Shimane J. Med Sci.,Vol.12, pp.17 - 22 , 1989/90

BILATERAL ORBITAL CELLULITIS IN A PATIENT WITH SCLERODERMA RECEIVING LONG-TERM HEMODIALYSIS

(orbital cellulitis/scleroderma/hemodialysis)

Sachiko NODA, Seiji HAYASAKA, and Tomoichi SETOGAWA

Department of Ophthalmology, Shimane Medical University, Izumo 693, Japan

(Received April 14, 1989/Accepted May 25, 1989)

A 63-year-old woman with scleroderma who received long-term hemodialysis complained of acute eyelid swelling, proptosis, and pain in the right eye. Fever and leucocytosis were also noted. A computed tomography scan showed high density in the right orbit. One week later both orbits exhibited signs of deterioration. Intravenous antibiotic therapy resolved the orbital infection after one month. This report describes a rare case of bilateral orbital cellulitis in an elderly woman receiving hemodialysis.

Unilateral orbital cellulitis occurs commonly in children and in young adults, resulting from sinusitis, upper respiratory tract infection, trauma, and other causes (1-3). We recently treated a rare case of bilateral orbital cellulitis in a 63-year-old patient with scleroderma who received long-term hemodialysis.

CASE REPORT

Renal failure occurred in a 50-year-old woman with scleroderma. The diagnosis of scleroderma was made according to clinical and histopathologic findings. Since the diagnosis, the patient had been undergoing periodic hemodialysis. At age 62, the patient had pneumonia, which was successfully treated with the intravenous administration of antibiotics, and subsequently

exhibited generalized peritonitis, which progressed well after surgical drainage and antibiotic therapy. Bacterial cultures of the blood and drainage specimens showed no growth. At age 63, the patient again had pneumonia that was successfully treated with intravenous antibiotics. Staphylococcus aureus grew from the sputum, which was sensitive in vitro to cefpiramide, cefpimizole, and cefotaxime.

On March 4, 1988, two months after remission of the pneumonia, the patient complained of acute eyelid swelling and pain in the right eye. On ophthalmic examination, her corrected visual acuity was 0.3 OD and 0.7 OS. Lid swelling with erythema, chemosis, proptosis (10 mm), and superficial keratitis were prominent in the right eye (Fig 1). The right eyeball was slightly deviated inferiorly, and movement was restricted within less than 5° in all directions.

The anterior chambers were clear. Cortical wheel-like opacities were seen in both lenses. The retinas appeared diffusely mottled, and retinal vessels were sclerotic. No papilledema or retinal hemorrhages were noted.

Fig. 1. On March 4, 1988, eyelid swelling with erythema, chemosis, and proptosis of the right eye are prominent.

Systemic and laboratory test results showed an elevated temperature (38.5°), an increased white blood cell count (9,500/cu mm), and a high level of C-reactive protein (+8.0). Conventional X-ray findings revealed no abnormality in the orbits and paranasal sinus, but an abnormal shadow of the lung suggested fibrosis. A computed tomography scan showed no active

inflammatory lesions in the paranasal sinus, lung, or abdomen, but a high density area was noted in the superotemporal region of the right orbit (Fig 2). An ultrasonography B scan demonstrated a localized low reflective lesion in the right orbit. Bacterial and fungal cultures of blood and conjunctiva were negative for growth.

A diagnosis of right orbital cellulitis was made, and the patient was given cefpimizole, lg/day, intravenously. The right orbital inflammation, however, did not respond to this treatment.

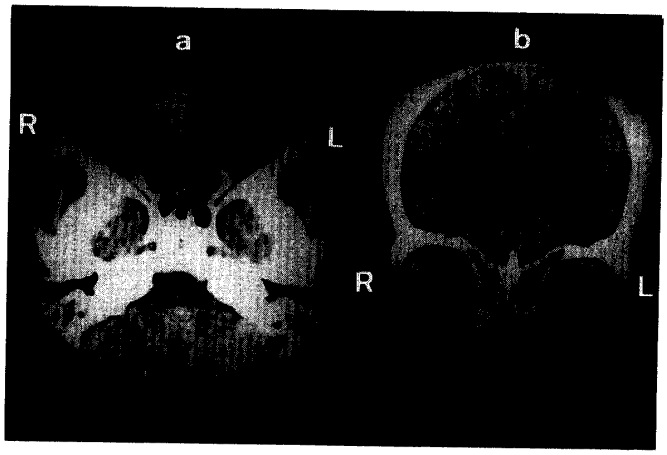

Fig. 2. On March 4, 1988, axial (a) and coronal (b) computed tomography scans exhibit high density in the superotemporal region of the right orbit.

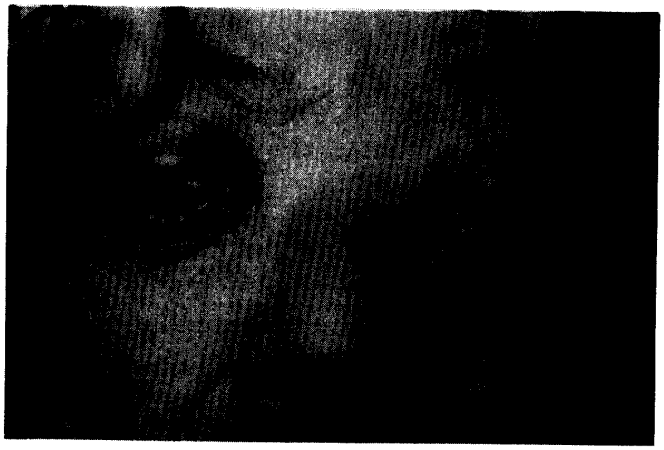

Fig. 3. On March 11, 1988, eyelid swelling with erythema, chemosis, and proptosis of both eyes are evident.

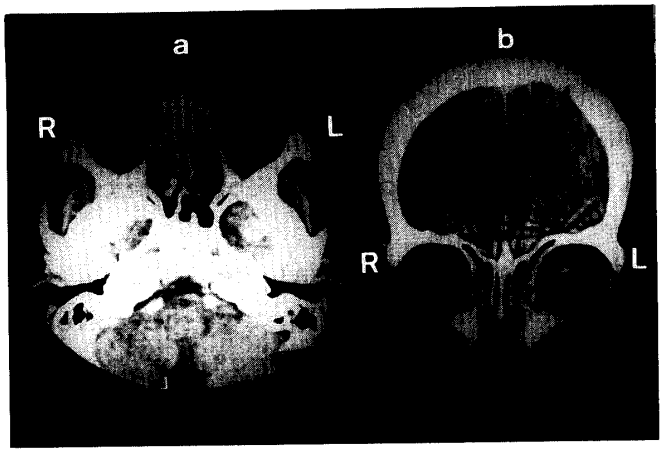

Fig. 4. On March 11, 1988, axial (a) and coronal (b) computed tomography scans demonstrate high densities in both orbits.

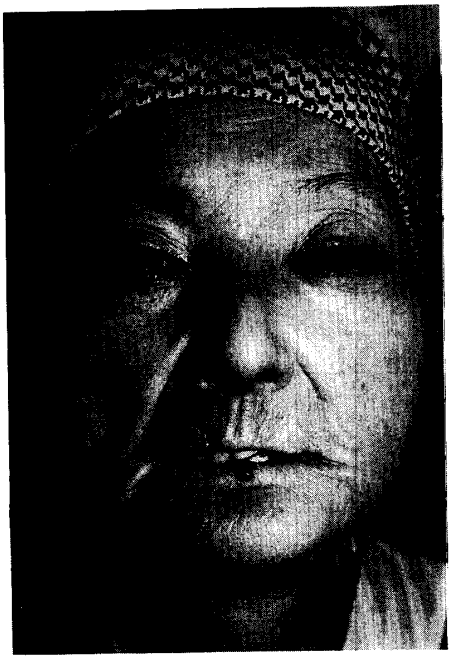

Fig. 5. On April 10, 1988, after resolution of lid swelling, the masklike face, with thin pursed lips and folds around the small mouth, typical of patrents with scleroderma, is noted.

One week later, not only the right orbit but also the left showed signs of deterioration. Bilateral eyelid swelling with erythema, chemosis, proptosis, and superficial keratitis occurred (Fig 3). Visual acuity in the left eye decreased to 0.2. A computed tomography scan showed high density areas in both orbits (Fig 4). Results of a blood culture were negative. A diagnosis of bilateral orbital cellulitis was made, and intravitreal chemotherapy was changed to cefotaxime, lg/day.

This regimen reduced markedly the bilateral orbital inflammation. By April 10, the proptosis and eyelid swelling

with erythema, chemosis, restriction of eye movement, and superficial keratitis had disappeared. Her visual acuity improved to 0.7 OU. The white blood cell count, body temperature, and C-reactive protein level also recovered to normal values. After the eyelid swelling resolved, the typical masklike face that characterizes scleroderma, which includes thin pursed lips and folds around the small mouth was evident (Fig 5).

Hemodialysis was maintained during and after this therapeutic course.

DISCUSSION

Our patient clearly demonstrated scleroderma, renal failure that necessitated hemodialysis, and bilateral orbital inflammation sensitive to antibiotic therapy. The orbital lesions in our patient were diagnosed as orbital cellulitis according to clinical and radiographic findings, despite negative bacterial culture findings.

Orbital cellulitis is commonly unilateral (1-3). Bilateral cases are infrequent. Microorganisms causing the condition may reach the orbit from various sources, such as trauma, infections of the skin, conjunctiva, globe, lacrimal sac, and upper respiratory tract, as well as dental abscesses(4). None of these sources, however, were conceivable beginnings for the orbital infection in our patient. Patients treated with hemodialysis have had systemic bacterial infection and immunodeficiency (5,6). Metastatic endophthalmitis also has occurred in patients undergoing long-term hemodialysis (7). Therefore, long-term hemodialysis may have been involved in the development of orbital infection in our patient, and it should be added to the list of predisposing factors of orbital cellulitis.

The management of patients receiving hemodialysis and chemotherapy is problematic, because many antibiotics are not excreted in the urine but accumulate in the body. We chose, therefore, a low dose (1g/day) of cefpimizole and cefotaxime, which would be excreted mainly via hemodialysis.

Although several ocular manifestations in scleroderma are

known (8), to our knowledge, orbital cellulitis is a rarely associated condition.

ACKNOWLEDGMENTS

The authors would like to thank Ms. M. A. Gere for editing the manuscript, and Miss Y. Yasuda for secretarial assistance.

REFERENCES

1) Bergin, D.J., and Wright, J.E. (1986) Orbital cellulitis. Br. J. Ophthalmol. 70, 174-178
2) Jackson, K., and Baker, S.R. (1986) Clinical implications of orbital cellulitis. Laryngoscope 96, 568-574
3) Watter, E.C., Waller, P.H., Hiles, D.A., and Michaels, R.H. (1976) Acute orbital cellulitis. Arch. Ophthalmol. 94, 785-788
4) Gonnering, R.S., and Harris, G.J. (1986) Infection of the orbit, in Tabbara KF and Hyndiuk RA (eds): Infection of the Eye, Little, Brown and Co., Boston, pp517-541
5) Kumagai, K., and Ito, K. (1980) Immunodeficiency in hemodialysis patient. Med. Clin. Jpn. 6, 958-960
6) Saito, A. (1980) Bacterial infection in hemodialysis patient. Med. Clin. Jpn. 6, 1064-1065
7) Bloomfield, S.E., David, D.S., Cheigh, J.S., Kim, Y., White, R.P., Stenzel, K.H., and Rubin, A.L. (1978) Endophthalmitis following staphylococcal sepsis in renal failure patients. Arch. Intern. Med. 138, 706-708
8) Gold, D.H. (1987) Ocular manifestations of connective tissue disease, in Duane TD and Jaeger EA (eds): Clinical Ophthalmology, Harper & Row, Philadelphia, Vol. 5, Chapt. 26, pp22-23