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YAWS IN CENTRAL AFRICA : CLINICAL ASPECTS AND USEFULNESS OF INDIRECT ABSORBED IMMUNOFLUORESCENCE FOR DIAGNOSIS

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A B S T R A C T

During a survey on 533 pygmies from Central African Republic, it appeared that there is still an impressive incidence in pygmy children with poor hygiene. Laboratory investigation showed that the Treponemal pallidum hemagglutination assay is often negative during the first stage of the disease, while the Fluorescent Treponemal antibody absorption test is positive and thus more sensitive.

Yaws (framboesia tropica, pian) was one of the world's most prevalent diseases before the initiation of mass penicillin therapy campaigns in the early fifties, and occured in humid tropical regions where hygiene was poor(3). Then, the disease became a rarity in Central Africa, except in one ethnic group: the pygmies. The diagnosis of an infection by Treponema pertenue, the causative organism which has not been differentiated bacteriologically or immunologically from T.pallidum yet, is based on three criteria: (1) the emergence of the disease in an endemic region,(2) clinically typical papilloma lesions and (3) seroactivity in a treponemal antigen test. Demonstration of T.pertenue by darkfield examination of exudate from a suspected lesion confirms the diagnosis, but it is often most difficult, due to frequent superinfections by other bacteria. Here, we present the results of a surveillance of yaws in pygmies living in a large jungle area in the south of the CAR.

From March to August 1987, we performed four surveys on pygmies populations from two zones: the Sangha and the Lobaye valleys. Eight villages in the Sangha and thirteen in the Lobaye were visited, and all children, and adults present, were examined. When a suspected lesion was detected, a blood sample was taken and the patient was treated with benzathine-benzylpenicilline (2.4 millions units intramuscularly in adults,half dose in children and a quarter in babies under 1 year of age). Sera were separated within 48 hours and frozen at -20°C until used. Antibodies against treponemal antigens were detected by the Treponemal Passive Hemagglutination Assay (TPHA) (Sera-Tek, MHA-TP; Ames Division, Miles, Paris) by two-fold dilutions beginning at 1/80,and sera found

negative were tested by the fluorescent treponemal antibody absorption test (FTA-ABS test, BioMerieux, Marcy l'Etoile, France) as described by the manufacturers.

A total of 533 pygmies were examined: 335 children under 15 and 198 adults (209 and 69 in the Sangha, and 126 and 129 in the Lobaye, respectively). In 15/21 villages, the whole population was seen, and there were 198 adults for 187 children. In 7/21 villages, most if not all adults were in the forest, so only children were examined. Among the entire population, 39 clinically suspect cases were detected: 2 in adults and 37 in children. Of these, only 27 were positive by TPHA, while 6 were positive by indirect immunofluorescence (FTA-ABS) only, and 6 were seronegative. In villages in which the entire population was seen, there were 2/198 (1 %) adults and 28/187 (15 %) children with serologically confirmed yaws,i.e. 93.3% of the cases occured in children under 15.

As regard to their access to medicine, children in villages were classified into three groups: one with good medical care and hygiene, where missionaries lived permanently; one with sporadic medical care; and one in completely wild conditions. We detected 0/79 (0%), 24/231 (10.4%) and 7/25 (28%) cases of yaws in each group respectively. This demonstrates a clear increase in the incidence of the disease when general hygiene conditions are poor as there was no preventive penillin compaigns conducted prior to our survey in the area of the country.

Whether the 6 seronegatives had lesions due to other conditions is difficult to ascertain. As shown in table 1, all 6 TPHA negatives and FTA positive patients had only 1, or 2 side-by-side lesions, while TPHA-positives often had

several such lesions. All seronegative children had the same clinical pattern as the TPHA-negative, FTA-positive group(Table 1). In one case, a seronegative child had a typical primary framboesia, while his brother living in the same hut had serologically confirmed yaws.

Papilloma were most frequently situated on the lower extremities (9 cases), face (9 cases including 1 on the skull), trunk and neck (7 cases), and buttocks (5 cases including 2 vulvar primary framboesia); but were also seen on the upper extremities (2 cases). In one case, a primary unique papilloma was localised on the sole of the foot, and in four cases of generalized forms, 20 to 50 papilloma were disseminated over the whole body. The mean age of children with disseminated forms was 3.75 ± 2.6 years, and 6.43 ± 3.5 years for non-disseminated forms.

Our work shows that yaws is still far from being eradicated and that there is an impressive incidence in pygmy children with poor hygiene. In our short series, no bone complications were detected. However, the large number of lesions observed among children with the disseminated form of yaws make super-infection highly possible and such a complication would be life-threatining. This should prompt health authorities to start mass penicillin therapy compaigns.

Serological reactivity on the fluorescent treponemal antibody absorption (FTA-ABS) test for yaws is poorly documented, likely due to the requirement for a fluorescent microscope, and the relatively recent current use of this test (2). Our study shows the usefulness of the FTA-ABS test, particularly during the first stage of the disease, when the micro-hemagglutination test is still negative.

Systematic serological survey performed on the same pigmy population 10 years ago by Cirera et al. (1) showed that as much as 80% of the adults were positive for syphilis. It is likely that many of these syphilis positive adult were actually positive for T.pertenue and they cross-reacted on the T.pallidum test. Thus, we feel that it is necessary to differenciate the immune response to T.pertenue from that to T. pallidum.

LITERATURE CITED

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TABLE 1 : Serological response to treponemal antigen in patients with yaws : correlation with number of frambesia.

Serological test	(Nb)	Number of cases with the following number of frambesia lesions. 1-2	3-5	6-10	11 - 50 (generalized)
TPHA (+)	(27)	8	14	1	4
TPHA (-) FTA-ABS (+)	(6)	6	0	0	0
TPHA (-) FTA-ABS (-)	(6)	6	0	0	0

TPHA = Treponema Pallidum Hemagglutination Assay
FTA-ABS = Fluorescent Treponemal Antibody Absorption Test.