STREPTOMYCIN RESISTANT GONORRHOEA*

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The readiness with which many organisms develop resistance to streptomycin is well recognized; Willcox (1953) ventured to predict that "should streptomycin be widely used for gonorrhoea it is possible that its efficiency may decline".

At the Liverpool Royal Infirmary during the past 4 years routine treatment of male patients suffering from gonorrhoea has been by a single injection of streptomycin 0.5 g. During the 3 years 1954-56, 687 cases were so treated. Failures totalled 34 (4.9 per cent.), but when the 3 years are examined separately (Table), it will be seen that the failure rate has increased sharply from 2.3 per cent. in 1954 to 7 per cent. in 1956.

TABLE
FAILURE RATE, 1954-56

Year	No. of Cases Treated	Failures	
		No.	Per cent.
1954	215	5	2.3
1955	231	12	4.9
1956	241	17	7.0
Totals	687	34	4.9

Clinical Picture

The normal response to streptomycin is as prompt and as gratifying as the response to penicillin. Re-examination at 48 to 72 hrs shows an absence of discharge and a urine free from pus haze. Threads, if present, tend to disappear without further treatment within a week or two and, when examined microscopically, do not contain gonococci. Failure to respond, shown by persistence of the discharge and the continued presence of gonococci at the end of 48 to 72 hrs, occurred in 23 patients.

Eleven patients, however, relapsed at a later date after an apparently satisfactory initial response. Examination at the end of 48 to 72 hrs would show an absence of discharge and a clear urine, but on re-examination 3 or 4 days later there would

be a recurrence of urethral discharge and gonococci would be found on microscopical examination. When, as in three patients, relapse does not occur until 2 weeks or more after treatment, it is tempting to invoke re-infection as the explanation, but the following case history points very strongly to the view that relapse may not be apparent for several weeks.

Case Report

A man aged 19, with no previous history of venereal disease, gave a history of exposure to infection one week before he was seen on June 10, 1955. He complained of slight discharge for 3 days.

Examination.—There was a purulent urethral discharge. Gonococci were present on microscopic examination.

Treatment.—Streptomycin 0.5 g. stat., Sulphathiazole 1g. four times daily for 5 days.

Progress.—13.6.55 and 17.6.55. No urethral discharge, urine clear.

He was instructed to report in 2 weeks, but returned to the clinic after 3 days and stated that he thought he had noticed a discharge 2 days previously. He was re-examined but no urethral discharge was seen and his urine was clear. He was again instructed to report in a fortnight, but returned 9 days later once more complaining of a discharge. No discharge could be seen, but unfortunately he had recently urinated.

After a further 2 days he returned to the clinic with a purulent urethral discharge with gonococci present. He was given a further injection of streptomycin 0.5 g. and returned 3 days later still with a persistent discharge. Gonococci were present and he was then given an injection of streptomycin 1 g., again without effect.

Two days later 300,000 units P.A.M. gave prompt and lasting benefit.

In addition to the above, four other patients who had failed to respond to streptomycin 0.5 g. were re-treated after 48 to 72 hrs with a single injection of 1 g. streptomycin, in each case without effect. All 34 streptomycin failures were promptly cured, however, with a single injection of 300,000 units P.A.M.

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Discussion

Gonorrhoea due to a streptomycin resistant gonococcus was originally described by Ryan (1952). From a man who had failed to respond to two separate injections of streptomycin 1 g., he was able to isolate a strain of *N. gonorrhoeae* resistant to at least 1,000 µg. streptomycin per ml., compared with a sensitive strain which was inhibited by 1 µg. streptomycin. More recently, Davey (1957) described the case of a female patient who failed to respond to streptomycin 1 g. daily for 3 days, and reported that the strain of gonococci isolated proved resistant to streptomycin *in vitro* (30 mg.) [sic].*

Although no attempt was made to demonstrate streptomycin resistance *in vitro* in the present series of cases, there can be little doubt that the failures we have encountered were due either to initial infection with streptomycin resistant gonococci or to the rapid emergence of streptomycin resistant strains *in vivo* and not to any alteration in response on the part of the host. This view is borne out by the subsequent behaviour of a number of these patients when they acquired fresh infections. Thus, the patient whose detailed history is given above, returned with fresh infections on two subsequent

occasions and on both occasions was promptly cured by a single injection of streptomycin 0.5 g.

Evidence that streptomycin resistant gonorrhoea may be increasing has already been reported from Italy (Chiarenza, 1954). There is now evidence to suggest that the same thing may be occurring in Great Britain. Fortunately, we possess in penicillin a readily available and effective alternative.

Summary

Our experience in the treatment of gonorrhoea in the male with a single injection of streptomycin 0.5 g. is reviewed.

An overall failure rate of 4.9 per cent. is recorded and the varied course of failed cases is described.

Evidence is presented suggesting that streptomycin resistance is increasing in Great Britain.

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* This should have read 30 µg. and the error is regretted. Ed.