European Journal of Ophthalmology / Vol. 15 no. 1, 2004 / pp. 138-142

SHORT COMMUNICATION

Ocular manifestations in patients with microscopic polyangiitis

M. MIHARA, S. HAYASAKA, K. WATANABE, K. KITAGAWA, Y. HAYASAKA

Department of Ophthalmology, Toyama Medical and Pharmaceutical University, Toyama - Japan

PURPOSE. *To describe ocular manifestations in patients with microscopic polyangiitis.*
METHODS. *Two patients with microscopic polyangiitis complained of ocular symptoms and underwent ophthalmologic examinations.*
RESULTS. *An 83-year-old woman (Case 1) was diagnosed with microscopic polyangiitis, according to the general clinical findings and the presence of perinuclear pattern of antineutrophil cytoplasmic antibodies (P-ANCA). She had hypopyon iridocyclitis in the right eye and retinal cotton-wool spots in the left eye. The patient was treated with oral prednisolone and subconjunctival betamethasone. The hypopyon iridocyclitis and retinal cotton-wool spots responded. A 79-year-old man (Case 2) had bilateral scleritis. The diagnosis of microscopic polyangiitis was made based on general clinical findings and the presence of P-ANCA. Scleritis was reduced after corticosteroid treatment.*
CONCLUSIONS. *Ophthalmologists should be aware that hypopyon iridocyclitis, cotton-wool spot, and scleritis could occur in patients with microscopic polyangiitis. (Eur J Ophthalmol 2005; 15: 138-42)*

KEY WORD. *Hypopyon iridocyclitis, Microscopic polyangiitis, P-ANCA, Retinal cotton-wool spots, Scleritis*

Accept: July 10, 2004

INTRODUCTION

Polyarteritis nodosa is a rare systemic disease that affects medium to small arteries and is characterized by necrotizing inflammation (1). For the traditional format classification of polyarteritis nodosa, 10 criteria were selected in 1990 (1). In 1994, Consensus Conference on the Nomenclature of Systemic Vasculitides, held in Chapel Hill, NC, proposed that polyarteritis nodosa (classic polyarteritis nodosa) and microscopic polyangiitis (microscopic polyarteritis) are differentiated by the presence or absence of small vessel involvement (2). A perinuclear pattern of antineutrophil cytoplasmic antibodies (P-ANCA) and ANCA with antigen specificity for myeloperoxidase (MPO-ANCA) are thought to be markers for microscopic polyangiitis (3, 4). Ocular complications of polyarteritis nodosa such as episcleritis (3) or scleritis (5), retinal artery occlusion (5), ulcerative keratitis (5, 6), nongranulomatous uveitis (5, 7), retinal vasculitis (7), optic neuropathy (8), and orbital apex syndrome (9) have been previously reported. Pulido et al (3) showed central

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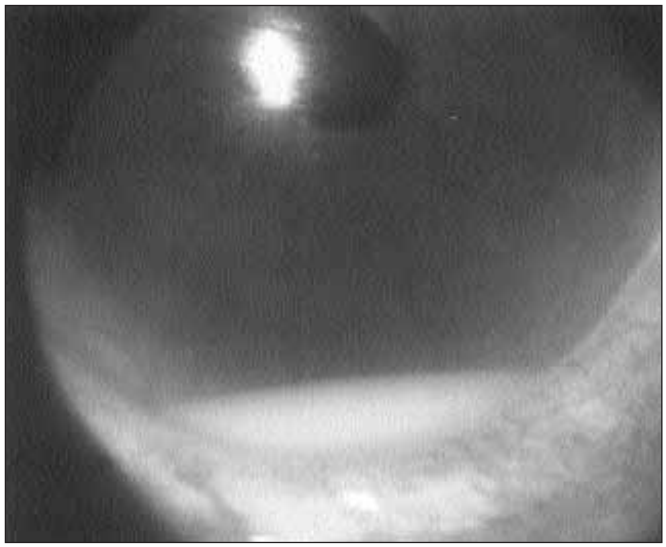

Fig. 1 - *Case 1. Hypopyon iridocyclitis is seen in the right eye.*

scotomas in a 54-year-old woman with microscopic polyarteritis. Rodgers et al (10) observed conjunctivitis in two patients with microscopic polyarteritis. We recently examined two patients with microscopic polyangiitis who complained of ocular symptoms.

Case reports

Case 1

An 83-year-old woman complained of fever, cough, and general fatigue in early December 2002. She had undergone cataract extraction and intraocular lens implantation in the right eye in 1992. Her past medical and family histories for ocular and systemic disease were otherwise unremarkable. A chest X-ray showed abnormal shadows in the right middle lobe of the lung, suggesting pneumonia. Treatment with broad-spectrum antibiotics was started but was ineffective. At the end of December, she complained of myalgia, muscle weakness, weight loss (6 kg), and livedo reticularis. Results of laboratory tests disclosed the following values: white blood cell count, 16,900/μL (normal, 5000-8500/μL); C-reactive protein, 18.6 mg/dl (normal, 0.1 mg/dl); blood urea nitrogen, 10.9 mg/dl (normal, 8-20 mg/dl); creatinine, 0.44 mg/dl (normal, 0.5-1.0 mg/dl); antinuclear antibody titer, 80 units (normal, <4 units); cytoplasmic pattern of antineutrophil cytoplasmic antibodies (C-ANCA) titer, 10 units (normal, <10 units); and P-ANCA titer, 640 units (normal, <10 units). No eosinophilia was noted. Skin biopsy demonstrated necrotizing inflammation of small vessels. In early January 2003, renal dysfunction developed; blood urea nitrogen (113.2 mg/dl) and creatinine (3.1 mg/dl) were elevated. Microscopic hematuria, proteinuria, and hypertension (systolic blood pressure, 208 mmHg; diastolic blood pressure, 95 mmHg) also developed. Oral prednisolone, 40 mg daily, was given for 5 days and then was gradually tapered. Her renal, lung, muscle, and skin lesions and hypertension resolved. There-

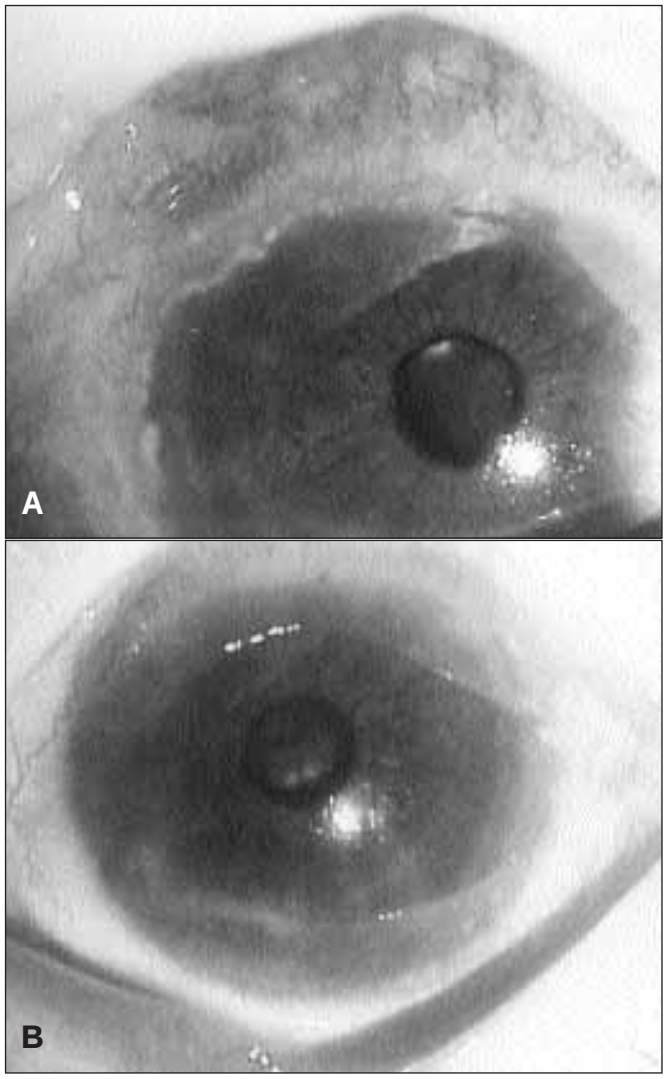

Fig. 2 - *Case 2. Scleritis in both eyes. Superior scleral hyperemia with corneal infiltration is found in the right* (**A**) *and left* (**B**) *eyes.*

after, the patient was given oral prednisolone, 5 mg daily.

On April 30, 2003, she complained of fever, headache, and mild pain in the right eye. On May 2, the patient had decreased visual acuity in the right eye. On ophthalmic examination, her visual acuity was hand motion in the right eye and 0.6 in the left. Her intraocular pressures were 17 mmHg bilaterally. No corneal or scleral ulceration or proptosis was found in either eye. Hypopyon iridocyclitis was observed in the right eye (Fig. 1). No cells were visible in the left anterior chamber. Aftercataract in the right eye and cortical cataract in the left eye were found. Ophthalmoscopically, the right fundus could not be seen clearly because of cloudy media. Retinal cotton-wool spots were observed in the temporal periphery of the left fundus. Diagnostic anterior chamber aspiration was performed. Giemsa staining of the smear of aqueous humor revealed polymorphonuclear cells, and Gram staining showed no microorganisms. Bacterial culture of aqueous sample showed no growth. No oral aphtha, genital ulceration, back pain, or arthritis was noted. White blood cell count and P-ANCA titer were elevated, blood urea nitrogen and creatinine were within normal range. The patient was treated with oral administration of prednisolone, 5 mg daily, topical instillation of 1% atropine sulphate, 4 times daily, and subconjunctival injection of betamethasone, 2 mg daily, for 5 days. Thereafter, the patient was treated with oral prednisolone, 5 mg daily, topical instillation of 0.1% betamethasone, and 1% atropine twice daily. On May 11, hypopyon iridocyclitis and anterior chamber cells in the right eye disappeared, and vitreous opacity was noted. Thereafter, retinal cotton-wool spots and vitreous opacity gradually decreased in both eyes. On May 20, the patient's visual acuity was 0.03 in the right eye and 0.6 in the left. On July 11, her visual acuity was 0.3 in the right eye and 0.6 in the left. During the 8-month follow-up period, no remarkable ocular signs were observed.

Case 2

A 79-year-old man complained of fever, cough, and general fatigue in mid-November 2003. His past medical and family histories for ocular and systemic disease were unremarkable. A chest X-ray showed abnormal shadows in the lung, suggesting pneumonia. Treatment with intravenous cefotiam, 2 g daily, was started but was ineffective. On November 26, he complained of bilateral ocular pain and weight loss (8 kg). On ophthalmic examination, his visual acuity was 0.7 in the right eye and 1.2 in the left. Scleritis with corneal infiltration was found in both eyes (Fig. 2). No cells were visible in the anterior chambers. Cortical cataract was seen in both eyes. The fundi appeared ophthalmoscopically normal. Giemsa staining of the conjunctival scraping material showed neutrophils. Bacterial culture showed coagulase-negative *Staphylococcus*, which was sensitive to levofloxacin. Topical levofloxacin was prescribed, but was ineffective.

In early December, 2003, he complained of myalgia. Results of laboratory tests disclosed blood urea nitrogen, 21 mg/dl (normal, 8–20 mg/dl); white blood cell count, 9350/μL (normal, 5000–8000/μL); C-reactive protein, 10.8 mg/dl (normal, 0.1 mg/dl); erythrocyte sedimentation rate, 127 mm at 1 hour; blood pressure, 162/93 mmHg; P-ANCA titer, 91 units (normal, <10 units). Red blood cell count, hemoglobin, hematocrit, platelet count, antinuclear antibody, anti-DNA antibody, rheumatoid factor, lupus erythematodes cells, and C-ANCA were negative or within normal range. No eosinophilia was noted.

Oral administration of prednisolone, 40 mg daily, and topical instillation of betamethasone, 4 times daily, and levofloxacin were started. One week later, the lung and scleral lesion resolved. Thereafter, oral and topical prednisolone was tapered. In March 2004, oral prednisolone, 5 mg daily, was maintained. During the follow-up period, no remarkable systemic or ocular signs were observed.

DISCUSSION

Lightfoot et al (1), in 1990, proposed that a patient shall be said to have polyarteritis nodosa if at least 3 of their 10 criteria are present. Our Case 1 had weight loss (more than 4 kg), livedo reticularis, myalgia, diastolic blood pressure higher than 90 mmHg, elevated blood urea nitrogen and creatinine, and biopsy-proven small vessel vasculitis. Our Case 2 had weight loss (more than 4 kg), myalgia hypertension, and elevated blood urea nitrogen. The above findings in Cases 1 and 2 fulfilled the 1990 criteria for polyarteritis nodosa (1). Histologic changes; elevated P-ANCA; re-

nal, lung, muscle, and skin lesions; hypertension in our Case 1 and elevated P-ANCA and renal and lung lesions in Case 2 were consistent with those of microscopic polyangiitis, and were different from classic polyarteritis nodosa (2-4, 10). Hypopyon iridocyclitis is an accumulation of pus (a liquid infiltration product composed of leukocytes and thin fluid) in the anterior chamber. In the acute stage of polyarteritis nodosa, polymorphonuclear neutrophils infiltrate the vessel wall, and in the subacute and chronic stage, mononuclear cells infiltrate. Polymorphonuclear cells were found in the anterior chamber of our Case 1. It is possible that the disease in our Case 1 was at the acute stage. It is also possible that retinal cotton-wool spots in our Case 1 may have resulted from microvascular occlusion. Our Case 1 had undergone cataract extraction and intraocular lens implantation in the right eye 10 years before. Negative bacterial culture of aqueous sample and good responsiveness to corticosteroid were found. Hypopyon iridocyclitis in our Case 1 could be differentiated from Behçet's disease, in which recurrent oral aphtha, genital ulcer, and skin lesions are found (11); postoperative endophthalmitis, in which bacterial culture of aqueous sample is positive and corticosteroid is ineffective; metastatic endophthalmitis, in which primary infectious lesions exist and antibiotics are effective; herpetic iritis, in which corneal ulcer and/or skin lesions are found; masquerade syndrome, in which corticosteroid is not effective (12); and acute anterior uveitis associated with ankylosing spondylitis and Reiter's syndrome, in which HLA-27 is positive, and back pain or arthritis occurs (13). Bacteria grew from the conjunctival sac in our Case 2. However, antibiotics sensitive to the bacteria did not reduce scleritis. Treatment with corticosteroid was effective. Therefore, it is unlikely that scleritis in our Case 2 might be caused by bacterial infection. We believe that bilateral scleritis in our Case 2 was associated with microscopic polyangiitis, although histopathologic study is lacking. The findings in our Cases 1 and 2 could also be excluded from Wegener's granulomatosis, in which C-ANCA is elevated (3, 14, 15). The cause of microscopic polyangiitis remains unknown.

The prognosis of the disease is reportedly improved if the condition is recognized early and treated with corticosteroid and cyclophosphamide (10). Our patients were treated with prednisolone only, because corticosteroid alone was already successful. Various ocular complications associated with polyarteritis nodosa have been reported (3, 5-9). To our knowledge, hypopyon iridocyclitis and scleritis have not been previously reported in patients with microscopic polyangiitis. Ophthalmologists should be aware that hypopyon iridocyclitis and scleritis associated with microscopic polyangiitis, as demonstrated in our patients, may occur.

Reprint requests to:
Miharu Mihara, MD
Department of Ophthalmology
Toyama Medical and Pharmaceutical University
2630 Sugitani
Toyama 930-0914, Japan
ophthal@ms.toyama-mpu.ac.jp

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