CASE NOTES

MOOREN'S ULCER TREATED BY DIATHERMY COAGULATION*†

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MOOREN'S ULCER is a relatively rare condition and treatment in the past has been for the most part unsatisfactory. Indeed, the multiplicity of therapeutic methods attempted or recommended in the literature is suggestive of the ineffectiveness of any of them. Duke-Elder (1938) notes the following methods of treatment: excision and cauterization by carbolic, trichloroacetic acid, iodine, absolute alcohol, or other chemicals; thermo-cautery; zinc iontophoresis; radium; ultra-violet light; the production of hypotony by a sclerectomy or by repeatedly opening a corneal incision; a "delimiting keratotomy" in front of the advancing edge.

In recent times β -radiation has been used, notably by Lederman (1957), who gave 1,000 r once a week for four treatments. The results in 45 eyes were fifteen cured, sixteen failed, and fourteen improved, so that a really successful outcome was achieved in only about 30 per cent. of cases.

Treatment by diathermy coagulation does not appear to have been given an adequate trial. Text-books on ophthalmic surgery by Spaeth (1948), Philips (1950), Stallard (1950), and Arruga (1952) do not mention this method. One case treated successfully by diathermy coagulation was recorded by Malmquist (1947). The details of a further case are given below.

Case Report

An agricultural peasant, aged 25 years, stated that he had had a watery, painful, and slightly red eye for the past 3 months. He thought that the condition was the result of being flicked in the eye by a cow's tail.

Examination (November 21, 1955) revealed a typical Mooren's ulcer in the right eye (Fig. 1, opposite) extending from the limbus in a more or less straight line joining 12 to 3.30 o'clock. The advancing border had undermined the anterior third of the depth of the cornea, and formed a grey overhanging edge which is so characteristic. The advancing edge stained faintly with fluorescein while the more peripheral area between the edge and the limbus had healed over with the formation of scar tissue and some slight vascularization. The rest of the cornea was clear and visual acuity was 6/6. There was some ciliary congestion localized to the area of the ulcer. The lens and fundus were normal. The other eye was normal.

Therapy.—Atropine ointment thrice daily was prescribed and a pad applied for 10 days with no improvement.

* The case was shown at a clinical meeting of the Bengal Ophthalmological Society on January 31, 1957.

† Date received for publication March 29, 1957.

FIG. 1.—Condition, November 21, 1955.

FIG. 2.—After β rays, January–March, 1956.

FIG. 3.—After first diathermy, March 22, 1956.

FIG. 4.—After second diathermy, April 26, 1956.

FIG. 5.—After third diathermy, May 31, 1956.

FIG. 6.—After fourth diathermy, June 27, 1956.

FIG. 7.—After fifth diathermy, August 2, 1956.

On December 2, 1955, a partial-thickness delimiting keratotomy with cauterization of the ulcer with pure carbolic acid was performed but without beneficial result.

Two weeks later, the ulcer was again cauterized with carbolic acid but without benefit.

A course of β -rays was next given through the courtesy of Dr Nirmal Ghose at the Eye Infirmary, Medical College Hospital, Calcutta. Applications were given twice weekly for 8 weeks and 400 r.e.p. were given at each sitting. At first there appeared to be some regression and healing, but soon after the completion of the treatment the ulcer had extended round the limbus from 12 to 11 o'clock above and from 3.30 to 8 o'clock below (Fig. 2). The eye was still painful, watery, and slightly congested.

On March 22, 1956, under local anaesthesia with cocaine 4 per cent. drops and a sub-tenon injection of xylocaine 1 per cent., the whole of the advancing edge of the ulcer was cauterized by diathermy-coagulation. The Moorfields diathermy machine was used with the blunt Larsson electrode. About three-quarters of the current usually required for non-penetrating diathermy coagulation through the sclera in detachment work appeared satisfactory. The electrode was applied very lightly to the ulcer and the clear cornea just in front of the advancing edge. The coagulated area could be seen to turn a whitish colour. The electrode was kept in contact with each area for about 2 seconds. Great care was taken to apply the electrode with only very light pressure, so as to confine the coagulative process to the anterior half of the thickness of the cornea and so to avoid penetration.

The eye was kept covered and atropine applied twice daily, and one week later the ulcer had healed except at two places at 11.0 and 5 o'clock near the limbus (Fig. 3). Scarring was satisfactory and there was practically no vascularization.

On April 26, 1956, the two unhealed areas were much the same and further similar diathermy coagulation was applied. The area at 11 o'clock failed to heal. This area persisted and the cornea appeared so thin at this point that further treatment was deliberately withheld.

By May 31, 1956, the ulcerated area had spread from 11.0 to 9 o'clock (Fig. 4), and further diathermy coagulation was now applied. This caused partial healing, but two very small areas at 9.0 and 11 o'clock persisted (Fig. 5).

On June 27, 1956, these two unhealed areas received a further light application of diathermy coagulation, and after this the upper area at 11 o'clock healed while the lower one at 9 o'clock not only failed to heal but started to extend towards the centre of the cornea (Fig. 6).

On August 2, 1956, a further diathermy coagulation to the area caused this last remaining part of the ulcer to heal after 12 days.

Follow-up.—The patient returned to his village but returned a month later with recurrence of pain and watering. Examination revealed two fresh ulcers, one on the former scar at 10 o'clock and one near this but in clear cornea nearer the centre (Fig. 7). On September 20, 1956, these areas received further diathermy coagulation, and this caused healing after 3 weeks.

There was considerable thinning of the cornea over the scarred area of former ulceration and diathermy coagulation. One area at 10 o'clock was particularly thin—so thin that ectasia was expected. (Figs 8 and 9.)

FIG. 8.—Slit-lamp appearance of thin area.

FIG. 9.—Thin area at the 10 o'clock meridian looking like a small hole in the corneal scar.

No further ulceration occurred, however, and 3½ months later, January 31, 1957, the scars had considerably faded and the thin areas were now of almost normal thickness. What was surprising was that the extremely thin area seen in Fig. 9 had almost disappeared. Visual acuity with -1 D sph. and -1 D cyl., axis 45° , was 6/12 ptly.

Comment

Although the patient was only 25 years old, the ulcer was absolutely typical of a Mooren's ulcer, so that no other diagnosis was possible. It was quite unlike marginal keratitis or marginal ectatic dystrophy.

Cauterization with carbolic acid was ineffective, probably because this only gives destruction of the most superficial surface cells. β -rays seemed in this case only to irritate the ulcer and cause it to spread rapidly. Great

credit goes to the patient, a simple country lad, for his fortitude in persisting with treatment lasting about $8\frac{1}{2}$ months. More drastic or more frequent coagulation was not attempted for fear of doing irreparable damage to the cornea with danger of the loss of the eye.

A great advantage of this method of diathermy coagulation is that the surgeon can do the treatment himself and modify it to each particular case. Diathermy coagulation is available in most hospitals and there is no fear of radiation burns to the surgeon or his assistants.

Summary

A case of Mooren's ulcer failed to respond to chemical cauterization. β -ray applications appeared to irritate the lesion and cause it to spread. Diathermy coagulation with the blunt Larsson electrode caused rapid healing except for some outlying areas which needed five further coagulations before the ulcer ceased spreading and finally healed. The advantages of this technique are noted.

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