Treatment

Treatment may be considered feasible in cases following a severe traumatic experience and in individuals who have a considerable number of flying hours or of operational hours to their credit. At first it is nearly always necessary to alter the environment to suit the person—this may mean temporary grounding, the prescription of daylight flying only, limiting the duration of the flight, or removing the individual from conditions of tropical glare. Return to full flying duties may be expected in a small number of relatively stable individuals. Orthoptic treatment of hysterics is unlikely to be permanently successful, although it has been shown that the suggestive and persuasive effect may carry the individual on for some time.

Acknowledgments.—Our thanks are due to Air Marshal Sir Harold Whittingham, Director-General Medical Services, R.A.F., for permission to publish this paper. We thank also the various R.A.F. Ophthalmic Specialists who referred cases to us, and Group Captain Keith Lyle for his helpful criticism of this paper.

REFERENCES

1. TRAQUAIR, H. M. (1942).—"An Introduction to Clinical Perimetry." Fourth Edition. H. Kimpton, London.
2. HURST, SIR ARTHUR (1940).—"Medical Diseases of War." London.
3. MICHAELSON, I. C. (1943).—"Ocular Manifestations of Neurosis in Soldiers." *Brit. Med. J.*, October 30, p. 538.
4. GILLESPIE, Air Commodore R. D. (1944).—Personal Communication. See also MANN, I. (1940).—Convergence deficiency. *Brit. J. Ophthal.*, August, p. 373.

THE TREATMENT OF TRACHOMA*

With special reference to local
sulphonamide therapy

BY

ARNOLD SORSBY

LONDON

ONE hundred and thirty-one children were admitted to the trachoma block at White Oak Hospital from 1934 till May 10, 1944, when the block was closed owing to the absence of new admissions. Together with some 40 trachomatous children resident at White Oak Hospital in 1934 and some 20 adults treated as in-patients at the L.C.C. trachoma unit for adults at the Eastern Fever Hospital, a series of some 200 patients treated under ideal conditions for continuous observation was available and has

* Received for publication, June 27, 1944.

allowed a certain amount of experimentation in treatment. A standardized and not unsatisfactory management of trachoma has emerged and is the subject of the present communication.

During the earlier stages such classical methods as treatment with the copper sulphate stick and chaulmoogra oil were tried and soon given up. Treatment with Jacobson's solution and tartar emetic proved of no value. Only three procedures of a multitude suggested by the literature on the subject were found helpful before the advent of the sulphonamides; saturated solution of quinine bisulphate, mercury perchloride and trachocid.

Saturated solution of quinine contains about 2 per cent. of the salt in solution. It is a powerful protoplasmic poison and many observers have reported on its value in trachoma. Mercury perchloride has also been advocated extensively and is generally used as a paint $\frac{1}{2}$ -2 per cent. solution in glycerine. Trachocid is a proprietary preparation said to contain bee-venom and is (or was) manufactured by the State Serum Institute at Vienna. It was recommended for use by injection into the upper fornix and subconjunctivally at the limbus. Experience at White Oak has fully justified the critical use of these agents.

A large number of classifications of trachoma into different stages has been proposed by different ophthalmologists at different times, MacCallan's classification into four stages with some subdivisions probably being the most widely used. At White Oak, a simple classification based on therapeutic requirements was found helpful. By Stage I was meant active trachoma with sodden fornices and follicle formation. Stage II represented a moist tarsal conjunctiva, ideally without follicle formation and but little swelling of the fornix. Stage III stood for Stage II, but with the conjunctiva no longer moist: it was trachoma in the process of healing. Treatment aimed at the rapid conversion of Stage I into Stage II. The passage of Stage II to Stage III was a more prolonged process.

The advent of the sulphonamides brought a valuable agent in trachoma therapy. At first it was used by oral administration and subsequently by local application. Used in conjunction with other agents in trachoma, the affection need no longer be regarded as a peculiarly chronic condition. Many cases of trachoma can now be rendered non-infectious within three months and be considered clinically cured in about six months.

The management of trachoma cases at White Oak Hospital.—On admission most cases show sodden fornices and follicle formation. The rapid conversion of these appearances into those of Stage II can be effected by the combination of the following procedures.

(1) Administration of full doses of sulphapyridine, sulphathiozole, or sulphamezathine (the last being best as it is least toxic) for 10 days.

(2) Mechanical expression of the follicles and the contents of the fornix. Rarely brossage is necessary. Local anaesthesia is adequate for these procedures. If necessary expression is repeated after 7 or 14 days.

(3) The conjunctival surface thus treated is painted immediately with saturated solution of quinine and the paintings repeated three times daily for 7 to 14 days.

These procedures generally ensure a relatively featureless fornix and tarsal conjunctiva within a fortnight. Some follicles there will still be and some infiltration of the fornix, but a characteristic feature of this stage (Stage II) is the moistness of the eye. At this stage any application of copper must be rigorously avoided. Two alternative methods of treatment are open. The more time honoured is the painting of the lids twice daily with glycerine solution of mercury perchloride $\frac{1}{2}$ -1 per cent. (in the case of children), or 1-2 per cent. (in adults). The paintings should be continued till the eye becomes dry. In uneventful cases this can be achieved within six months. Where relapses occur, the treatment as indicated for Stage I must be resumed. More recently better results have been obtained by painting the lids with 30 per cent. sodium sulphacetamide solution ("Albucid") once daily and instilling sodium sulphacetamide ointment 6 per cent. (Albucid ointment, 6 per cent.) three times daily. The eye rapidly becomes dry, all follicles disappear and the fornix looks almost normal.

Stage III is characteristically a dry eye. It is not healed trachoma, if scarring is the criterion of healed trachoma. In most cases, nothing need be done, though there is no harm in using Gutt. Cupri Sulphas $\frac{1}{4}$ per cent., or Gutt. Zinc Sulphas $\frac{1}{4}$ per cent. The continued use of sulphacetamide ointment is helpful in consolidating the results of treatment.

Scarring is minimal with this treatment—so much so that the writer cannot subscribe to the classical adage "no scarring, no cure." With sulphacetamide treatment, especially, the tarsal conjunctiva remains remarkably supple and shows a pearly tinge.

The treatment of corneal complications.—Pannus is an essential feature of trachoma and regresses with proper management of the conjunctival lesion. Massage with a smooth glass rod of the limbus and upper third of the cornea is, however, a useful procedure and is applied in all cases, especially in Stage II, once daily. Atropine is of course indicated where there is a more active corneal lesion, and a course of oral administration of some sulphonamide may be necessary in such cases.

Before the advent of the sulphonamides trachocid injections subconjunctivally at 2 or 3 points in the circumference of the cornea were found helpful for active corneal lesions and dense pannus. The quantity injected was 0.5 c.c. of the mixed solution obtained in equal amounts from the two complementary ampoules. It has been unobtainable since the outbreak of the war—and may probably be superfluous with present day sulphonamide therapy. Should a corneal ulcer develop, "carbolicing" with 30 per cent. sulphacetamide solution may be carried out.

Negative considerations.—The application of the copper stick is a barbarous procedure that should be discarded. Copper, in fact, has little or no place in the modern treatment of trachoma. It does untold damage when applied to the moist eye, and makes a dry eye moist when it is applied.

Summary scheme of treatment.—Stage I. (Follicles and sodden fornix.) General sulphonamide treatment for ten days. Expression. Painting of lids three times daily with saturated solution of quinine bisulphate. (Recently, painting with 30 per cent. sodium sulphacetamide was found as effective.)

Stage II. (Trachomatous chronic conjunctivitis with a non-specific appearance. (A moist eye.)

Painting of lids once daily with $\frac{1}{2}$ -2 per cent. mercury perchloride in glycerine.

More recently better results have been obtained by painting with 30 per cent. sodium sulphacetamide once daily and the application three times daily of 6 per cent. sodium sulphacetamide ointment. Corneal massage should be carried out.

Stage III. (Healing trachoma. A dry eye.)

Sodium sulphacetamide ointment 6 per cent. twice daily can be continued until complete clinical cure is obtained.

Alternatively Gutt. Zinc Sulphas $\frac{1}{4}$ per cent., and less desirably Gutt. Cupri Sulphas $\frac{1}{4}$ per cent. t.d.s. can be used.

Comments

That sulphonamides are of value in the treatment of trachoma is now widely accepted, though some authorities hold that they are effective on the secondary infection only. Experience at White Oak Hospital, where a number of cases of trachoma have been clinically cured mainly by local sulphonamide therapy, the only adjuvants being one or more courses of general sulphonamide therapy and one or more expressions, strongly suggests that the sulphonamides are indeed specific against the virus of trachoma, and not merely against any associated secondary infection. There is no theoretical reason for doubting this specificity, as the sulphonamides have been shown effective against the viruses allied to the as yet unisolated trachoma virus.

Summary

1. Considerable departures from the classical methods of treatment are now possible in trachoma. The time honoured copper sulphate stick has no place in present day therapy.

2. Expression and the local use of sulphacetamide can in themselves bring about a clinical cure of trachoma.

Valuable supplementary measures are general sulphonamide therapy, local application of saturated solution of quinine bisulphate, mercury perchloride $\frac{1}{2}$ -2 per cent. in glycerine, and subconjunctival injections of trachocid.

4. Modern therapy cuts drastically the period of infectivity and the duration of treatment.

A CASE OF MUSTARD GAS KERATITIS TREATED WITH CURETTAGE OF THE CORNEA FOR THE REMOVAL OF A BAND-SHAPED CRYSTALLINE DEPOSIT*

BY

HUMPHREY NEAME

LONDON

OWING to the fact that the cornea of severe cases of mustard gas keratitis is liable to recurring ulceration, it has become customary to regard such corneae as unsuitable for operation. The following case seems worth recording as an example of the fallacy of the opinion mentioned above.

Fred H., aged 56 years, was fitted with contact lenses in 1939 on account of progressive deterioration of vision. In January, 1940, with contact lenses R.V.=6/24, 6/18 (1); L.V. 6/60. In August, 1940, ditto, R.V. 6/18, L.V. 6/60. In April, 1941, ditto, R.V. 6/18, L.V. less than 6/60. In July, 1941, ditto, R.V. 6/24, L.V. 3/60. In November, 1942, ditto, R.V. 6/24. The left cornea showed a transverse band across and below the pupillary area of the cornea composed of a superficial deposit of glistening crystalline appearance completely obstructing the vision.

On November 27, 1942, curettage of the band-shaped opacity was performed under local anaesthesia. Healing of the cornea was uneventful. In May, 1943, with contact lenses, R.V.=6/18, L.V.=6/60, and in November, 1944, R.V.=6/24, 6/18 (3), L.V.=6/36. The patient was very appreciative of the improvement in the vision of the left eye.

* Received for publication December 23, 1944.