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REPORT OF FORTY-EIGHT CASES OF MARGINAL BLEPHARITIS TREATED WITH PENICILLIN*

BY

M. E. FLOREY, A. M. MCFARLAN *and* IDA MANN

OXFORD

MARGINAL blepharitis is a relatively common and particularly intractable inflammation of the lid margins, usually attributed to infection with *staphylococcus aureus*. In the past a variety of treatments have been tried, including the application to the lid margins of ointments (*e.g.*, hyd. ox. flav., ung. hyd. am. dil., ung. zinc et ichthyol., ung. sulphónamide, etc.), of dye solutions (*e.g.*, liq. tinct., mercurochrome), of mild antiseptics (protargol, argyrol), and of caustics (1 per cent. silver nitrate and 0.5 per cent. dilute carbolic). Combined with these treatments epilation of the lashes, autogenous and stock *staphylococcus aureus* vaccines, staphylococcal toxoid, correction of errors of refraction, vitamins, and removal of septic foci have also been recommended. Treatment of the usually associated seborrhoea capitis is also considered essential by many observers. The multiplicity of treatments alone indicates the intractable nature of the disease. It tends to improve under all or any of them for a time, but usually shows frequent relapses and may pass easily into a chronic stage which may be life long.

The following investigation was carried out in order to test the

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clinical value of penicillin in a well established infection due to an organism known to be sensitive to its action. As chronic blepharitis supplied these requirements and is known to be an intractable condition, it provided an ideal field in which to test the efficacy of treatment with this drug, as well as its use in one of the commonest external diseases of the eye. Throughout the investigation clinical signs were correlated with bacteriological findings.

The work was carried out as follows: Forty-eight cases from the Out-patient Department of the Oxford Eye Hospital were treated. These cases were taken as they presented themselves, in other words, there was no selection. The youngest was aged three and a half years, the oldest 77. Twenty-six of the patients were under the age of 20 and 11 were over 40.

The type of blepharitis varied. Thirty cases were definitely ulcerative in type, 17 were squamous and one was complicated by corneal ulcers.

The duration of the lid infection before commencing penicillin treatment, though not necessarily continuous, varied from three weeks to 32 years (see Table I).

TABLE I.—Duration of Symptoms

	Total	1-2 mos.	6 mos.-2 yrs.	5-15 yrs.	Longer
No. of cases	48	5	27	8	8

As only five had a history of less than two months, the bulk of the cases could be considered as having reached a chronic stage. The usual history was of continuous soreness kept in check by treatment (nature immaterial) and of relapses after treatment was stopped. In some cases there had been remissions at intervals; in a few only was there a history of two distinct attacks separated by a long interval. Most of the cases had had long periods on the standard treatments mentioned in the first paragraph.

Bacteriological investigation.—All but seven cases were examined bacteriologically before treatment began. The results were as follows:—

Staphylococci cultured before treatment with penicillin.

Staph. aureus (Coagulase positive) in 39 cases

Staph. albus (Coagulase negative) in 2 „

Not done 7 „

48 „

Staph. aureus was usually found in pure culture, but occasionally in combination with *Staph. albus*, *Neisseria catarrhalis*, or diphtheroid bacilli. Further bacteriological examinations were made weekly or fortnightly and only after no drug had been applied to the lids for a minimum of 24 hours. It was hoped to continue these examinations a week, a fortnight, a month, and finally a year after apparent recovery had taken place, but the numbers reporting after these periods of time necessarily dwindled, so that later records are only a proportion of the whole.

Treatment.—The treatment was carried out by the patients themselves. They were each given a weekly supply of a few grams of ointment containing 600-800 Oxford units per gram. This was made by dissolving the requisite amount of penicillin in a few drops of sterile distilled water and beating this up, under aseptic conditions, with sterilised vaseline. Each patient was instructed to apply a small quantity of this on the lid margins with a wooden probe, rubbing it in with the latter. When possible this treatment was carried out three times a day and always just before retiring to bed at night. Instructions were given to keep the box of ointment in a cool place and covered up. No adjuvant treatment was given and very few lashes were epilated.

Assessment of progress.—This was made in the first instance on clinical and secondly on bacteriological grounds. Recovery was not considered to be complete until the lids looked normal and no *Staph. aureus* could be cultivated from them a week after penicillin had been discontinued. An exception to the clinical criterion had to be made in cases of many years' duration where scarring of the lids prevented a return to complete normality. In all instances, however, the bacteriological findings were the final criterion of recovery, as the complete disappearance of *Staph. aureus* was considered the safest insurance against relapse.

Results

All patients except one reported alleviation of symptoms and a number stated that their eyes had not been so comfortable for years. This was noticed in some cases within 24 hours, and by the end of a week 33 cases were feeling relief. The remainder lost their symptoms gradually.

Clinical recovery took place in 36 of the cases. Bacteriological recovery was registered in 24 of these, some accident preventing the final examination being made in the remaining 12. Though alleviation of symptoms occurred in 11 cases, treatment was not carried out regularly by 9 of them, nor was it continued by the two others till they could be pronounced as fully recovered. No improvement was reported in one case who had a refractive error and from whose lids no organism but *Staph. albus*, coagulase negative, was cultured.

Recovery following treatment

Clinical recovery	...	...	...	36 cases
(bacteriological recovery	...	24)		
(not done	...	...	12)	
Improvement	...	...	...	11 cases
(inadequate treatment, irregular		9)		
(not completed	...	...	2)	
No improvement	...	...	...	— 1 case
				48 cases

In spite of the rapid alleviation of symptoms, the disappearance of clinical signs and pathogenic bacteria took appreciably longer, but in all cases fully examined the former preceded the latter. Though mild cases, even when chronic, had recovered with a fortnight's treatment, the usual time that had to be allowed was 3-6 weeks. Some intractable infections recurred after one or two weeks' cessation of treatment, even when this had been continued till after *Staph. aureus* had disappeared from swab cultures. This gap lengthened the time of recovery in some cases, as did also lack of care and regularity in treatment. Evacuee children needed definitely more prolonged courses than did those who had their own parents to care for them.

TABLE II.—*Recovery Time*

	Total	1-2 weeks	3-6 weeks	7-10 weeks	12-14 weeks
No. of cases	36	7	15	11	3

Follow up.—All cases were asked to report a year after treatment had been completed. No conclusions can be drawn as to the value of penicillin in permanently eradicating the infection except from those in which treatment was completed and recovery registered (those in the "improved" category, eight of whom replied to the enquiries, are simply tabled as a matter of interest and comparison). This narrows the field down to 24 cases, as 12 of the 36 who showed clinical recovery did not reply to the enquiry.

The results might be classified under three headings, depending on whether the patient had (1) remained clinically and bacteriologically free of infection, (2) clinically free but having *Staph. aureus* again on his lids, (3) had suffered a relapse or re-infection.

TABLE III.—*Clinical follow up after 1 year*
(figures = No. of cases)

Condition at end of treatment	Condition 1 year later			
	Total reporting	No return of complaint	Reinfection	
			Relapse	Probably fresh infection
Recovery *	24	16	2	6
Improved but not adequately treated ...	8	3	5	—

* *Staph aureus* known to have disappeared in 16 cases.

Out of 24 cases, therefore, in which recovery had followed treatment, there had been a recurrence in eight, *i.e.*, a proportion of 1 : 3. If the association with measles, colds and sore noses, boils and styes, is accounted as a fresh infection rather than a relapse, the recurrence rate drops to 2 in 24, that is 1 : 12.

The bacteriological follow up was not quite so satisfactory. Table IV would appear to indicate that final bacteriological evidence that the infection has been eliminated is a better insurance against relapse than is reliance on clinical examination alone.

TABLE IV.—*Bacteriological follow up after 1 year*
(figures = No. of cases).

Condition at end of treatment	Condition 1 year later	
	Total examined	<i>Staph. aureus</i> present
Clinical recovery ...	7	4
Bacteriological and clinical recovery	12	4
Total ...	19	8

It is perhaps worth noting that a survey of these patients' records some two and a half years after this series was treated reveals the fact that no more than 7 of the original 48 have returned for treatment of a recurrence. As there is no other eye hospital in the district, this should represent a high proportion of cases which have been permanently relieved.

It is felt, therefore, that penicillin ointment offers a hopeful form of treatment for marginal blepharitis. The fact that two-thirds of the cases reporting showed complete clinical cure a year later in spite of the fact that concomitant conditions, such as seborrhoea capitis, tonsils and adenoids and boils were not especially dealt with, is the basis of this conclusion. Most probably better results still could have been obtained had all possible foci of reinfection been eradicated. This was purposely not done, so that the issue might not be confused by several methods of treatment.

Summary

48 cases of blepharitis have been treated with local application of penicillin ointment, 600-800 units per gram.

Staphylococcus aureus was isolated from the lesions of 39 of 41 cases examined bacteriologically.

36 of the cases applied their treatment regularly three or four times a day for as long as it was considered necessary (*i.e.*, 3-10 weeks).

Recovery took place in all these without removal of other foci of infection or any adjuvant treatment—other than epilation of a few lashes.

Bacteriological findings were found to be closely associated with clinical signs, but the disappearance of *Staph. aureus* from lid cultures was considered a better indication than clinical signs for cessation of treatment as it invariably succeeded the latter.

A follow up a year after treatment was discontinued revealed that two-thirds of the cases reporting had remained free of recurrences without any further treatment.

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