseline and every 3 months the procedure.

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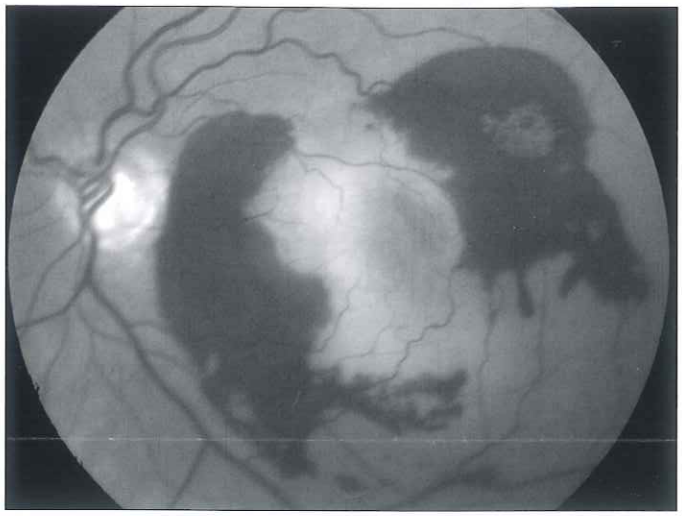

FIGURE 1. Fundus photo showing massive submacular hemorrhage and fibrosis with inferior preretinal hemorrhage. *(Photo courtesy of Dr. Daniel Berinstein.)*

Patients' postoperative follow-up ranged from 5–52 months (mean, 19.9 ± 14.2 months). Fourteen patients had submacular hemorrhage, and 15 patients had hemorrhagic pigment epithelial detachment detected before vitreous hemorrhage. In the 25 patients seen, mean BCVA was 1.05 ± 0.59 logMAR units; after vitreous hemorrhage, mean BCVA was 2.61 ± 0.82. Three months later, BCVA had significantly improved. The improvement continued at 6 months (1.23 ± 0.78) and 12 months (1.12 ± 0.82; $p < 10^{-8}$). Although 26 eyes (84%) showed improvement of >0.3 logMAR units, only 8 eyes (26%) had a final BCVA of ≥1.0 logMAR units.

In the gas group, mean BCVAs before the vitreous hemorrhage occurred, after the vitreous hemorrhage occurred but before the pars plana vitrectomy, and at final follow-up were 0.82 ± 0.30, 2.46 ± 0.87 and 0.90 ± 0.56, respectively. In the PDT group, mean BCVAs were 0.97 ± 0.26, 2.54 ± 0.92 and 1.35 ± 0.72, respectively. In the untreated group, mean BCVAs were 1.08 ± 0.65, 2.71 ± 0.79 and 1.34 ± 0.79, respectively. This suggested a trend for a better visual prognosis in the gas group than in the other groups, but the difference did not reach statistical significance. Eyes whose fellow eye had exudative AMD had significantly poorer BCVA at final follow-up (0.71 ± 0.58 vs 1.53 ± 0.84; $p = .02$). No other factors appeared to influence final BCVA.

The authors concluded that following vitreous hemorrhage, pars plana vitrectomy can restore visual acuity to the previous level, although that level may not represent a relatively good visual prognosis. Bilaterally affected patients have a poorer visual prognosis than those who are unilaterally affected.

Hasegawa T, Otani A, Sasahara M, et al. Prognostic factors of vitreous hemorrhage secondary to exudative age-related macular degeneration. Am J Ophthalmol *2010;149:322-329.*

Failed Pneumatic Retinopexy

Rhegmatogenous retinal detachment can be treated with pneumatic retinopexy, an office-based procedure with a success rate of 60–80%. However, because failure of pneumatic retinopexy leads to the persistence of the detachment or retinal redetachment, the question of whether poor outcomes can be successfully overcome needs to be answered.

Mudvari et al from Rush University Medical Center, Illinois, reviewed the charts of 289 patients (289 eyes) who underwent pneumatic retinopexy between 2001 and 2008 at a multicenter retina practice. Of these patients, 58 (20.1%) required retina reattachment surgery. After excluding 8 patients whose follow-up at the time of the study was <6 months, 50 eyes from 50 patients (27 men, 23 women; mean age, 57 ± 11 years) were included; they were followed for a mean of 28 ± 20.4 months. Thirty-four eyes (68%) were phakic, and 16 eyes (32%) were pseudophakic; 6 eyes (12%) had undergone LASIK (laser-assisted in situ keratomileusis) surgery.

More than three-quarters of the 50 patients suffered detachment (mean detachment, 4.3 ± 2.6 clock hours) within the first month after pneumatic retinopexy (mean, 24.9 days; range, 2–161 days). Subsequent retinal detachment was associated with the original break and detachment in 14 eyes; the other 36 eyes developed a new retinal detach-

ment in an area where the retina had been previously attached.

Primary reattachment surgery consisted of pars plana vitrectomy in 21 eyes (42%), scleral buckle in 19 eyes (38%), combination pars plana vitrectomy and scleral buckle in 9 eyes (18%), and repeat pneumatic retinopexy in 1 eye (2%).

More than three-quarters of all eyes required only 1 reattachment surgery (mean, 1.4 ± 0.9; range, 1–5 procedures). Although no potential risk factors for >1 reattachment surgery achieved significance, eyes with persistent or increased subretinal fluid tended to require >1 surgery.

Successful retina reattachment was achieved in 100% of eyes. Mean visual acuity went from 20/125 at presentation (range, 20/20 to hand movement) and 20/100 at time of reattachment surgery (range, 20/20 to counting fingers) to 20/50 at final follow-up (range, 20/20 to counting fingers). Eyes with a new retinal detachment achieved a better final visual acuity than eyes with persistent or increased subretinal fluid.

The authors recommended that patients who undergo pneumatic retinopexy be closely followed for at least 1 month after the procedure and fully informed about the signs and symptoms of retinal detachment. In cases in which retinal detachment occurs as a sequela to pneumatic retinopexy, reattachment surgery results in both anatomic and functional improvement.

Mudvari SS, Ravage ZB, Rezaei KA. Retinal detachment after primary pneumatic retinopexy. Retina *2009;29:1474-1478.*

Methicillin-sensitive and Methicillin-resistant *S aureus* Endophthalmitis

A frequent cause of acute-onset endophthalmitis, *Staphylococcus aureus* has mutated into strains resistant to methicillin antibiotics and is more likely to exhibit resistance to fourth-generation fluoroquinolones. Studies have suggested that methicillin-resistant strains of *S aureus* (MRSA) ocular infections are becoming increasingly prevalent. Major et al from the University of Miami Miller School of Medicine, Florida, retrospectively studied the outcomes for a series of endophthalmitis cases caused by MRSA and methicillin-sensitive *S aureus* (MSSA; Figure 2).

The authors reviewed the charts of 32 patients treated at the Bascom Palmer Eye Institute of the University of Miami for *S aureus* endophthalmitis between January 1, 1995, and January 1, 2008. Thirteen patients (41%) had infections caused by MRSA; 19 patients (59%) had infections caused by MSSA. Patients underwent 1 of the following 2 treatments:

- Aspiration of vitreous specimen followed by injection of vancomycin 1 mg and ceftazidime 2.25 mg
- Pars plana vitrectomy followed by injection of vancomycin 1 mg and ceftazidime 2.25 mg

In the MSSA group, 11 of the 19 cases were resistant to penicillin; however, all of these cases were sensitive to vancomycin, gentamicin, trimethoprim-sulfa (Bactrim) and clindamycin. All but 1 of the 19 cases were susceptible to fluoroquinolones (oxifloxacin, gatifloxacin and moxifloxacin). In the MRSA group, all were resistant to penicillin; 7 of 13 were susceptible to gentamicin and 8 of 13 were susceptible to clindamycin. Only 5 of 13 cases were susceptible to fourth-generation fluoroquinolones

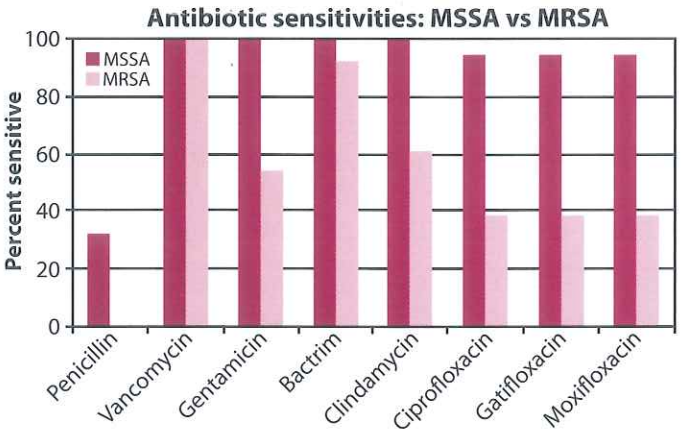

FIGURE 2. Bar graph showing endophthalmitis caused by *S aureus*; antibiotic sensitivity profiles.

(gatifloxacin and moxifloxacin). All MSSA cases and all but 1 MRSA case were sensitive to trimethoprim-sulfa; all cases were sensitive to vancomycin.

Each patient was evaluated for visual acuity at baseline and 1 week, 1 month and 3 months after treatment. Baseline visual acuity in the MSSA and MRSA groups ranged from 20/200 to no light perception (NLP). After 3 months, visual acuity in the MSSA group ranged from 20/60 to NLP; visual acuity in the MRSA group ranged from 20/70 to light perception. The difference at 3 months approached statistical significance ($p = .065$).

In this study, which covered the years 1995 to 2008, MRSA accounted for more than one-third of all cases of acute onset endophthalmitis. Many of these MRSA cases were also resistant to fourth-generation fluoroquinolones. However, all *S aureus*-associated endophthalmitis cases remained sensitive to vancomycin.

Major JC Jr, Engelbert M, Flynn HW Jr, et al. Staphylococcus aureus *endophthalmitis: antibiotic susceptibilities, methicillin resistance, and clinical outcomes.* Am J Ophthalmol *2010;149: 278-283.*

Surgical Outcomes for Idiopathic Macular Hole

Surgical success has been presumably based on preoperative characteristics, but it has been suggested that several preoperative events may prevent the success rate from increasing any further. Passemard et al from University Hospital of Dijon, France, evaluated several preoperative indicators as potential risk factors for long-term reopening of idiopathic macular holes (IMHs) after initially successful surgery.

Patients from 2 French academic centers with stage 2, 3 and 4 IMH who underwent successful surgery from 2002 through 2005 were included in the study. Before surgery, investigators recorded eye history, age, gender, estimated duration of the IMH, lens status, IMH stage and the largest diameter of the IMH for each of the 332 patients.

Nearly three-quarters of the eyes had stage 3 IMH. Patients were divided into 4 groups depending on when and if cataract surgery was performed.

- **Group 1** underwent vitrectomy in pseudophakic eyes
- **Group 2** underwent vitrectomy and cataract extraction as a combined procedure
- **Group 3** underwent vitrectomy followed by cataract extraction
- **Group 4** underwent vitrectomy in eyes that remained phakic

No macular holes reopened during the follow-up. Best-corrected visual acuity significantly improved from 20/160 before surgery to 20/40 after surgery ($p < .001$) and was similar for all groups. In all, 94.8% of eyes exhibited improved visual acuity after IMH closure. Seven cases of cystoid macular edema were observed, 3 of them related to surgical complications.

Given the success rate of this study at 30 months, none of the preoperative measurements were associated with the reopening of IMHs. Moreover, cataract extraction performed after IMH surgery, which had been suggested as a factor in IMH reopening, clearly did not contribute to any such result among this cohort.

Passemard M, Yakoubi Y, Muselier A, et al. Long-term outcome of idiopathic macular hole surgery. Am J Ophthalmol *2010;149:120-126.*

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- Toxic vitritis
- Myopia and diabetic retinopathy
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