vol) no1, 1986)

TRANSACTIONS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE (1986) 80(5

Isolation of dengue 2 and dengue 4 viruses from patients in Senegal

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Abstract

Dengue 2 and dengue 4 viruses were isolated and re-isolated by inoculation into *Aedes pseudoscutellaris* continuous cell line (Mos 61) and/or *Toxrhynchites brevipalpis*. The strain of dengue 2 had been isolated from a patient returning from Casamance (south-western Senegal) and two strains of dengue 4 from patients who lived in Dakar and had not been outside the town in the 15 days before becoming ill. Serological evidence of dengue 4 infection was found in another patient living in Casamance.

Table I—Detection of antibodies to dengue viruses in sera of four patients

Antigens	Patient 1 (F.M.) DEN 2 isolation Days after onset 2		13		Patient 2 (C.M.B) DEN 4 isolation Days after onset 2		16		Patient 3 (C.P.) DEN 4 isolation Days after onset 2		16		Patient 4 (G.M.. No isolation Days after onset 11	
	CF[a]	IgM[b]	CF	IgM	CF	IgM	CF	IgM	CF	IgM	CF	IgM	CF	IgM
YF	8	N	16	100	N	N	N	400						
DEN 1	N	N	256	200	N	N	N	N	N	N	N	N	N	N
DEN 3	N	N	256	400	N	N	N	N	N	N	N	N	N	N
DEN 4	N	N	256	1600	N	N	256	3200	N	N	64	3200	64	400

[a]CF: Complement fixation test; N: negative titre <8. [b]IgM: antibodies were evaluated by ELISA test. N: negative titre <100.

Introduction

Very little has been reported up to now by clinicians on dengue in Senegal. Following a large dengue 2 epizootic, in the south-eastern area (Kedougou) in 1981, during which 213 dengue 2 strains were isolated from sylvatic *Aedes* mosquitoes (M. Cornet, in preparation), we have paid particular attention to establishing the incidence of dengue viruses of man.

Case Reports

In November 1983, one strain of dengue 2 virus was isolated from a patient (F.M.) returning from a journey to Casamance (south-western Senegal). He developed a febrile infection with headache, myalgia, vomiting, nausea and a cutaneous rash on the fifth day.

During the same period, two strains of dengue 4 virus were isolated from patients (C.M.B. and C.P.) who lived in Dakar and had not been outside the town in the 15 days before they felt ill. Both patients presented with fever, headache and myalgia, and one of them developed a rash.

The dengue 2 and dengue 4 viruses were isolated and re-isolated by inoculation into *Aedes pseudoscutellaris* continuous cell line (Mos 61) and/or *Toxorhynchites brevipalpis* mosquitoes. Identification was made by indirect immunofluorescence with type-specific monoclonal antibodies (HENCHAL *et al.*, 1982). Furthermore, serological evidence was found for dengue 4 infection in another patient (G.M.) living in Casamance who developed dengue with a rash in November 1983.

All the dengue cases occurred in French expatriates who had lived in Senegal for several years and had been vaccinated against yellow fever.

Serological data recorded for the four patients using complement fixation (CF) test and ELISA test for IgM antibodies titration following the procedure developed by MONATH & NYSTROM (1984) are summarized in Table I.

Discussion

The dengue 2 infection was probably related to the dengue 2 epizootic observed in south-eastern Senegal in 1981. A serological survey (employing antigens from all flaviviruses occurring in Senegal) carried out in April 1982 in the Kedougou area where the epizootic occurred showed that 11% of children aged 10 years or less had antibodies corresponding to a dengue 2 infection (33 sera positive/301 tested).

The dengue 4 virus isolations in 1983 were the first evidence of autochthonous dengue 4 cases in Africa. Previously, one strain of dengue 4 had been isolated in Dakar in 1981 from a patient who had contracted dengue in Haïti and felt ill on his arrival in Dakar. The dengue 4 infections observed in 1983 could be related to the virus introduction. A serological survey carried out in south-eastern Senegal in 78 wild monkeys caught from September to December 1983, and in 328 children aged 10 years or less in February 1984, tested against flaviviruses using CF and ELISA tests have provided no evidence of dengue 4 viruses in this area.

More investigations are needed to establish the circulation mechanism of dengue 4 virus in Senegal, including "fingerprints" analysis of the strain isolated from the Haïtian patient and both strains isolated in Dakar in 1983.

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Accepted for publication 22nd October, 1984.