

ACUTE GONORRHOEA DUE TO A STREPTOMYCIN-RESISTANT GONOCOCCUS*

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As streptomycin is now considered by many the most suitable drug for the treatment of acute gonorrhoea, the isolation of a streptomycin-resistant gonococcus may be of some interest. No report of the isolation of a similar strain has been found in the literature.

Clinical History.—A soldier who had returned by air from Korea attended the local V.D. Clinic on January 7, 1952, with acute urethritis which had started 2 days previously; Gram-stained smears from the mucopurulent urethral discharge showed pus cells and morphologically typical gonococci. He gave a history of last exposure to infection on December 28, 1951, in Hong Kong. No cultures were made at this stage but 1 g. streptomycin was administered intramuscularly.

On January 9 the patient's condition was unimproved and gonococci were still present in the smears. Streptomycin 1 g. was repeated.

As there was still no improvement on January 10, cultures were made from the discharge and procaine penicillin 200,000 units was given.

On January 11 only slight discharge was present and smears showed only scanty pus cells and no organisms. At a final examination on February 7 all clinical signs were absent and no gonococci could be isolated on culture.

Bacteriology

The discharge was inoculated on to a chocolate agar plate which was incubated in an atmosphere of approximately 5 per cent. CO₂. After 24 hrs. many colonies had developed consisting of *Neisseriae* indistinguishable from *N. gonorrhoeae* on morphological, cultural, and biochemical grounds. These were subcultured on to a chocolate agar plate and tested for sensitivity to streptomycin and to penicillin by the filter-paper disk method, and proved sensitive to penicillin but resistant to streptomycin. All other strains of gonococci that have been tested by this method have proved sensitive to both antibiotics.

A formal streptomycin-sensitivity test was then carried out on this strain and on one other recently isolated strain of *N. gonorrhoeae*. A dilute suspension of the organism to be tested was made in nutrient broth and a series of dilutions prepared. Single drops of these dilutions were inoculated on to chocolate agar plates containing various concen-

trations of streptomycin. With the largest inocula a semi-confluent growth was obtained and with the smallest, less than ten colonies, but the streptomycin-sensitivity was identical with all inocula. The resistant strain grew as well on the plate containing 1,000 µg. streptomycin per ml. as on a control plate containing no streptomycin. The sensitive strain was inhibited by 1 µg. streptomycin per ml., but grew on the plate containing 0.5 µg. per ml. as well as on the control plate.

It seems unlikely that the streptomycin-resistance developed *in vivo* during the 3 days of unsuccessful treatment and it is more probable that the man was originally infected with the streptomycin-resistant strain.

This strain has been deposited in the National Collection of Type Cultures (N.C.T.C. No. 8448).

Medium

Preparation of Nutrient Base

Fat free minced beef heart	2,000 g.
Na ₂ CO ₃ (anhyd.)	20 g.
NaCl	25 g.
Tap water	5,000 ml.

Stand overnight in refrigerator. Add 40 ml. conc. HCl. Boil. Filter. Adjust to pH 8.0. Add 75 g. powdered agar (Davis). Heat to dissolve. Add 50 g. peptone (Evans). Adjust to pH 7.8. Bottle in 400-ml. quantities. Autoclave.

Preparation of Chocolate Agar Plates

To 400 ml. of the melted base at 60° C. add:

Yeastrel*	1.0 g.
Animal charcoal*	1.0 g. (approx.)
Cystine (in 8 per cent. HCl)	0.01 g.
Horse blood (oxalated)	30 ml.

Raise the temperature of water bath to 80° C. until completely brown.

Pour plates, using at least 20 ml. of medium to each plate. A considerable saving can be effected by pouring layered plates using a saline agar bottom and a thin layer of chocolate agar on top.

Summary

The isolation of a gonococcus resistant to at least 1,000 µg. streptomycin per ml. is described.

The patient had been infected in Hong Kong.

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* The yeastrel is dissolved and the charcoal suspended in a convenient, small volume of water and autoclaved separately.

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