ABSTRACTS

(This section of the Journal is published in collaboration with the two abstracting journals, ABSTRACTS OF WORLD MEDICINE, and ABSTRACTS OF WORLD SURGERY, OBSTETRICS, AND GYNAECOLOGY, published by the British Medical Association. The abstracts are divided into the following sections: syphilis (general, pathology, therapy); gonorrhoea (general, pathology, therapy); chemotherapy; other venereal disease conditions; public health; miscellaneous. After each subsection of abstracts follows a list of articles that have been noted but not abstracted. All subsections will not necessarily be represented in each issue.)

SYPHILIS (General)


The clinical features of two cases of syphilis of the trachea are described. A woman aged 26 years had progressive difficulty in breathing for 6 months. The respiration was noisy, and was accompanied by contraction of the accessory muscles of respiration and indrawing of the jugulum. The larynx was normal. The Wassermann and Sachs-Witebsky reactions were strongly positive. Tracheoscopy showed a cylindrical membrane overlying granulation tissue just above the bifurcation of the trachea. The lumen was reduced to 2 mm., but was increased to 1 cm. by removing the membrane and granulations. Tracheotomy was performed. In spite of antisyphilitic treatment and almost daily removal of crusts and granulations from the trachea, the patient died.

The second patient, a woman aged 24 years, had received anti-diphtheritic serum and had undergone tracheotomy for respiratory obstruction. Examination showed scarring of the soft palate on the left side with defect of the uvula, an ulcer with sloughy base of the right side of the epiglottis, oedema of the ventricular bands obscuring the vocal cords and a star-shaped scar in the upper third of the anterior tracheal wall. The Wassermann and Sachs-Witebsky reactions were positive. Decannulation was not done because of the degree of stenosis.

Stephen Suggit


This paper is the fourth of a series of reports on a study of acquired syphilis in the male negro in Macon County, Alabama, and is made after 16 years' observation. In the winters of 1931–32 and 1932–33, 410 syphilics and 201 controls were studied and serologically examined. In 1938–39, 140 untreated syphilics and 156 of the controls were again examined, the syphilics who had received treatment in the meantime being excluded. In 1948, 155 individuals who could be located were examined for the third time. In the same year, 140 of the persons included in the study died, and necropsies were obtained in 98 cases.

Characteristics were divided into three groups: (a) deaths from any cause; (b) abnormal conditions of the heart and aorta; (c) abnormal conditions not involving the heart and the aorta. All abnormalities, whether potentially syphilitic or not, were taken into account. At the time of the first examination 47-2 per cent. of the untreated syphilics and 26-1 per cent. of the controls had abnormalities. At the time of the second examination, when deaths had been added, the figure was 52-7 per cent. for the syphilics and 37-3 per cent. for the controls. At the time of the third examination the figures had risen to 89-1 per cent. for the syphilics and 61-1 per cent. for the controls. All of these differences between the two groups were considered significant.

In those individuals who were 25 to 54 years of age at the time of the first examination a greater number of potentially disabling conditions was observed among the untreated syphilics at each of the three physical examinations. Among persons 55 years of age and over when first examined there were no significant differences between the two groups.

R. R. Willcox


A case of Ayerza's disease of syphilitic origin is described. After treatment of acute right heart failure, specific therapy was given with iodides, then with penicillin (in small individual doses), and finally with neoarsphenamine and bismuth, with good results.

James Marshall


SYPHILIS (Pathology)


In order to find out at what stage of the disease immunity to syphilis develops, and to determine the duration of immunity after treatment, the authors
experimentally infected young male rabbits with syphilis and, 5 to 11 weeks after the disease had developed, treated them with curative doses of penicillin. During a 4-month period of observation none developed clinical signs of syphilis, but in eight out of 22 cases, lymph-node transfer gave rise to active syphilis in other rabbits, showing that only partial immunity had developed; in the remaining fourteen there appeared to be complete immunity. The time periods were as follows: after 5 weeks, two showed partial and three complete immunity; after 2 to 8 weeks the numbers were six and seven respectively, and after 10 to 11 weeks, 0 and 4. These experiments, together with those reported previously (Amer. J. Syph., 1947, 31, 264 and 489) in which animals treated with penicillin during the early weeks of the disease were successfully reinoculated, suggest that immunity to syphilis increases with the duration of the disease before treatment.


Continuing their experiments, the authors treated thirty young male rabbits suffering from latent syphilis of 8 months' duration with sufficient penicillin to ensure cure and, 6 months later, inoculated them in the same way as for the original infection. During subsequent observation for 4 months none developed any signs of syphilis, although eight animals died. At the end of this time lymph nodes from the 22 survivors and from one which had died after 85 days were transferred to normal rabbits, which were then observed for 4 months; thirteen developed clinical syphilis and ten remained symptom-free. The 22 rabbits which had survived reinoculation for 6 months were then adequately retreated with penicillin and, after a further 6 months (during which four died), the eighteen survivors were inoculated again and observed for 4 months. Of the sixteen which survived five had developed partial and eleven complete immunity as shown by lymph-node transfer. Analysis of the results in these sixteen animals over the 3 years showed six free from infection, and three with symptomless infection, after both reinoculations, while two were free from infection after the first and had a symptomless infection after the second reinoculation, and five had a symptomless infection after the first and no infection after the second reinoculation. Disregarding the booster effect of the second inoculation, the immunity which had developed during latent syphilis of 8 months' duration thus persisted for 6 to 28 months after penicillin treatment.


The authors investigated the advantages of carrying out the Wassermann reaction in hypertonic sodium chloride solutions. Their detailed experiments led them to the following main conclusions. (1) The use of hypertonic conditions during the first phase of the reaction, that is, before adding the haemolytic system, does not eliminate anticomplementary and non-specific positive reactions. (2) Under hypertonic conditions the fixation of complement is to some extent inhibited. By using a greater dose of complement, complement fixation can be obtained in quantities equal to those in isotonic conditions. (3) By use of a 1:4 per cent. concentration of sodium chloride in the first and second phases of the reaction non-specific positive reactions can be completely, and anticomplementary reactions can be almost completely, eliminated. (4) The reaction in hypertonic conditions was more sensitive than in isotonic ones in 105 sera from patients with syphilis. For statistical reasons it is necessary to enlarge this investigation before drawing any final conclusions. (5) The increased sensitivity of the hypertonic reaction is particularly marked in cases of primary syphilis. (6) Additional investigations are required before the hypertonic Wassermann reaction can be used for routine purposes.

[Techical details should be read in the original article.]

K. S. Zinnemann


[This long article contains a mass of detail and figures for which the original should be consulted.] The main object of the investigation was to find the optimum ratio between lecithin and cardiolipin in the Kline test. With a ratio of 8:1 some 14,042 sera were tested in parallel with the standard Kahn test and in the case of syphilitic sera in parallel with the Kolmer complement-fixation test; a group of 1,185 sera were further tested against a battery of cardiolipin antigens with ratios ranging from 5:1 to 11:1.

The main group of sera was divided into three categories: (1) syphilitic (strongly and weakly positive); (2) presumably non-syphilitic; (3) sera of undecided category. In general it was found that sensitivity varied directly and specificity inversely as the lecithin-cardiolipin ratio.

In tests on 658 syphilitic sera, the 8:1 cardiolipin test gave a sensitivity of 98:1 per cent. compared with 80:6 per cent. for the Kahn test and 80:6 per cent. for the Kolmer; this increased sensitivity was most pronounced in the low region levels. In tests on 13,304 presumably non-syphilitic sera this antigen (8:1) gave a specificity of 98:9 per cent., compared with 99:3 per cent. for the Kahn test. In a comparison between 8:1 and 10:1 cardiolipin antigens, these gave 80:3 per cent. and 86:1 per cent. strongly positive reactions, and 6:6 per cent. and 6:4 per cent. negative reactions respectively with syphilitic sera. In a group of 621 selected non-syphilitic sera, the 8:1 antigen gave 9 per cent. and the 10:1 antigen 15:3 per cent. false-positive reactions; thus the superior specificity of the 8:1 antigen more than outweighed its slightly inferior sensitivity.

In addition, in 25 cases of infectious mononucleosis all

A technique has been developed (called "cyto-analysis" by the author) which is claimed to reveal cell changes not seen by other methods. The essential step is incubation of the fresh living cells to be studied at 37° C. in Tyrode's solution, which is said to act as a "developer", revealing changes on subsequent fixing and staining which are not otherwise seen. Normal cells are not affected by this process, only damaged cells showing the changes described. This technique has been used to study the effect of penicillin on the cells of the mucosa of the buccal cavity. (This site was chosen for convenience, but the method may be applied to cells from any available site.) It was found that a solution of 500 units of penicillin in physiological saline gave good results, especially in the case of infants, who constituted most of the subjects of the experiments. After painting the buccal membrane in one spot with penicillin a little was scraped off, together with some of the adjacent tissue, and the two specimens were examined by "cyto-analysis".

The penicillin-treated cells always showed nuclear fragmentation, the cytoplasm tending to be glossy and swollen, and staining deeply and uniformly. Control cells showed a normal picture. A wide selection of substances other than penicillin had no effect on the cell, only streptomycin producing slight degenerative changes in the nucleus at rather high concentration. The mere addition of penicillin to the Tyrode solution did not cause the changes found experimentally. Results in cases of disease involving the buccal mucosa were inconclusive, as were attempts to demonstrate changes after intramuscular penicillin therapy.

*E. A. Brown*


Of 518 persons with neurosyphilis treated with penicillin since 1943, 32 have died—thirteen from vascular disease (cerebral accidents, cardiac and hypertensive disease, and pulmonary embolism), three from paresis, three from accidents, nine from associated diseases, and four from unknown causes. Twenty died in hospital and twelve at home. Nine necropsy reports are presented in detail. Seven were cases of neurosyphilis and two of neurological disease, in which positive Kolmer and mastic reactions were found in the spinal fluid.

Three of the deaths were in paresis. One died of an exacerbation 3 weeks after receiving 2,400,000 units of penicillin and showed signs of active disease at post mortem. Another died of bronchopneumonia and massive pulmonary embolism 5 months after receiving 1,200,000 units of penicillin and only 3 weeks after being given a second course on account of relapse. Necropsy revealed syphilitic aortitis and cerebral arteriosclerosis with very little lymphocytic infiltration. The third died of a massive cerebral haemorrhage 5 months after receiving 9,600,000 units of penicillin; in this case also relatively little lymphocytic infiltration was found. In both the last two cases the signs of active infection appeared to have cleared up.

Material from a fourth patient, a man with meningovascular syphilis, who died of myeloid leukaemia 5 months after receiving 4,000,000 units of penicillin, was likewise free of microscopical signs of active inflammation in the nervous system. Two other men had tabes, one dying of bronchogenic carcinoma 31 years after the first of three courses of penicillin, and the other of auditory neuroma 6 months after treatment with 1,200,000 units. Each showed typical demyelination of the posterior columns but without inflammatory reaction.

The seventh case was that of a 34-year-old white person with rheumatoid arthritis, who in 1944 went blind in one eye from optic neuritis; vision was partially restored by a course of penicillin. The other eye was involved 4 months later when she was given more penicillin with incomplete recovery. This was followed 3 months later by a giant urticaria; she died suddenly from respiratory failure and, at post mortem, a "hive" was found in the medulla. A demyelinating process of the optic nerve was also noted but with no evidence of syphilis.

Two patients with abnormal spinal fluid giving positive tests for syphilis, one with a positive blood reaction and treated with penicillin, also came to necropsy. One was found to have acute multiple sclerosis and the other severe cerebral arteriosclerosis, but both without microscopical evidence of syphilis. It is postulated that the abnormal findings in spinal fluid may have been false-positive reactions. It is considered that the evidence presented indicates that penicillin had cleared the infection in most cases. This bears out the implications of the successful reversal of spinal-fluid reaction obtained in most cases by the use of this agent.

*R. R. Wilcox*


The authors treated 127 patients, serum-positive and said to be suffering from early latent syphilis, with 3 to 4 million units of penicillin and followed them up, carrying out quantitative complement-fixation and Kahn tests, for periods of 1 to 4 or more years. The serological reactions in 22 per cent. became and remained negative, and in 7 per cent. returned to positive; in 21.3 per cent. there was a significant fall in titre to below 10, 31.5 per cent. showed titles falling but still above 16, and 10.2 per cent. showed no significant change of
titre; in 8 per cent. of cases there had been agreement between the results of two types of test before treatment, but considerable discrepancies after treatment. Of the thirteen patients whose blood showed no change of titre, at least four or five probably had biological false-positive reactions, and of fourteen other patients (not included above) who showed marked discrepancies in results before treatment, three or four probably also gave false reactions (details of these are given in a table). Re-treatment was given to thirty patients whose blood continued to have titres between 16 and 256; of these, five showed a marked fall in titre, nine remained unchanged, and sixteen have been followed up for less than 6 months.

The difficulties of interpreting positive tests in asymptomatic patients are discussed in detail; when both types of reaction are strongly positive and remain so, a diagnosis of syphilis is almost certain, but with marked discrepancies and fluctuations apart from treatment the decision is difficult, and diagnosis must be based on the history and the findings on prolonged observation. The authors believe that all but four or five of their 127 patients had syphilis.

**T. E. Osmond**

**Alkaline and Acid Phosphatase in Cerebrospinal Fluid.**


Working in the University of Western Ontario, London, Canada, the authors estimated alkaline and acid phosphatase in cerebrospinal fluid by a modification of the King-Armstrong technique involving incubation with the substrate for 18 hours. Of twenty samples of normal fluid taken from healthy adults under 55 years of age, nine showed alkaline and six acid phosphatase activity. Of thirteen patients with meningitis three had pneumococcal, two meningococcal, three influenzal, and five tuberculous meningitis. Fluid from all these cases showed alkaline phosphatase activity, which was significantly increased in ten. Nine samples of fluid tested for acid phosphatase showed an increase in activity which was just significant. No correlation existed between the cytological type of the exudate and the degree of acid phosphatase activity, though the latter was usually high in tuberculous meningitis where the reaction was predominantly lymphocytic. Samples of fluid taken from 24 cases of poliomyelitis all showed alkaline phosphatase activity whose mean was significantly higher than the normal. Acid phosphatase activity in these fluids was likewise significantly increased. Fluid from patients in whom the acute stage of the disease was past showed normal acid phosphatase activity. In syphilis there was no significant alteration in alkaline or acid phosphatase activity. There was a significant correlation between protein concentration in the fluid and alkaline phosphatase activity, but not with acid phosphatase. Similarly, alkaline phosphatase activity was correlated significantly with the cell count, while acid phosphatase activity was not. These results are discussed and the literature is reviewed.

**Walter H. H. Merivale**


**SYPHILIS (Therapy)**


The authors have recently noted a great increase in the incidence of neurological complications during the arsenical treatment of early syphilis in Halle. The order of frequency is polyneuritis, encephalitis, and myelitis. A similar increase in incidence of polyneuritis is reported from other clinics using arsenic. Females are about three times as frequently affected. There is no correlation with arsenical dosage or frequency of administration. Whether the complications arise on a toxic or allergic basis is undecided.

This is yet another reason why arsenic should be abandoned in the treatment of syphilis in favour of the less toxic and more efficient penicillin.]

**G. W. Csonka**


Penicillin concentrations in plasma obtained with single intramuscular and subcutaneous injections, respectively, of a Danish procaine penicillin in aqueous suspension were measured at Rigshospitalet, Copenhagen. After intramuscular administration of 300,000 i.u. to 63 patients the average plasma concentration rose to a maximum of 1.3 i.u. per ml. after 2 hours. In 36 patients investigated after 24 hours an average level of approximately 0.1 i.u. was maintained, but in three there was no trace after 24 hours; in two cases levels of 0.04 i.u., in 19 of 0.05 i.u., and in 11 of more than 0.1 i.u. were recorded.

Subcutaneous administration of the same dose to forty patients gave an average maximum of 0.3 to 0.5 i.u. after 1 to 2 hours. In the plasma of all 26 patients in whom 24-hour values were obtained some penicillin was found: 0.03 i.u. in one case, 0.05 i.u. in five cases, and over 0.1 i.u. in the remainder. A much better depot effect is thus obtained. Larger initial dosage results in higher concentrations at first, but does not materially increase the level after 24 hours. The authors conclude that unless particularly high concentrations are required one subcutaneous injection of 300,000 i.u. should maintain an adequate penicillin level in the 24-hour period.

**W. G. Harding**


The authors investigated the plasma concentration of
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Of 5,596 non-syphilitic mothers attending the Philadelphia General Hospital in the years 1945-48 there were born 4,902 normal infants (87-6 per cent.), the outcome of pregnancy in the remainder being a live birth with neonatal death in 170 cases (3-0 per cent.) stillbirth in 44 (0-8 per cent.), premature birth in 160 (2.9 per cent.), and miscarriage in 320 (5-7 per cent.)—an unsatisfactory outcome in only 12-4 per cent. Of seven persons with untreated symptomatic early syphilis the outcome was unsatisfactory in 42-9 per cent., of 54 with untreated early latent syphilis the outcome was unsatisfactory in 70-4 per cent. (a living syphilitic infant being born in no less than 31-4 per cent.), and of fourteen with untreated late syphilis the outcome was unsatisfactory in 7-1 per cent.

Figures for syphilitic mothers given arsenic and bismuth before or during pregnancy are also given. Of seventeen mothers bearing seventeen infants, and given inadequate treatment for early syphilis before and none during pregnancy, the outcome was satisfactory in only ten. Of 36 mothers bearing 37 infants, having received inadequate treatment during pregnancy and none before, the outcome was unsatisfactory in 21-6 per cent.; of 31 mothers having inadequate treatment before and again during pregnancy the outcome was unsatisfactory in 16-1 per cent.; of 81 mothers bearing 81 infants, receiving adequate treatment during pregnancy irrespective of previous treatment, the outcome was unsatisfactory in only 6-2 per cent.; while of thirty mothers bearing 32 infants, having had adequate treatment before and little or none during pregnancy, the outcome was unsatisfactory in only 6-2 per cent.

The results in further series of 245 pregnancies in which 248 infants were born of mothers with early syphilis treated with 2-4 mega units of aqueous penicillin G over a period of 71 days, and of 93 pregnancies in which 96 infants were born of mothers with late syphilis treated with the same amount of penicillin, are presented. Of 181 infants born of 179 mothers with early syphilis, receiving penicillin during pregnancy, 171 (94-5 per cent.) were normal; there were three syphilitic infants who survived, two neonatal deaths, two stillbirths, two premature infants, and one miscarriage—an unsatisfactory outcome in only 5-5 per cent. Of 67 infants born of 66 mothers who were given no treatment during pregnancy, but who had had penicillin treatment before conception, there was an unsatisfactory outcome in only 6 per cent. (one syphilitic infant, two neonatal deaths, and one stillbirth). Among ninety children born of 88 mothers with late syphilis given penicillin during pregnancy, there were only two neonatal deaths, the remainder being normal—an unsatisfactory outcome in only 2-2 per cent., while in five pregnancies in mothers with late syphilis who had been given penicillin before conception there was one miscarriage and the outcome in the remainder was satisfactory.

R. R. Willcox


The author reports the outcome as regards the foetuses born to 300 women who had antenatal treatment for syphilis. The patients were drawn from rural, urban, heavy industrial, and seaport areas of Northumberland and Durham and from the cities of Newcastle upon Tyne and Gateshead. The tenfold increase in incidence of contagious syphilis which occurred in the women of child-bearing age in this area during the recent war led to the routine serological testing of all women attending the antenatal clinics. Between 1944 and 1949, 71,645 such tests were performed and 515 women with a positive reaction were referred to the author for further examination. Of 398 who attended, 96 were already receiving treatment and 205 were infected and untreated.

Through other channels 95 additional patients reached the clinic and, of the total of 300 expectant mothers, 132 (44 per cent.) suffered from primary or secondary syphilis, seven (2 per cent.) had clinical evidence of late syphilis, and 39 (13 per cent.) had congenital syphilis; in the remaining 122 (4 per cent.) infection was latent.

The 13 weeks' treatment schedule comprised eleven intravenous injections of arsenic ("novarsenobillion" or "stabilarsan"), total 4-65 g.; and thirteen intramuscular injections of 0-2 g. bismuth oxychloride. In addition, all the patients received a course of penicillin and, irrespective of the frequency of administration and the type of preparation used, a total of 2,400,000 to 3,000,000 units was given to patients with serum-negative primary syphilis and a dose of 4,000,000 units to all the others. From July, 1948, two or more such courses, known as P.A.B. units, were given to all patients in an attempt to reduce sero-clinical relapse. As far as possible the patients were admitted to hospital for penicillin treatment, because this action: (1) ensured that the full course of penicillin was received; (2) helped to gain the patient's future cooperation; (3) provided rest for the mother; (4) overcame difficulties of distance and lack of transport. As the P.A.B. unit schedule required 13 weeks to complete, 33 mothers received before delivery only a full course of penicillin, plus a varying fraction of the dose of heavy metals.

Satisfactory results were obtained irrespective of the stage of maternal infection in patients receiving penicillin plus at least one-quarter of the course of arsenic and bismuth. There was no case of congenital syphilis.
TABLE I

OUTCOME OF PREGNANCY IN 300 WOMEN WHO RECEIVED AT LEAST 1 P. + 1 A.B.

<table>
<thead>
<tr>
<th>Type of Syphilis</th>
<th>Abortion</th>
<th>Stillbirth</th>
<th>Alive and Well</th>
<th>Died</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contagious</td>
<td>3</td>
<td>5</td>
<td>112</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Early latent</td>
<td>1</td>
<td>3</td>
<td>38</td>
<td>8</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Late latent</td>
<td>1</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Late</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Congenital</td>
<td>0</td>
<td>1</td>
<td>36</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 5 10 261 5 5 14* 300

* "Three infants born full-term alive and apparently well but the mothers refuse to have them tested. Eleven mothers left the district."

TABLE II

OUTCOME OF PREGNANCY IN INFECTED AND HEALTHY WOMEN

<table>
<thead>
<tr>
<th>Group</th>
<th>Total No. of Pregnancies</th>
<th>Alive and Well</th>
<th>Abortion</th>
<th>Stillbirth</th>
<th>Congenital Syphilis</th>
<th>Died</th>
<th>Unstudied</th>
<th>1st Month</th>
<th>1st Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous pregnancies in 202 women in present series* (untreated)</td>
<td>279</td>
<td>70</td>
<td>2</td>
<td>9.5</td>
<td>6.4</td>
<td>2.1</td>
<td>6.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current pregnancies* (treated)</td>
<td>286</td>
<td>91</td>
<td>1</td>
<td>8</td>
<td>3.5</td>
<td>-</td>
<td>1</td>
<td>1.8</td>
<td>18</td>
</tr>
<tr>
<td>Control group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1945</td>
<td>4,836</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1946</td>
<td>6,079</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1947</td>
<td>6,449</td>
<td>-</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1948</td>
<td>5,373</td>
<td>-</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* Excludes those where current pregnancy outcome is unknown.
+ Only 73 per cent. of these were examined since in the remainder cooperation was not forthcoming.


Of 71 patients with early syphilis (44 with secondary syphilis), 23 received a single injection of 2,400,000 units of procaine penicillin with aluminum monostearate (PAM) and 48 were given only 1,200,000 units. After a follow-up period of 6 to 20 months, sixty (84.5 per cent.) were serum-negative when last examined, seven still had positive titres of 16 units or less in the Kahn test, one was being treated for serum-resistance, two had relapse-reinfections, and one had a definite reinfection. Of 67 patients with early syphilis (44 with secondary syphilis) treated with 1,200,000 units of PAM once a week for 4 weeks and followed up for 6 to 20 months, 41 (61.2 per cent.) were serum-negative when last examined, seventeen had Kahn titres of 16 units or less, three were re-treated for serum-resistance, four had relapse-reinfections, and two had definite reinfections. Of 68 other patients with early syphilis (thirty with secondary syphilis) treated with 1,200,000 units of PAM once a week for 4 weeks and followed up for 6 to 20 months, 41 (60.3 per cent.) were serum-negative when last examined, twenty had Kahn titres of 16 units or less, four were re-treated for serum-resistance, and three had relapse-reinfections.

The re-treatment rates for the three groups were thus 5.7 per cent., 13.4 per cent., and 10.4 per cent., respectively. It is concluded that the results obtained by the single-injection method appear to be as good, after the period of follow-up stated, as those of any rapid-treatment method previously tried at the Belle Vue Hospital.


A series of 53 rabbits were inoculated intratesticularly with moderate or severe heart failure receiving little treatment, 35 died, whereas out of 47 patients receiving much treatment, 25 died.

In a group of 131 with symptoms followed up for more than one year, the mortality rate for those receiving little treatment was 57 per cent., whereas the rate was 40 per cent. for those receiving much treatment (standard error of difference calculated as 9 per cent.). However, 32 per cent. of those receiving much treatment obtained symptomatic relief, compared with only 13 per cent. of those given minimal treatment. On the other hand, in a group of 151 without symptoms followed up for more than one year, the proportion of deaths in the two sub-groups was 22 per cent. and 20 per cent. respectively.

The statistical difficulties in the assessment of results are discussed in full, and the results of other workers tabulated. It is shown that cases with and without symptoms must be separated for study, and it is concluded that treatment improves prognosis at all stages of cardiovascular syphilis, but is most effective when given before the onset of symptoms. R. R. Wilcox

The author discusses some pitfalls in the diagnosis of early infantile syphilis with particular reference to serological tests and radiological appearances of the long bones [greater emphasis could usefully have been given to the value of quantitative tests in such cases]. He also recognizes the dangers attendant on neoarsphenamine treatment but suggests that all syphilitic pregnant women should have a full course of arsenic and bismuth as well as penicillin. [It is possible that, since writing this paper, the author has accepted the modern view that penicillin and bismuth are adequate and that arsphenamines should be avoided, especially in pregnant women.]

S. M. Laird


Of the 334 patients with cardiovascular syphilis studied, 57 were Negroes and fifty were females; 240 had aortic regurgitation alone, 39 aneurysm alone, and 55 both lesions. They were divided into two groups according to whether they had received more or less than 35 injections of arsenic or bismuth or both. Of 69 asymptomatic patients who received little treatment, 21 were known to have died; of 73 who received much treatment, 15 died. Of 39 with mild heart failure receiving little treatment and 45 given much treatment, seventeen and twelve died respectively; of 43 patients with
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A Proposal for Joint Action Against Congenital Syphilis. 


Subcutaneous or intramuscular implantation of procaine-penicillin tablets prolongs therapeutic blood levels for several days. Tablets consisted of procaine penicillin G with 20 per cent. ox fat. Implantation of 400- to 800-mg. tablets gave a detectable level of penicillin in the blood for fourteen days, and of a 1-g. tablet for 23 days. The tablets caused no local or general reactions, and the authors discuss their possible uses, especially in preventing post-operative infection and in the treatment of syphilis. 


The case of a patient who developed anhidrosis and arsenical dermatitis during a course of treatment with arsenaphenine for latent syphilis is described. The physiology and innervation of sweat glands are discussed in detail. In this patient there developed almost total anhidrosis, though the histological sections of the sweat glands appeared normal. Later, localized areas of sweating on the face, hands, feet, and axillae were found—the areas in which pigmentation disorders after arsenical dermatitis are commonly found. A unique and unexplained feature was the disappearance of the dermatitis from the areas exposed to sunlight. There was also diminished and delayed reaction of the skin of the trunk to ultraviolet rays. It is thought that most of the phenomena described were due to a toxic effect of arsenaphenine on the diencephalon, where a centre for sweat-regulation is situated. 

G. W. Csonka


The treatment of twelve patients with cardiovascular syphilis who were in congestive cardiac failure is discussed. All patients were made to rest in bed and were given digitalis, a low-salt diet, and mercurial diuretics. In addition penicillin treatment was started immediately and the dosage increased to the full within 3 days at the latest. The total dosage varied between 4,800,000 and 9,600,000 units over a period of 12 to 15 days. In no case was any evidence of therapeutic shock discovered on clinical examination or by electromiography. In 2 cases a slight rise of temperature was noted, but this did not interfere with the treatment.

Surveillance was maintained for over 6 months in 9 cases. Two of the patients died within 3 months of leaving hospital. Three patients had had no previous treatment; the remainder had received a varying amount of arsenical or bismuth therapy. The authors consider that penicillin therapy, in addition to causing no myocardial disturbance, actually aided recovery.

V. E. Lloyd


Since the introduction of rapid penicillin treatments for syphilis there has been a higher incidence of reinfections following therapy; there are two possible hypotheses to explain this. The first is the possibility that the patients are now being cured more rapidly and are returning to the same sexual environment where originally infected while, under the older treatments with arsenic and bismuth, they were kept under observation for a year and a half. The second is that there is a difference in the acquisition of immunity under the two methods of treatment. This presupposes that the development of immunity under the old system was not terminated immediately the patient began treatment (as in the case of treatment with penicillin), but that some immunity continued to be built up. Attempts were therefore made to discover whether a treated but uncured infection could produce demonstrable degrees of immunity in experimental animals, and to compare this immunity with that produced by the unaltered infection.
Male rabbits were inoculated into a single testis with ten million *Treponema pallidum* (Nichols strain). The initial infection was confirmed by aspiration of the testis. Subcutaneous treatment with penicillin was administered 3 weeks after the initial inoculation and repeated at 6 and 9 weeks (given as a single injection of 2,000 units of penicillin G in oil-beeswax per kg). After the initial injection the orchitis rapidly subsided and no *T. pallidum* could be detected thereafter. Twelve weeks after inoculation a final curative dose of 16,000 units of penicillin in oil-beeswax was given for 4 days to a total of 64,000 units per kg. Six weeks after this treatment the immunity was challenged by again inoculating the same testis. The rabbits were then observed twice weekly for 3 months and the presence during this time of dark-field-positive lesions was considered as evidence of symptomatic reinfection. Node transfer was performed at the end of 3 months to see whether the animal could be considered as asymptotically infected or as immune.

A comparison was made with another group of syphilitic rabbits treated with 64,000 units of penicillin per kg. over 4 days at 3, 6, and 12 weeks after inoculation by similarly challenging the immunity after 6 weeks. Results indicated that additional acquired immunity may develop during the subcutaneous infection, and the rate of its development is estimated at one-sixth of that of the untreated infection. It is considered possible, therefore, that some significant additional immunity may have been obtained with the older schedules in man.

R. R. Willeox


According to the author's observations iodine compounds increase the effectiveness of penicillin, therapeutic results being achieved with four or five times smaller doses of the antibiotic. Iodine is supposed to render the membrane-barrier of bacterial cells permeable to antibiotics and chemotherapeutic agents. It is suggested that iodine may damage the calcium and magnesium "bridges" between the molecules of lipoids and nucleic acids within the cell. The author reviews this subject in the light of evidence collected from the available literature.

J. W. Czekalowski


The experiments described were carried out on patients with venereal and skin diseases. It is suggested that the best therapeutic results were achieved by using amorphous penicillin (yellow) together with iodine salts, and a certain part in this effect is attributed to impurities present in the yellow form of penicillin. With this combined form of treatment the author never encountered allergic phenomena.

Combined use of iodine salts and yellow penicillin led to a higher percentage of positive therapeutic results than did use of crystalline penicillin G in similar doses. The results of combined treatment are influenced by the function of the thyroid gland, the age (poorer results in younger patients), and the nutritional state of patients. After previous "optimal" saturation of the patient with iodine the response to even small doses of antibiotic was striking.

For treatment of gonorrhea, two methods were used:

1. The patients received orally 0.75 ml. 5 per cent. potassium iodide in milk per kg. body weight, 1/4 to 1 1/2 hours before the administration of penicillin, or were given two doses of one tablespoonful 5 per cent. KI solution with a 1/2 hour interval, and the antibiotic was injected one hour after the second dose.

2. Certain salts of iodine (the author does not name them) and the antibiotic were injected together.

Dosage of penicillin varied; in general two doses were injected with a 2-hourly interval; 
(a) 10,000 and 15,000 units, or  
(b) 15,000 and 30,000 units, or  
(c) 25,000 units twice. With (a) about 50 per cent. and with (c) about 75 per cent. of cases were cured. In one case this small amount of penicillin although it cured gonorrhoea did not delay the appearance of a primary syphilitic lesion. In male patients treated by injection of certain iodine salts and penicillin, a few minutes afterwards a local hyperaemic reaction of the urethral mucosa appeared.

In the treatment of syphilis (all cases were in the second stage of the disease) two methods were used:

1. During the 21 days of treatment KI (1-5 ml. 5 per cent. solution per kg. body weight) was given orally. Simultaneously three courses of penicillin injections were administered. 
(a) On the 5th day, four 2-hourly injections of 200,000 units, and on the 6th and 7th days the same dose once a day. 
(b) On the 13th day, four 2-hourly injections of 100,000 units, and on the next day one injection of 100,000 units. 
(c) On the 20th day two injections of 100,000 units, and on the 21st day one injection of the same dose. Clinical symptoms disappeared on the 6th day of treatment, and serological tests became negative after 5 weeks. 

2. Penicillin was administered in two similar courses, four injections of 200,000 units each, 2-hourly, being given on the first day, three similar injections on the 2nd and 3rd days, and two injections of similar strength on the 4th day. The second course began after a 7-day interval during which an intensive tonic treatment was carried out (with calcium gluconate, vitamins B1 and C, and preparations of phosphorus). Similar tonic treatment was repeated after the second course of penicillin. Potassium iodide, in doses as in method (1) above was administered for 3 days before the first penicillin course, as well as during each course. During the first 3 days of potassium-iodide treatment, patients developed Herxheimer reactions, which disappeared during the administration of penicillin.

In the early days of the 20th century surgery was extensively tried in the treatment of tabetic joints, but it was found wanting and was consequently abandoned. Spasmodic attempts have since been made to revive interest, but in a condition becoming increasingly rare enthusiasm is difficult to arouse. With the improvement in orthopaedic technique coupled with the use of modern antibiotics these authors have found surgery to be of great value. They discuss the lesion with special reference to the vascular theory. Arteriograms have revealed a normal arterial pattern, and hence they pin their faith to the theory of vasomotor disturbance.

Treatment is of two kinds: in the early stage before the joint is disorganized the authors have had considerable success with periarterial sympathectomy, and in the established arthropathy they attempt stabilization. The following points are discussed. Where the knee is involved resection alone is sometimes of value. An arthrodesis employing the patella (Hibbs) or a free graft is generally more satisfactory. Subsequent immobilization is best obtained by a mid-thigh plaster incorporating a Kisschnr wire through femur and tibia to prevent rotation. In the case of the ankle, resection or astragalectomy is carried out, and for the mid-tarsal a simple arthrodesis. In the atrophic type of arthropathy of the hip a Whitman reconstruction is recommended; in the hypertrophic type, an arthrodesis employing a large iliac flap or, alternatively, a subtrochanteric osteotomy is recommended. For the upper limb surgery is rarely required. When the spine is affected surgery is seldom of value, but in those cases where the lesion is strictly localized an Albee graft should be performed; this must extend well down over the sacrum to ensure a complete fixation of the lumbro-sacral joint. In all cases post-operative immobilization must be absolute and prolonged.

*R. T. Burkitt*


A survey is presented of the management of 467 cases of ocular syphilis with tabulation of the ocular manifestations. Of these, optic atrophy, interstitial keratitis, and iritis are the most frequent. The relatively infrequent use of penicillin is noted, and the authors found it impossible to draw valid conclusions as to the efficacy of penicillin from the facts available. They conclude that much more research is needed before penicillin is accepted or condemned as a therapeutic measure in ocular syphilis. They offer suggestions for improvement of the service, and a simplified chart form.

*C. A. Brown*

**GONORRHOEA (General)**


**GONORRHOEA (Pathology)**


These authors tested the sensitivity of twenty strains of gonococci to eight antibiotics and to sulphonamide in parallel with *Streptococcus* 98 and *Klebsiella pneumoniae* strain T; the following are the inhibiting concentrations in μg. per ml. for the various substances in relation to the gonococcus: penicillin 0.002 to 0.04; bacitracin 1.6 to 12.5; streptomycin 0.8 to 6.3; neomycin 9 to 288; polymyxin 50 to 800; aerosporin 12.5 to 400; aureomycin 0.2 to 1.6; chloramphenicol 0.4 to 1.6; sulphanilamide 63 to 8,000++. Curves for the various antibiotics are shown in a figure, giving the "antibiotic spectrum" of the gonococcus; penicillin is the most active; curves for aureomycin and chloramphenicol follow and overlap and the remainder follow in the order streptomycin, bacitracin, neomycin, polymyxin, aerosporin, and finally sulphanilamide (which only inhibited 8 cent. of the strains at a strength of 10 mg. per 100 ml.). A comparison of the effect of penicillin on gonococci before 1947 and during 1949 shows a significant reduction in the sensitivity of recent strains but this may be due, in part, to ingredients other than pure penicillin G and to some difference in technical methods.

*T. E. Osmond*

**GONORRHOEA (Therapy)**


Terramycin was used in the treatment of 81 cases of venereal disease (73 of gonorrhea, six of syphilis, and two of granuloma inguinale). When 1 to 2 g. terramycin hydrochloride was given in two divided doses at 6-hour intervals in cases of acute gonorrhea, a cure-rate of 80 to 100 per cent. was obtained; with other dosage schedules the results were disappointing. Six patients,
three with primary and three with secondary syphilis, all with dark field-positive lesions, were given terramycin in doses of 60 mg. per kg. body weight daily for 8 days; no spirochaetes were seen after 24 to 48 hours. Serological reactions became negative after one month in the three cases in which the tests were performed. Two patients with granuloma inguinale were given similar doses of terramycin for 12 days and in both cases Donovan bodies had disappeared from the lesion by the 3rd day. Only in six of the 81 patients did mild toxic reactions occur.

_A. W. H. Foxell_

**Procaine Penicillin G in the Treatment of Gonorrhoea.**


The authors treated 135 patients with acute uncomplicated gonorrhoea with procaine penicillin G in order to assess its effectiveness in small doses, its minimal effective dose, and the validity of early cultures as a test of cure. The total of 135 patients consisted of 99 Negro males, seventeen Negro females, thirteen white males, and six white females. A single intramuscular injection of procaine penicillin G, in oil containing 2 per cent. aluminium stearate, was given to 113 patients in doses of 100, 200, 250, 300, 500, and 1,000 units of penicillin per kg. body weight. Another preparation of procaine penicillin in sesame oil was given to the remaining 22 patients in doses ranging from 300 to 1,000 units per kg.

From the observation of 55 patients over periods ranging from 6 to 30 days after treatment, it was concluded that cultures taken less than 72 hours after treatment were unreliable as a test of cure, the minimum period required apparently lying between 3 and 6 days. Slightly less than 10 per cent. of the patients were cured by a dose of 100 units of penicillin per kg., but 92.8 per cent. were cured by 1,000 units per kg. Maximum therapeutic results may therefore be expected from a dose of penicillin in excess of 1,000 units per kg. body weight, but an occasional failure does occur. If administered, without regard to body weight, maximum therapeutic results should be achieved with doses in excess of 100,000 units of procaine penicillin.

[This dosage is lower than that of 300,000 units of penicillin in oil and beeswax which was recommended as an acceptable schedule early in 1948 by the Division of Venereal Disease of the United States Public Health Service.]

_T. Anwyll-Davies_


In the course of a venereal diseases survey of the African in Southern Rhodesia undertaken during 1949, the author treated 114 patients suffering from a variety of venereal infections, other than uncomplicated gonorrhoea, with a single injection of 2,400,000 units of procaine penicillin in oil with 2 per cent. aluminium monostearate. These included 75 cases of proved early syphilis, nineteen of "clinical soft sore", four of lymphogranuloma venereum, and two of gonococcal epididymo-orchitis. As would be expected the syphilitic skin lesions healed in an average time of less than a week, and it is of interest that the nineteen cases of "clinical" soft sore were also healed in an average of less than 6 days after the start of treatment. A similar injection successfully prevented the development of an ulcer in six out of eight volunteers inoculated with bubo fluid within 4 days, but in only two out of eight inoculated between 5 and 8 days after injection. The "single shot" was also successful in four cases considered on clinical grounds to be cases of mild climatic bubo.

_G. L. M. McElligott_


After commenting on the greater concentration of the drug in the tissues which is obtained by intra-ocular injection of penicillin than by any other method of administration, the author describes the changes occurring in 37 cases of syphilitic diseases of the eyeball treated with penicillin. For anterior-segment disease an injection of 500 units, or in very severe cases 1,000 units, is given into the anterior chamber every 6 hours for 3 days. In cases of posterior-segment disease and ciliary body syphyloma, an injection is given into the vitreous through the sclera in the equatorial region and repeated at 10- or 12-hourly intervals for 2 or 3 days. General antisyphilitic treatment should be continued after the local treatment is complete. Cocainization and retrobulbar procaine injections are essential in rendering the treatment relatively painless, and, provided the concentration does not exceed 1,000 units, no damage is done to the eye. In cases of keratitis in which one eye was treated by this method and the other by older techniques, the value of intra-ocular injection was manifest.

_L. E. Werner_


The author reviews 93 cases of syphilis treated between 1940 and 1949. Ten patients defaulted. While 31 cases were treated with arsenic and bismuth without penicillin, the remainder received all three substances. After trial of various arsenical compounds a preparation, "arsetyl", was adopted as the least toxic, and 0·06 g. (0·04 g. for women) was given every 5 days for ten doses. Bismuth was then given either as oleobismol or as bismuth salicylate in 1 ml. doses. The quantity of bismuth in 1 ml. oleobismol is 100 mg. and in 1 ml. of the other preparation 75 mg.; 1 ml. was given every 5 days for ten doses, and the whole regimen repeated so that four courses of each compound had been given in 18 months. This was considered to be the minimum effective treatment. When penicillin was introduced the regimen was adjusted, 3 million units of penicillin being
given during 10 days between the courses of arsenic and bismuth. Some patients were given 6 million units of procaine penicillin. Larger doses of bismuth tended to produce gingivitis and larger doses of penicillin caused urticaria. With the full combined dosage all patients appeared, both on clinical and serological grounds, to be free of syphillis even before the end of the course. These cases included cases of serum-negative primary, serum-positive primary, and both late and recent secondary syphillis. When penicillin was used there was a markedly shorter interval before the disappearance of the primary chancre. In eight cases only penicillin and bismuth were given because the patient was unable to tolerate arsenic; three of these patients were not cured. Three pregnant women were used, two in late pregnancy; both the latter had children with slight signs of congenital syphillis. The author is satisfied that the most effective treatment is by use of the three drugs over at least 18 months. The results when arsenic could not be used were not so satisfactory.

J. G. Jamieson

Penicillin in the Treatment of Uncomplicated Gonorrhoea.


The authors maintain that penicillin is no panacea for gonorrhoea, basing their assertion on the results of treating 1,788 male and 481 female patients, who were given 150,000 units of sodium penicillin in aqueous solution in five equal doses at intervals of 2 hours. The analysis of results here given is limited to 1,447 males and 432 females. Of these, 94 men (6-4 per cent.) and fifteen women (3-5 per cent.) are regarded as "immediate failures" owing to the persistence of the discharge or relapse within 2 weeks, or because of complications (epididymitis in five, arthritis in five, cowperitis in two, salpingitis in eleven, and Bartholinitis in three cases). The gonococcus was actually isolated in only 25 of this group, and nearly all of the failures responded to further penicillin. In 276 men (19-1 per cent.) a purulent urethritis developed within 2 weeks to 3 months of treatment, and gonococci were found in 216. Likewise the gonococcus reappeared in 56 women (13-4 per cent.) within this time. Further sexual intercourse was admitted by 116 of the men and 27 of the women. The authors state that the likelihood of contracting gonorrhoea after a single intercourse is not so high as to justify the conclusion that even those who admitted to further exposure had necessarily been reinfected [case histories of comparable cured patients are not given]. A third group in which treatment failed, consisted of 270 males (18-6 per cent.) who were free of symptoms but showed signs of residual infection in the prostate or seminal vesicles. Gonococci were found in 25 of these. In some of the female patients the persistence of leucocytes in the cervical smear is noted, but, as this type of failure is difficult to assess, the number of cases is not given. Of the males 140 had had a previous urethral infection; if these are included the total failure rate for male patients is 34-5 per cent., compared with 44-2 per cent. if they are included. The total failure rate for the female patients is 16-4 per cent.

[At first sight it might appear that these results are appreciably worse than those obtained by other workers. Actually the gonococcus was found in only 266 (18-4 per cent.) of the male cases and in 71 (15-4 per cent.) of the female cases in which failure occurred. Failure in the remaining cases might be attributed to secondary infections or to a simultaneously acquired non-specific urethritis. Even the failure rates of 17 to 19 per cent. include all reinfecions within 3 months of treatment and follow the use of a relatively small dosage of penicillin.] R. R. Wilcox

The Treatment of Gonococcal Arthritis with Streptomycin.


CHEMOTHERAPY

Newer Antibiotics in the Treatment of Venereal Diseases.


OTHER VENEREAL DISEASE CONDITIONS

Complement-Fixation Studies in Granuloma Inguinale.


Donovania granulomatis, grown on coagulated fertile egg-yolk medium, was used to prepare a rabbit antigen, which was then tested by complement-fixation methods against a series of antigens of members of the coli group. It was found that many of the antigens fixed complement with the anti-D. granulomatis serum at comparatively low titres, and that Klebsiella pneumoniae 3C and 47B gave titres equal to that of the homologous antigen. Reciprocal absorption tests showed that while Klebsiella antigen absorbed the common antibody almost completely the absorption of the anti-Klebsiella serum by D. granulomatis antigen did not lower the titre of the absorbed antiserum for its homologous antigen.

A boiled-filtrate, protein-free antigen prepared from D. granulomatis gave titres as high as the bacterial antigen, but was no longer antigenic and so resembled a hapten in properties. Common antigens shared by taxonomically unrelated organisms are well-known, and the authors do not consider that there are yet sufficient grounds for changing the position of D. granulomatis to bring it closer to serologically-related organisms. The theory that granuloma inguinale is produced by a mutant of a faecal organism does not yet afford a satisfactory explanation of the differences in morphology and cultural characteristics between Donovania and the faecal organisms.

L. G. Goodwin


Excellent clinical results and good (but slow) serological response were obtained in large numbers of cases of yaws treated by short-term retard penicillin therapy.

ABSTRACTS

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Five out of six male patients aged 22 to 44 years, with inguinal and/or femoral lymph-node lesions of lymphogranuloma venereum of 2 to 8 weeks' duration (in two cases the iliac nodes were also enlarged), were treated with 250 mg. aureomycin orally every 6 hours to a total of 7 g. A sixth patient was given two courses to a total of 29 g., and all were subsequently observed for 6 to 14 weeks. Three men were Chinese, and one was Indian, one Norwegian, and one of unknown nationality; all acquired their infections overseas. Before treatment all gave positive Frei reactions and positive complement-fixation reactions in titres of 1 in 40. One patient had previously received a 2-week course of sulphonamides, followed by chloramphenicol, 3 g. daily for 3 days, both without obvious effect.

In four cases the results were good, there being no pain or tenderness at the end of one week and the lesions resolving. In one case the condition improved but lymph nodes were still palpable at 6 weeks, while in the remaining patient, a Chinese given two courses of aureomycin (total 29 g.), plus 5,000,000 units of penicillin and 1-2 g. of “bisoxyl” for co-existent latent syphilis, the condition was still active 12 weeks later. After treatment the Frei reaction remained positive in four cases while two gave doubtful reactions. These two also showed a significant fall in the titre of the complement-fixation reaction.

It is noted by the author that the first enthusiastic American reports concerning the action of aureomycin upon lymphogranuloma venereum have been followed by more modest claims. R. R. WILCOX


The authors report the treatment of cases of granuloma inguinale occurring in Georgia. Penicillin, tyrothricin, and bacitracin have proved ineffective but good results have been obtained with streptomycin, aureomycin and chloramphenicol (“chloromycetin”).

Of 142 women patients treated with streptomycin 86-6 per cent. were cured after one course of 20 g. given intramuscularly in 1 g. doses every 6 hours for 5 days; fourteen of the nineteen failures responded successfully to a second course of treatment. The disadvantage of streptomycin is the need for stay in hospital. A series of 46 patients were treated with aureomycin orally in a dosage of 500 mg. every 6 hours for 10 to 15 days, to a total of 20 to 30 g. The only two relapses responded to a second course. The disadvantages of aureomycin are the toxic reactions, such as nausea, vomiting, and diarrhoea. Aureomycin given intramuscularly, 250 mg. 4-hourly up to 1,500 mg., was ineffective.

Chloramphenicol has the advantages that it is not toxic and that it can be used for out-patients. The authors have used it for 23 patients. Donovan bodies disappeared from the lesions more rapidly than with the previous drugs and the only two relapses responded successfully to a second course. The dosage given was 500 mg. every 6 hours for 10 to 20 days to a total of 20 g., this amount being raised to 50 to 70 g. in the case of extensive lesions or slow healing. ELAINE M. SANDERSON


Chancroid is notoriously auto-inoculable. The author inoculated 35 patients suffering from chancroid intra-cutaneously with 0-05 to 0-1 ml. of fluid from their own buboes, and two with material from their own sores; nine were untreated and acted as controls, the remainder being given various drugs before or at the time of inoculation. In eight of the nine controls pus-tules developed, whether the “dnelclos” skin test had been positive or not. Of eleven patients treated with sulphonamides before, or simultaneously with, inoculation only one developed a positive reaction; of two patients who were
given penicillin one had a positive reaction and the other did not; of two patients treated with a combination of penicillin and sulphonylazone both were protected; 2-25 g. chloramphenicol given by mouth over a period of 3 days protected one patient, whereas 2 g. aureomycin given by mouth over 2 days to another failed, but delayed the reaction considerably; streptomycin in doses of 1-5 to 3 g. protected three patients; and neo-
arsphenamine was only successful in two out of six cases. From these experiments it is clear that both streptomycin and the sulphonamides have a definite prophylactic action against experimental chancroid. T. E. Osmond


During 1947-8, in a blood-donor campaign, routine complement-fixation tests for lymphogranuloma venereum with "lygranum" antigen were carried out on three sections of the population of a Virginia town. Patients with a titre of 1 in 20 or over were suspected of having an active infection.

Of 365 female factory workers (Negresses), 163 gave a positive result, and in 77 of these the titre was 1 in 20 or over. Of 86 male factory workers tested, 28 gave a positive result and in fifteen the titre was 1 in 20 or above. Of 89 Negro college students (women) fifteen had a positive reaction, but only in three was the titre at or above 1 in 20, while of 89 male Negro college students only two gave positive reactions, the titre in both cases being below 1 in 20. Thus out of 178 Negro students, drawn from an educational and socio-economic stratum different from that of the factory workers, and from different age-groups, only 4 per cent. had positive reactions and only 1-7 per cent. had a titre greater than 1 in 20. Out of 45 white men and 45 white women attending clinics, only six gave a positive reaction and only in one was the titre 1 in 40.

It has long been suspected that there is a large reservoir of active infection with lymphogranuloma venereum in the American Negro; the present study confirms that suspicion. R. R. Willcox


In *in vitro* experiments streptomycin was found to be the most effective antibiotic against twelve strains of pleuropneumonia-like organisms (PPLO), the majority being inhibited by 0.1 f. per ml. although two required 15 f. per ml. Dihydrostreptomycin was effective only against six out of twelve strains at concentrations of 15 to 50 f. per ml.

Some strains were inhibited by chloramphenicol and aureomycin at concentrations of 5 to 40 f. per ml. but three strains were not inhibited by 200 f. of aureomycin per ml. or 100 f. of chloramphenicol per ml. Growth of PPLO appeared to be enhanced by these two antibiotics. Crystalline sodium penicillin G had no effect even at a concentration of 1,000 units per ml. The L forms may be bacterial variants resistant to the action of many antibiotics and chemotherapeutic agents.

A. W. H. Foxell


This paper, illustrated by 21 excellent photomicrographs, is based on the examination of 558 surgical specimens (531 from lymph-node lesions) and on two necropsies. Inclusion bodies were not demonstrated in any of this material although haematoxylin and eosin, Giemsa, and Noble staining techniques were employed. Of 156 persons Frei-tested (112 with lymph-node lesions), 130 gave a positive reaction; 28 complement-fixation tests with "lygranum" antigen performed on 29 persons with lymph-node lesions also gave positive results.

Thirteen primary penile lesions were examined, twelve of which had ulcerated and one of which was a bubonicus. The ulcers had a flat base of granulation tissue with a narrow border zone of necrosis and a neutrophil leucocyte reaction. The ulcer margins were usually undermined and the adjacent epithelium frequently showed a pseudo-epitheliomatous hyperplasia with a dense infiltration of plasma cells and lymphocytes extending into the corium, and occasional areas of necrosis and a fibroblastic paliads. Tiny necrotic tuberculous lesions with epithelioid cells, a few giant cells, and a marginal zone of plasma cells were occasionally observed in the corium, while perivascular collars were noted at the periphery of the inflammatory areas.

In the lymph nodes the first changes noted were a focal accumulation of neutrophil leucocytes in minute necrotic foci followed by lymphocytic hyperplasia and an influx of plasma cells. The small foci enlarged and coalesced to form a geographical pattern—the so-called "stellate abscess", which is typical of the disease. As the lesions aged a marginal zone of epithelioid cells and fibroblasts developed to form the so-called "suppurative granuloma". In many cases suppurative lesions coalesced to form a sinus and ultimately a dense fibrous wall developed, which sometimes became calcified. The neutrophil leucocytes arrived early in the foci of necrosis but disappeared within a few weeks. Epithelioid cells multiplied slowly and persisted for several months yielding to acellular collagenous tissue. Plasma cells appeared promptly and were conspicuous until the lesion was quiescent. The blood vessels showed a thickened intima with partial to complete obliteration.

The microscopical appearances of the inflammatory reaction surrounding a stricture of the rectum were not pathognomonic although a typical suppurative granuloma was occasionally found in the rectal wall and plasma cells invariably were conspicuous in the cellular exudate. In a few cases there was granulomatous periproctitis with preservation of the rectal mucosa, but in most cases an extensive proctitis was present, in which the rectal mucosa was replaced by granulation tissue. Strictures usually consisted of non-epithelized scar tissue.

The occasional association of chronic lymphogranuloma venereum with carcinoma is stressed. R. R. Willcox

An account is given of the implantation of a piece of granuloma tissue excised from a case of streptomycin-resistant granuloma inguinale into the thigh of a healthy volunteer. A typical granulomatous ulcer containing numerous Donovan bodies developed in 44 days and proved resistant to treatment with two separate courses of streptomycin.  

*V. E. Lloyd*


It is incorrect to suppose that Ducrey discovered the bacillus responsible for chancroid. This micro-organism was first described as a streptobacillus in 1877 by Professor Oscar V. Petersen, a Russian scientist, two years before Ducrey's publication. The bacillus was first obtained in pure culture by two other Russian scientists, Istamanov and Akopyants, who employed as culture medium human skin, agar-agar, and water. Their results were communicated to the Medical Society of the Caucasus in 1897, a year before the work of the French microbiologist, Lenglet, was published.  

*S. S. B. Gilder*


The authors studied the effect of aureomycin in three proven cases of chancroid, solely as part of a general investigation of the application of this drug in venereal diseases. The dose was restricted to 0.5 g. four times daily by mouth for 7 to 14 days. This treatment proved effective. [It is implied that the rate of healing might have been greater with larger doses.] Sulphonamide administration remains the treatment of choice for chancroid because of its proved effectiveness and its cheapness and availability, and because aureomycin has some therapeutic action on *Treponema pallidum*. Aureomycin therapy might be indicated in chancroid if the patient was intolerant to sulphonamides, but if it is used in such circumstances careful clinical and serological observation must be maintained for from 3 to 6 months to exclude the presence of simultaneously acquired syphilis.  

*S. M. Laird*


Three West African children with florid secondary yaws were given six 250 mg. capsules of aureomycin orally daily for 7 days. In order to allay African suspicion of any treatment not involving an injection, 2 ml saline was administered intramuscularly as a placebo on the occasion of each visit. *Treponema pertenue* remained visible in the surface lesions up to the fifth day, by which time the lesions had begun to heal, being almost healed by the seventh day. The serum Kahn tests, however, were still positive 6 weeks later. The action of aureomycin in infectious yaws is thus not considered to be as rapid as that of penicillin, although it has administrative advantages for the treatment of the masses.

Four other patients with tropical ulcers, exuding foul-smelling pus teeming with spirochaetes and fusiform bacilli, were also treated with aureomycin orally, being given four to six 250 mg. capsules daily for 4 to 7 days. Only lint soaked in distilled water was applied locally. Within 24 hours the numbers of organisms in the ulcers had markedly diminished and the surrounding oedema was reduced in 48 hours with an almost complete absence of spirochaetes and fusiform bacilli; all lesions healed completely.  

*R. R. Wilcox*