BILATERAL PROPTOSIS IN ACUTE MYELOID LEUKAEMIA*†

BY

B. N. CONSUL, O. P. KULSHRESTHA, AND A. S. MEHROTRA

Department of Ophthalmology, S. M. S. Medical College, Jaipur, India

BILATERAL proptosis due to orbital involvement by tumour cells was observed in only 2 per cent. of cases of lymphatic leukaemia by Reese and Guy (1933), and myelogenous leukaemia rarely leads to orbital infiltration (Duke-Elder, 1952, Wright, 1938).

Acute myeloid leukaemia may produce diffuse infiltration into various organs, such as the liver, spleen, and lymph glands, or may cause localized deposits. Another variant is chloroma, a prominent feature of which is deposition of greenish-yellow tumour masses especially in the skull, orbits, accessory sinuses, lymph nodes, and spine. About 50 per cent. of cases of chloroma show orbital involvement with exophthalmos. These tumours apparently have the same relation to myeloid leukaemia as lymphosarcomata have to lymphatic leukaemia.

Chatterjee and Sen (1960) reported leukaemic deposits in the right orbit; on incising the conjunctiva a pale white mass was exposed which did not bleed on section; there was a focal collection of leukaemic cells in a fairly dense fibrous matrix.

Mortada (1963) reported three cases of orbital tumours in children in association with leukaemia. One had orbital lymphosarcoma and 6 months later the blood picture of acute lymphoblastic leukaemia. The second had bilateral orbital chloroma with acute myeloid leukaemia. The third, aged 5 years, had bilateral rapidly-developing proptosis diagnosed on biopsy as reticulum cell sarcoma with the blood picture of acute myeloid leukaemia.

Wright (1938) reported a case in a 4-year-old child, with a hard mass in each orbit, projecting beneath the supra-orbital margin; there was fever and the blood picture of acute myeloid leukaemia.

Smith (1959) reported eight cases of malignant lymphomatous tumours of the eye, in two of which there was evidence of orbital infiltration with chronic lymphatic leukaemia, but he did not include the diagnostic haematological tests.

Reese (1963) pointed out that, although orbital infiltration might occur in myelogenous leukaemia, in some reported cases orbital haemorrhage had not been excluded.

Case Report

A 9-year-old Muslim boy was admitted with gradually increasing proptosis in both eyes for 1 month. For the last 10 days he had not been able to close his eyes and he had lost all vision in the right eye for 6 days. He had had fever off and on with extreme weakness and loss of appetite for 2 months.

* Received for publication July 26, 1965.

† Address for reprints: Prof. B. N. Consul (as above).

He had passed one or two adult round worms in the stools 4 months previously, and 2 months previously there had been a discharge of pus from both ears for about 4 weeks, but the ears were dry on admission.

Examination.—He was very weak and irritable, markedly pale, and emaciated. A few sub-mandibular and cervical lymph nodes were palpably enlarged on both sides. Both tonsils were slightly enlarged. The liver and spleen were not felt.

There was marked proptosis of both eyes with exposure of the corneae; the upper lids could cover only one-third of the cornea, and eye movements were much restricted (Fig. 1).

FIG. 1.—Severe proptosis of both eyes. The entire right cornea is hazy. Left tarsorrhaphy was done to protect the cornea.

The right lids were swollen and the conjunctiva chemosed, the whole cornea being hazy and sloughed. The left conjunctiva was chemosed and a small part of the lower cornea was hazy, taking fluorescein staining. There was a diffuse mass in both orbits, and below the superior and temporal borders of the orbital margins a rubbery mass could be palpated on both sides. These appeared to be infiltrated lacrimal glands.

Laboratory Tests.—The white cell count was 91,000/mm.³ (myeloblasts 6 per cent., promyelocytes 16 per cent., myelocytes 25 per cent., metamyelocytes 6 per cent., mature cells 47 per cent.).

The red cell count was 2.3 millions per mm.³; Hb 7 g. per cent.

Bone marrow biopsy confirmed the diagnosis of myeloid leukaemia.

The urine contained no sugar or albumen, the erythrocyte sedimentation rate was 75 mm. in one hour, and Kahn's test was negative.

Treatment.—In view of the severe exposure of the cornea, a left tarsorrhaphy was done under general anaesthesia.

Tissue was taken for biopsy from beneath the supero-temporal margin of the right eye, and from deeper tissues. The tissue consisted of grey rubbery material which could be cut easily with a scalpel.

Histopathological Report.—A piece of lacrimal gland tissue with dense infiltration with cells showing myeloid features, suggestive of leukaemic infiltration. The deeper orbital tissue also showed dense infiltration with myeloid cells (Figs 2 and 3, opposite).

Termination.—The child's condition gradually deteriorated and he died within 25 days of admission.

Discussion

The possibility of leukaemic infiltration into the orbit should be remembered as a possible cause of proptosis in children. These tumours occur less frequently than the unclassified malignant tumours. The blood slide should invariably be seen by an experienced haematologist.

FIG. 2.—Lacrimal gland tissue, showing leukaemic infiltration. $\times 60$.

FIG. 3.—Dense leukaemic infiltration with myeloid cells. Lacrimal gland tissue is seen on the right hand side. $\times 270$.

Summary

A case is reported of acute myeloid leukaemia with bilateral orbital tumour. The diagnosis was established by biopsy.

Our thanks are due to Dr. D. P. Gupta, M.D., Professor of Pathology, S.M.S. Medical College, Jaipur, for the histopathological report.

REFERENCES

- CHATTERJEE, B. M., and SEN, N. N. (1960). *Brit. J. Ophthalm.*, **44**, 440.
 DUKE-ELDER, S. (1952). "Text-book of Ophthalmology", vol. 5, pp. 5549-59. Kimpton, London.
 MORTADA, A. (1963). *Amer. J. Ophthalm.*, **55**, 327.
 REESE, A. B. (1963). "Tumors of the Eye", 2nd. ed., p. 476. Hoeber, New York.
 ——— and GUY, L. (1933). *Amer. J. Ophthalm.*, **16**, 718.
 SMITH, V. H. (1959). *Brit. J. Ophthalm.*, **43**, 247.
 WRIGHT, R. E. (1938). "Selected Pictures of Extra-ocular Affections". Government Press, Madras.
 Quoted by Duke-Elder (1952).