

in the laboratory since the blood of patients, with sandfly fever or dengue, inoculated intra-abdominally in mice, is without effect, while in the case of Rift Valley Fever the mice die in about 2 to 3 days.

Findlay⁹ has previously reported the persistence of neutralizing antibodies for the virus of Rift Valley Fever for 4 to 5 years in laboratory workers, who, however, might have had further exposures to the virus. The present demonstration of the persistence of the antibodies for a period of 12 years, is an unusual example of the duration of immunity after a single attack without further exposure to the virus during the intervening years.

Summary. 1. Accidental human labora-

⁹ Findlay, G. M., *Brit. J. Exp. Path.*, 1936, **17**, 89.

tory infection with a strain of Rift Valley Fever virus which had undergone at least about 300 intracerebral passages in mice, indicated that no modification in its pathogenicity for man resulted from this mode of passage.

2. The virus was recovered from the blood 10 hours after the first appearance of headache but titration revealed that the virus content was very low—only 666 LD₅₀ per cc of serum. Four days after onset, no virus was detected in the blood, but neutralizing antibodies (index of 50) were already present and in the next 10 days increased to yield an index of at least 1,585,000.

3. Neutralizing antibodies for Rift Valley Fever virus (index of 3,160) were found 12 years after a single attack in the serum of an individual who had no further exposure to the virus during the intervening years.

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Streptomycin in the Therapy of Granuloma Inguinale.*

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(Introduced by G. L. Kelly.)

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The use of antimonial preparations in the therapy of granuloma inguinale is well established. Its limitations, particularly in chronic cases, have long been known. Recurrences of the disease have occurred with a great degree of frequency even after apparent healing was attained. Other forms of treatment have been employed alone or in conjunction with the antimonials and have ranged from the local application of escharotic agents to surgery and x-radiation therapy. Although cure may be attained by adhering to one or another of these procedures, much is to be desired in the management of this minor venereal disease.

With the advent of the antibiotics it was hoped that a more adequate and specific

therapy for granuloma inguinale might be evolved. Preliminary observation with penicillin and tyrothricin showed that these drugs were of little value. One to 4 million units of penicillin administered for the expressed purpose of treating granuloma inguinale failed to control the granulomatous lesions. Tyrothricin was also without effect when it was applied locally in the treatment of granuloma inguinale.

Streptomycin, however, has proved so strikingly effective in the therapy of granuloma inguinale that a preliminary report is warranted at this time. A total of 23 patients has received streptomycin for granuloma inguinale. The diagnosis of the disease was established in all cases by demonstrating the presence of Donovan bodies in either spreads made from the lesion or by

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histologic study of biopsy sections.[†] It is to be emphasized that no other form of treatment was instigated. The daily doses employed ranged from 0.3 to 1 g administered in 6 equal doses per 24 hours at 4-hour intervals. Total doses varied from 3.3 to 46 g given over a period of time extending from 6 to 46 days. The patients to whom the drug was administered may be divided into 3 groups: (1) untreated patients, (2) chronic cases inadequately treated over a period of years, (3) patients who had relapsed after an extensive course of fuadin or anthiomaline therapy.

Daily smears made from lesions after streptomycin injections showed that Donovan bodies could not be demonstrated 5 to 9 days after administration of the antibiotic. Fusospirochetosis, often observed as a superimposed infection, was controlled with but few exceptions within 48 to 72 hours. Healing followed a general pattern and was usually centripetal in effect. The extragenital lesions responded most rapidly to treatment. On the other hand, when moist, ulcerated areas were in constant contact with one another, as between the thigh and scrotum, response to therapy was slower. However, the Donovan bodies disappeared as rapidly in these recalcitrant lesions as in those that showed rapid clinical improvement. The lesions ultimately were covered by depigmented scar tissue.

Toxic reactions were noted in 2 patients.

[†] A note of appreciation is due Dr. Edgar R. Pund for the examination of these tissue sections.

One occurred in a colored male 29 years of age after 10 days of administration of a total dose of 6 g of streptomycin. The toxic manifestations were expressed as a febrile reaction associated with a maculo-papular rash of the extremities and malar regions of the face. In addition a fine vesicular eruption and edema of the lips were also observed. Pruritus accompanied the skin eruption. Fifty mg of benadryl administered twice a day failed to control or prevent the reaction from occurring when streptomycin was tried again. Another patient developed a mild burning of the conjunctiva also after 10 days of treatment with a total dose of 3 g of streptomycin. However, after discontinuing the drug for 4 days, resumption of the same daily dose failed to cause any untoward symptoms.

Follow-up examinations, while meager at present, indicate that relapses may occur. Two patients who had received less than 4 g of the drug returned with a recrudescence of the lesion. A third patient who had received 28 g suffered a relapse several months later. Donovan bodies were readily demonstrable in the recurrent lesions of these three cases. More time must elapse before a true evaluation of the overall effectiveness of streptomycin can be established. Certainly the remarkable clinical improvement and the rapid disappearance of the Donovan bodies from the smears of patients are reassuring and indicate that streptomycin is the most effective agent available today for the treatment of granuloma inguinale.