Treatment of gonorrhoea with spectinomycin hydrochloride

J. D. STRATIGOS, O. MARSELLOU-KINTI, V. KASSIMATIS, AND G. K. DAIKOS
From the First Department of Propaedeutic Medicine, King Paul’s Hospital, and the Department of Dermatology, A. Sygros Hospital, Athens

In recent years, the increase in the frequency of gonorrhoea has reached alarming levels in many countries (Hart, 1971; Guthe, 1971; Juhlin, 1971; Delune, 1971; Gay-Prieto, 1971). Some believe that gonorrhoea is now ‘out of control’ mainly because of non-medical factors (Guthe, 1971; Baccareda-Boy and Rebora, 1971; Sparling and McKenzie-Pollock, 1971). Although Neisseria gonorrhoeae is susceptible to various drugs, there is still a need for new drugs that would approach the ideal as closely as possible, i.e. to be highly effective in a single-dose in uncomplicated cases.

Spectinomycin (formerly actinomycin) is a broad-spectrum antibiotic derived from Streptomyces spectabilis (Hanka, Mason, and Sokolski, 1961; Mason, Dietz, and Smith, 1961; Holloway and Scott, 1963). The sulphate was found to be effective in urogenital infections, especially gonorrhoea (Mason and others, 1961; Lindemeyer, Turck, and Petersdorf, 1962; Holloway and Scott, 1963; Vineyard, Mays, and Sanford, 1963). Recently the more soluble hydrochloride derivative has been used to treat gonorrhoea with good results (Platts, 1970; Labowitz, Porter, and Holloway, 1970; Savage, 1971). Cornelius and Domescik (1970), in a more extensive study, found single injections of 2 g. spectinomycin hydrochloride 100 per cent. effective in 108 men and had only four failures among 100 women treated with either 2 or 4 g. We tried the hydrochloride salt of spectinomycin in seventy male patients suffering from acute gonorrhoea. Our observations are reported below.

Pharmacology
Spectinomycin sulphate originally proved to be a broad-spectrum antibiotic without serious side-effects, even in large doses. Slight untoward effects were noticed when the drug was given over long periods. Orally, the drug is poorly absorbed. Intramuscular and intravenous administration of 25 mg./kg. body weight give blood concentrations between 60 to 80 µg./ml. at one hour. A single 2 g. injection produces peak serum concentrations averaging 103 µg./ml. at one hour. The half-life is relatively short (2 to 2½ hours). The drug is eliminated rapidly by the kidneys, 35 to 80 per cent. being excreted in the urine unchanged within 24 hours (Barry and Koch, 1963; Romansky, Walters, Johnson, and Peck, 1962).

Patients and methods
Spectinomycin hydrochloride was given to seventy male patients aged between 17 and 48 years who were suffering from acute gonorrhoea. The symptoms varied in duration from 24 hours to 4 days. The disease was diagnosed by both smear and culture.

The drug was given in a single dose of 2 g. intramuscularly. Results were assessed clinically and bacteriologically after 24 hours and again after 8 days.

Five out of the original seventy patients defaulted and our results are based on the remaining 65 patients.

Findings
Gonococci were isolated in all seventy patients before treatment and all strains were inhibited in vitro by discs of 30 µg. spectinomycin (Table I). Marked improvement in symptoms occurred in all except one patient within a few hours of the injection. Clinical examination 24 hours later revealed only a slight mucous secretion and appearances were normal after 8 days. Table II shows that only one of the 65 patients who attended for follow-up continued to harbour the gonococcus. No side-effects were observed except for slight pain at the site of injection.

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>Minimum inhibitory concentration of spectinomycin (disc method)</th>
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</thead>
<tbody>
<tr>
<td><strong>Inhibition</strong></td>
<td><strong>Spectinomycin (µg.)</strong></td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Strong positive</td>
<td>+ + + +</td>
</tr>
<tr>
<td>Positive</td>
<td>+ + +</td>
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<tr>
<td>Weak positive</td>
<td>+</td>
</tr>
</tbody>
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Summary and conclusions
A single injection of 2 g. spectinomycin hydrochloride was used to treat seventy men with acute gonorrhoea.
Only one failure was observed among the 65 men who attended for follow-up. All seventy strains of gonococci were inhibited in vitro by 30 μg discs of spectinomycin; this concentration is readily obtained in the blood by the dosage used in this trial. It is concluded that spectinomycin is a satisfactory drug for the treatment of gonorrhoea.

References

Savage, G. M. (1971) 'Gonorrhoea as a world health problem'. 7th International Congress of Chemotherapy, Prague, 1971

Traitement de la gonococcie par le chlorhydrate de spectinomycine

SOMMAIRE
On a traité par une injection unique de 2 g de chlorhydrate de spectinomycine 66 hommes atteints de gonococcie aiguë. Un seul échec fut noté parmi les 65 hommes qui se présentèrent pour le contrôlé. Toutes les souches de gonocoques étaient inhibées in vitro par 30 μg de spectinomycine; cette concentration est facilement obtenue dans le sang par la posologie employée dans cet essai. On conclut que la spectinomycine est un médicament satisfaisant dans la gonococcie.