Epidemiology of *Mansonella perstans* filariasis in the forest region of South Congo

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A study of *Mansonella perstans* filariasis conducted in the Chaillu mountains, Southern Congo, showed that 108 of 134 Pygmies (80.6%) and 79 of 302 Bantus (26.2%) presented with microfilaraemia. The mean microfilarial densities were also significantly higher in the Pygmies (1213 ml⁻¹ of blood) than in the Bantus (136 ml⁻¹). Ninety eight per cent of the *Culicoides* taken which had bitten man in the daytime...
geometric mean. In order to detect dermal mf, 118 skin snips were taken from adults selected at random (41 Pygmies, 77 Bantus). Double skin biopsies were taken from the iliac crests and placed in 50 μl of normal saline, and four hours later a drop of formaldehyde was added. Specimens were transported to the laboratory, where emerged mf were identified.

A survey of anthropophilic Culicoides was carried out in April 1987 (diurnal and nocturnal species) and January 1988 (diurnal species), for a total of 11 capture days. The Culicoides were collected with a mouth aspirator, preserved in 70% alcohol, and then mounted for taxonomic studies (Cornet, 1974). The diurnal species were caught in the morning between 07.00 and 09.00 hours and in the evening between 17.00 and 19.00 hours, and the nocturnal species were caught between 23.00 and 01.00 hours. Some 629 of the dominant species of Culicoides were anaesthetized with ether, then dissected in order to detect Mansonella larvae (Sharp, 1928). The lacerated fly tissue, fixed in human serum, was stained with acid haemalum.

RESULTS

The prevalences of M. perstans mf carriers, and the mean microfilarial densities, are shown in Table 1. The prevalence rate was 80.6% in the Pygmies and 26.2% in the Bantus. No difference was observed according to sex. In the Pygmies the maximum rate was reached early (age group 10–19 years), whereas it increased with age throughout life in the Bantus. The m.d. were 136 mf ml⁻¹ in the Bantus and 1213 mf ml⁻¹ in the Pygmies. In the Pygmies the densities increased regularly with age, and were twice as high in the women as in the men (1595 vs. 685 mf ml⁻¹ of blood). In the Bantus, however, the densities were slightly higher in men than in women and increased only in women above 30 years. The high mf prevalence and densities in the Pygmies contrast with those in the Bantus, but the difference was not statistically significant.

The captures of diurnal anthropophilic Culicoides (Table 2) showed that C. grahamii was the species most aggressive to man. This species accounted for over 98% of the captures irrespective of the period. Some 0.8% of the dissected C. grahamii (five of 629) were carriers of indistinguishable filarial larvae of the Mansonella genus, including one third-stage larva. Only one species, low densities, one species, low densities, The clinical West Congo difficult to a
TABLE 2
Biting densities of diurnal anthropophilic species of Culicoides

<table>
<thead>
<tr>
<th>April 1987</th>
<th>January 1988</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>C. grahamii</td>
<td>1470</td>
</tr>
<tr>
<td>C. kumbensis</td>
<td>8</td>
</tr>
<tr>
<td>C. fulvithorax</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>1501</td>
</tr>
</tbody>
</table>

F/MH: no. of flies caught per man-hour.

one species, C. rutshuruensis (group milnei), was found attacking man at night, and it occurred in low densities (nine flies per man-hour).

DISCUSSION

The clinical impact of microfilaraemia filariases is not insignificant in this region of South-West Congo (Noireau et al., 1990). However, the respective role played by mansonellosis is difficult to assess because of the coexistence of loaiasis. Nevertheless, severe pathogenic effects have been reported with M. perstans in Zimbabwe, in areas in which mansonellosis occurs alone (Gelfand and Bernberg, 1959; Holmes et al., 1969). This might be due to the particular virulence of the local strains which are morphologically distinguishable from West African strains (Duke, 1974). Unlike loaiasis, for which the percentage of mf carriers in the adult population never exceeds 35% (Fain, 1978), M. perstans microfilaraemia can be observed in a high percentage of the population (Kershaw et al., 1953; Richard-Lenoble et al., 1980; Dujardin et al., 1982). In our study major differences between the Bantus and the Pygmies were observed. The exposure to the vector certainly plays an appreciable role, and might account for the earlier occurrence of microfilaraemia in the Pygmies. On the other hand, the differences in the trend of microfilarial load with age (significant increase in the Pygmies, unlike the Bantus) perhaps support the theory that microfilaraemia might be regulated genetically.

Four species of Culicoides which are preferentially or occasionally anthropophilic were identified in the study region. Of these species, only C. fulvithorax has never been reported to have played a role in the transmission of M. perstans (Linley et al., 1983). Culicoides grahamii
MAISONELLA FILARIASIS IN SOUTH CONGO


