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Hepatitis C in remote populations of southern Cameroon

The seroprevalences of hepatitis C virus (HCV) vary widely in Africa, as shown by studies of blood donors in capital cities: from 0·5% in Niger (Develoux *et al.*, 1992) and 2·1% in Mozambique (Dazza *et al.*, 1993) to 8·0% in Egypt (Kamel *et al.*, 1992). The recent study of an open community from eastern Gabon indicated that this country might be highly endemic for HCV (Delaporte *et al.*, 1993). These results prompted us to study, in neighbouring Cameroon, the prevalence of HCV infection and the role of ethnicity as a risk factor for HCV infection in remote populations, including those of the pygmies considered to be the oldest inhabitants of Equatorial Africa (Froment *et al.*, 1993).

In 1984, French and Cameroonian researchers conducted a study called *Food Anthropology of Cameroonian Populations* in three Bantu-speaking populations of different origins, living in the same ecosystem and having different survival strategies (Froment *et al.*, 1993). This survey was carried out in the Campo district, on the Atlantic Coast and on the border with Equatorial Guinea, and included a rain-forest game reserve. The study populations were the coastal Yassa, principally a fishing population, the Mvae agriculturalists and hunters and the Bakola pygmies, traditionally hunter–gatherers, scattered throughout the forest. The Bakola nowadays practise rudimentary agriculture, but they also exchange game with neighbouring agriculturalists for staple foods (cassava, bananas) and manufactured goods. In the Campo district, the population density is only 1·3 people/km^2. Most of the population is settled in ethnically homogeneous villages.

Sera from a total of 277 subjects were collected in 1984 (mean age ± S.D. = 35·5 ± 19·9 years; male:female sex ratio 0·82) comprising 111 from the Yassa ethnic group, 80 from the Mvae group and 86 from the Bakola pygmy group. The mean ages (± S.D.) of these groups were 32·5 ± 22·4, 39·4 ± 17·4 and 38·3 ± 17·9 years, respectively [Kruskall–Wallis test (Kruskall and Wallis, 1952); $H = 10{\cdot}28$, degrees of freedom (df) = 2, $P < 0{\cdot}006$].

The stored sera were tested in 1993 for anti-HCV using a second-generation ELISA and, for confirmation, the Line Immuno Assay (Innogenetics, Antwerpen). Criteria for positivity have been described elsewhere (Dazza *et al.*, 1993). Age-adjusted prevalences were calculated using a direct method of adjustment, with pooled populations as reference.

The overall prevalence of anti-HCV in sera collected in 1984 was 14·1% [39/277; 95% confidence interval (C.I.): 10·0–18·2%] and was independent of sex (12·0% in males *v.* 15·8% in females). Prevalence increased with age, from 1·5% (C.I.:0·9–4·6%) in the 0–19-years age range, and 17·9% (11·4–24·4%) in the 20–49-years age range to 18·7% (10·5–26·9%) in those >49 years. The mean ages (± S.D.) of anti-HCV-positive and -negative subjects were 47·6 ± 12·9 years and 34·4 ± 20·2 years, respectively (Kruskall–Wallis test; $H = 16{,}99$, $df = 1$, $P < 4 \times 10^{-4}$). The age-adjusted anti-HCV prevalence (Table) was highest in the Mvae group (27·8% *v.* 7·6% in the Yassa group and 8·4% in the Bakola group). Taking the Yassa group as reference, the relative risk of anti-HCV positivity was 3·65 (C.I.:1·92–6·89) for the Mvae group and 1·10 (C.I.:0·32–3·62) for the Bakola group.

This study shows the presence, in a remote area of southern Cameroon, of a highly endemic HCV focus where ethnicity is a risk factor for infection. In studies performed in 1988 in neighbouring Gabon, most anti-HCV-positive subjects were found to be viraemic (Delaporte *et al.*, 1993). The present studies confirm the specificity of second generation assays for the diagnosis of anti-HCV, even in stored African sera, and show that, in this region, there is a large HCV virus reservoir. Studies performed in industrialized countries indicate that HCV is, in most

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TABLE
*Distribution of anti-HCV according to ethnic group**

Test for anti-HCV	*No. of Yassa (N=111)*		*No. of Mvae (N=80)*		*No. of Bakola (N=86)*	
Positive	7	(8·4)	24	(22·2)	8	(7·2)
Negative	104	(102·6)	56	(57·8)	78	(78·8)

*Values in parentheses are age-adjusted prevalences, using the pooled populations as reference. For the crude data, $\chi^2=23{\cdot}93$, $df=2$, $P=6{\cdot}4\times10^{-3}$. For the age-adjusted data, $\chi^2=19{\cdot}48$, $df=2$, $P=5{\cdot}9\times10^{-5}$.

instances, transmitted parenterally (Reinus *et al.*, 1992; Osmond *et al.*, 1993), but many questions remain. How does transmission occur in this African focus, preferentially affecting adults and certain ethnic groups? Do particular routes of transmission, such as sexual intercourse, play a more important role in Africa than in Europe or the U.S.A.? Is the presence of anti-HCV a good index of past exposure to HCV? What is the clinical impact of HCV infection? The answers to these questions, derived from investigations of populations such as those studied here, will be of importance in designing prevention strategies.

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