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WHO/Smallpox/1
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# SUMMARY REPORT ON THE 2nd SESSION OF THE JOINT OIHP-WHO STUDY GROUP ON SMALLPOX

The Study Group met at the Office International d'Hygiène Publique, Paris, on 18 and 19 October 1948; the following were present:

Dr. E.T. CONYBEARE, Medical Officer, Ministry of Health, London;

Professor A. LEMIERRE, Member of the Academy of Medicine, Paris;

Dr. R.S. MUCKENFUSS, Assistant Commissioner, New York City Department of Health;

Dr. C.G. PANDIT, Secretary, Indian Research Fund Association, New Delhi;

Professor A. DUJARRIC DE LA RIVIERE, Assistant Director, Pasteur Institute, Paris, and

Dr. Atilio MACCHIAVELLO, U.S. Public Health Service, Consultant Epidemiologist of the Pan-American Sanitary Bureau, Lima,

also attended the meetings;

OIHP :

Dr. M. GAUD, Director of the Office International d'Hygiène Publique,

acted as Chairman;

WHO :

Dr. Y.M. BIRAUD, Director of the Division of Epidemiology, assisted by

Dr. G. STUART, Chief of the Sanitary Conventions and Quarantine Section.

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The Study Group considered the following points:

1 Characters of the viruses of the smallpox group

1.1 The Study Group noted that no morphological differences had been detected between the smallpox and the vaccinia viruses when examined by the electronic microscope.

1.2 Presumptive differentiation between both could be made morphologically by macroscopic examination of cultures of these viruses on the chorio-allantoic membranes of chick-embryos, usually three to four days after their inoculation.

1.3 The Group noted that differentiation between the vaccinia and smallpox viruses could be made by reason of the fact that the virus of the former but not of the latter will propagate on the rabbit's skin.

1.4 The Study Group recommended that investigation be made of possible differences between the variola major and alastrim types of smallpox virus, by means of the electronic microscope and other methods.

2 Laboratory methods for the diagnosis of smallpox

The Study Group considered the following tests to be the most practical for the early diagnosis of smallpox:

2.1 In the vesicular stage:

2.1.1 Detection of elementary bodies (Paschen).[1] This test has the advantage of not requiring more than a microscope and stain, but calls for considerable technical experience; moreover it is of greatest service if clinical signs of smallpox are present when it can contribute to the differential diagnosis between smallpox on the one hand, and chickenpox or secondary syphilis on the other.

2.1.2 Flocculation test.

2.1.3 Complement-fixation test. This test is to be carried out with specific anti-sera on the antigens obtained from lesions on the patients. Neither the flocculation nor the complement-fixation test can differentiate between smallpox and vaccinia viruses. Differentiation requires:

2.1.4 Culture on the chick-embryo membranes.

2.2 Tests applicable during the stage of crust formation

The flocculation, complement-fixation and egg-membranes culture tests are all applicable at this stage.

3 Contagiousness of smallpox in the pre-eruptive stage

3.1 The Study Group, having noted evidence in favour of persons having been infected by patients during the pre-eruptive stage, recommended that investigation be made to determine, if possible, the presence of the virus in the latters' nasal, buccal and pharyngeal mucosa, as well as on the skin, prior to eruption.

3.2 The Group noted, in an observation communicated by one of its members, that a papule, within 12 hours of its formation, contained the virus, which was easily obtained by a slight and invisible scratch of the lesion with a needle. This would suggest the possibility of the minor traumata due to scratching or even to friction by clothing causing liberation of the virus in the pre-vesicular stage.

4 Vaccination

4.1 The Study Group considered the desirability of obtaining precise data on the duration of immunity after primary vaccination and re-vaccination, as a basis for determining the time after vaccination when re-vaccination is necessary.

4.2 The Study Group considered also the opportunities offered by the French Health Authorities for extensive and intensive investigations to be made into the vaccinal and serological response of vaccinated and re-vaccinated infants, children and young adults.

4.3 The following suggestions were made for the carrying out of these investigations:

4.3.1 Study of the vaccinal response to annual re-vaccination, up to 5 years of age, of children primarily vaccinated within the first three months of life - care being exercised to have the vaccination and re-vaccinations made with the same technique and with vaccine of the same titre prepared by the same institute.

4.3.2 Study of the vaccinal response of a similar group of children, but whose primary vaccination had been performed between the third and the twelfth months of life. In this group, response to annual re-vaccination should be noted yearly up to school-age.

4.3.3 Study, where laboratory facilities exist and children vaccinated at various ages are available, of the vaccinal response to re-vaccination, in correlation with the serum anti-body titre, such determination to be carried out immediately prior to, and one month after, the re-vaccination - choice of methods of titrating anti-bodies (complement-fixation, flocculation, haemo-agglutination) being left to the laboratory investigators.

4.4 The Study Group being aware that "potency test" of vaccines, obtained by takes of vaccinia dilutions in rabbits, afforded no direct proof of the vaccine's efficacy in protecting human beings against smallpox, recommended that the WHO take steps to have field trials done, wherever opportunity offered, to test the actual protective value of smallpox vaccine in the field, particularly when a new type of vaccine or a new method of vaccination, was introduced.

4.5 Vaccination against smallpox and yellow fever

The Study Group considered opinions advanced by certain of its members on the intervals which should be allowed to elapse between the administration to the same individual of smallpox vaccine and that of yellow fever vaccine. It agreed that yellow fever vaccine should be the first to be inoculated and that smallpox vaccine should not be administered until the 15th day thereafter. The reason for the order of administration and for the 15-day interval between the inoculations was the reduction to a minimum of the possibility of occurrence of post-vaccinal encephalitis. Should, for unavoidable reasons, smallpox vaccine be administered first, an interval of 21 days should elapse before yellow fever vaccine is inoculated.

The above precaution did not appear necessary for African countries where encephalitis is non-existent and where some 17 million combined smallpox and yellow fever vaccinations have been performed without ill-effect.