Short Report

Ivermectin treatment of loiasis

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Treatment of loiasis with diethylcarbamazine may produce severe adverse reactions which can cause death after allergic encephalopathy (BOULESTEIX & CARME, 1986; FAIN, 1978). Recently, ivermectin has been reported to be a safe and efficient *Loa loa* microfilaricide (RICHARD-LENOBLE *et al.*, 1988; CARME *et al.*, 1991). Although the microfilaricidal activity of a single dose of 0·2 mg/kg of ivermectin appeared to be inadequate to cure patients, the great reduction of parasitaemia obtained should be beneficial to patients with high parasite density or frequent symptoms. We report here trials of 2 different ivermectin multiple treatment protocols. Our objective was to measure the duration of ivermectin activity and the required frequency of treatment.

The trial was carried out in 2 villages, consisting of 200 people each, in the Sanaga valley near Yaoundé, in southern Cameroon. Ivermectin at a dose of 0·2 mg/kg every 3 months was administered to volunteers above 5 years old. The results were combined according to the number of treatments received. Protocol 1 involved 255 people from both villages, of whom 84 showed microfilaraemia, who were treated twice. Protocol 2 involved 65 people from only one village, of whom 26 showed microfilaraemia, and who were treated 3 times. Parasitological surveys were made by means of calibrated thick blood smears (30 mm^3) obtained by finger prick between 10:00 and 15:00 on days 1 (immediately before treatment), 7, 21 and 50. For each group, blood was finally sampled 6 months after the last treatment. Geometrical means of microfilarial parasitaemia (GMP) were recorded and compared only in patients showing microfilaraemia.

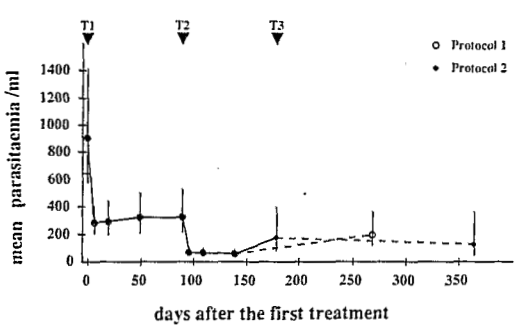

Figure. Decrease of *Loa loa* parasitaemia after multiple ivermectin treatments (T1, T2, T3) (geometric mean±standard error of the mean at P=0·05-.

Microfilarial density decreased drastically after each ivermectin treatment (Figure). For both treatment groups, GMP was significantly different between day 1 (before treatment) and day 7 (for combined treatment groups: t=4·01, degrees of freedom [df]=214, $P<10^{-4}$). Similarly, GMP decreased significantly after the second treatment (for combined treatment groups: t=5·02, df=139, $P<10^{-6}$). As we did not sample patients in protocol 2 again before day 180, it was not possible to calculate parasite reduction following the third treatment. Six months after ivermectin treatment, parasitaemia had increasedwith protocol 1 and decreased with protocol 2, but GMPs were not significantly different from the mean parasitaemias observed on the last treattment day (for protocol 1: t=1·62; df=110, $P>0·1$; for protocol 2: t=1·56, df=87, $P>0·11$). However, with both drug protocols GMP was still significantly less than the parasitaemia found before the first treatment (protocol 1: t=3·98, df=131, $P<10^{-4}$; protocol 2: t=3·38, df=117, $P<10^{-3}$).

Previous studies using a single dose of ivermectin (0·2 mg/kg) did not follow patients beyond one month after treatment. However, RICHARD-LENOBLE *et al.* (1988) reported reductions in microfilarial numbers of 82% by day 7, while CARME *et al.* (1991) reported 89% reduction by day 14. In our more heavily infected patients, reductions in microfilaria numbers in the blood were quite similar (about 70% on day 7).

Although adverse reactions were observed in 45% of patients after the first treatment, most of them were mild (pruritus, arthralgia). Fever (>38°C), which should be regarded as the most severe reaction, was seen in 5 treated patients showing high parasitaemia (1·6%), only after the first treatment.

Repeated treatment with ivermectin (0·2 mg/kg) reduced microfilarial counts to low levels for at least 3 months and it is therefore assumed that quarterly mass treatments could reduce loiasis transmission in hyperendemic areas. However, the long-term rate of reappearance of microfilaraemia after a single dose of ivermectin remains unknown.

References

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