SEROLOGY OF SYphilis


In the diagnosis of syphilis, an essential aim is the standardization of serological techniques, at both national and international levels. In accordance with this principle, the Subcommittee on Serology and Laboratory Aspects (of the Expert Committee on Venereal Infections) during its second session, held in Paris from 23 September to 2 October, 1950*, felt that it should devote the greater part of its work to advising WHO on the problems to be solved in attaining this objective.

SEROLOGICAL TECHNIQUES

The need for an international conference on serological techniques—along the general lines laid down by the subcommittee at its first session† and subsequently approved by the Executive Board and by the Third World Health Assembly—now appears in a new light. Developments of a technical nature have taken place which appeared sufficiently important to the subcommittee to justify the postponement of certain decisions. These developments concern the application to the storage of sera of processes capable, if the hopes placed in them are realized, of considerably simplifying the standardization of serological tests.

During the last year freeze-drying techniques have been generally applied for the preparation of the sera used in the standardization of various products and methods. These techniques have not yet been applied to syphilitic sera, and consequently there are no grounds for assuming that, when subjected to this drying process, such sera would retain their serological properties. If such were the case, however, it would be possible to prepare a collection of syphilitic sera coming from different parts of the world and from both treated and untreated patients, representing various levels of reactivity, various stages of the disease, or different types of false-positive or negative reactions. These sera could be used as preliminary standards, making it possible to evaluate the respective merits of various serological methods.

In view of these new possibilities, the subcommittee suggested that detailed planning and organization of work for the conference be suspended until the question had been settled on the technical level by a pilot study. The plans for this study were established in collaboration with the Expert Committee on Biological Standardization. The aim is to determine whether freeze-dried sera are suitable for complement-fixation and flocculation tests. The pilot study will be carried out in seven laboratories in different countries, each using a certain number of specified methods, and will apply to 12 sera. The general report on the study should be available to the subcommittee within six months.

ANTIGENS BASED ON CARDIOLIPIN

The subcommittee studied the position as regards the production and use of cardiolipin and lecithin during the past year. Dr. Mary Pangborn, who discovered cardiolipin, gave a report on present methods of production and control.

Production of these two reagents has increased to such an extent that they are now sold commercially. However, it is mainly in the hard currency areas that they are available. Manufacture has also been undertaken in a few places outside this area, but
the small quantities produced are not sufficient to meet the needs arising from routine use in all laboratories concerned. In the view of the subcommittee, the industrial production of these substances should be encouraged in soft currency areas, where, it seems, certain obstacles of a financial and technical nature are impeding production and slowing down experimental work. Furthermore, it is necessary for these new reagents, whose use will become general, to be controlled, and for all necessary guarantees to be obtained as regards the composition of the antigens. The advantages of the cardiolipin-lecithin test would be lost if impure products were put on the market or used in the laboratories preparing them, without suitable control. The control of cardiolipin and lecithin produced in the U.S.A. and in some other countries, which so far has been carried out free of charge by the Division of Laboratories and Research of the New York State Department of Health, is becoming too heavy a burden for this institution. Consequently, bearing in mind the international significance of the use of these substances, the subcommittee suggested certain ways in which WHO might contribute to guaranteeing the purity of the antigen reagents:

(1) Inclusion, in the Pharmacopoeia Internationalis, of standards for cardiolipin and purified lecithin;

(2) Establishment, in collaboration with the Expert Committee on Biological Standardization, of an international standard for each of these two substances;

(3) Selection of a limited number of laboratories to undertake the chemical and serological control of cardiolipin and lecithin.

The subcommittee suggested that WHO support this last activity financially and that the technical staff concerned be strengthened by the allocation of fellowships. One or more of these laboratories should be selected in tropical or subtropical regions.

The control centres in question could also carry out research work in certain very promising fields. For example, substances related to cardiolipin in chemical composition have recently been prepared from the tubercle bacillus, from certain vegetables, and from wheat. A complex phosphatidic acid, named sitolipin, has recently been isolated in Finland from wheat embryo. Initial experiments indicate this substance to be suitable for use in the serodiagnosis of syphilis. The subcommittee pointed out that the method of preparation of sitolipin, which is doubtless cheap and easy to obtain, should be published in detail as soon as possible, and that samples of the pure substance should be placed at the disposal of the laboratories accustomed to working with cardiolipin so that a comparison of the two substances may be made.

Treponema Studies

The subcommittee noted the value of the cooperation established between WHO demonstration teams located in regions where various treponematoses are endemic and the International Treponematoses Laboratory Reference Centre in Baltimore, Md, U.S.A. The dispatch of information and material in connexion with yaws and bejel, for the purpose of applying Nelson's test, is leading to progress in these investigations. The specificity of this test should be evaluated, as well as the services which it might render in the case of subjects found to be sero-positive by the usual tests but not showing any clinical symptoms of syphilis. The subcommittee discussed recent information concerning the culture of virulent treponema and its application to serological and cutaneous diagnostic tests. It will follow this research with interest, as well as all efforts to maintain the infecting organism on artificial media.