

MODELLING HUMAN FILARIASIS

CLINICAL STUDY OF THE OCULAR LESIONS INDUCED BY *MONANEMA MARTINI* IN ITS MURID HOSTS

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KEYWORDS : ocular lesions, ophthalmology, murids, filaria, *Monanema*, onchocerciasis.

The filaria *Monanema martini* with skin-dwelling microfilariae induces in its natural murid hosts lesions similar to those in human onchocerciasis. This was demonstrated by histo-pathological studies (Vuong *et al.*, 1991) but it appeared useful to evaluate the model by a clinical study. An ophthalmological analysis (Aimard *et al.*, 1993) was performed on the two species of hosts, inoculated by one, two or multiple doses of larvae, with patent infections since at least one year. A total of 140 eyes was examined (anterior and posterior segments) ; a system of values was established for the different types and intensities of lesions ; a file was prepared for each eye and an attempt at quantification was performed. The significant lesions were different in the two host species. In *Arvicanthis niloticus*, in which motile microfilariae were seen in the anterior segment, punctate keratitis was predominant. In *Lemniscomys striatus*, the posterior segment showed complete chorioretinal atrophy, similar to the ultimate stage of onchocercal chorio-retinitis.

The pathogenic mechanism is probably not unique and it may vary according to the species or individuals. It is noted for example that *L. striatus* has levels of skin microfilariae much higher than *A. niloticus*. *M. martini* represents in its natural hosts two complementary models for the study of pathogenesis and treatment of human onchocerciasis.

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<i>L.s</i>	Control	Mono-inoc	Bi-inoc
n	19	20	10
Mf/mm ²	0	78	101
Chor-ret atrophy Sc.	0.2	1.5	2.1
<i>A.n</i>	Control	Mono-inoc	Multi-inoc
n	7	9	10
Mf/mm ²	0	3.6	13.60
SPK-IPK Sc.	1.4	2.3	2.2

Table I. – Scores of significant ocular lesions in *L. striatus* and *A. niloticus* infected with *Monanema martini*.

Control : rodents not inoculated with infective filarial larvae (L3) ; Mono-inoc : inoculated with a single dose of 80 L3 ; Bi-inoc : inoculated twice with 80 L3 at twelve months intervals ; Multi-inoc : inoculated with a mean sum of 340 L3 given in bi-monthly doses of 15-20 L3 ; n : number of *L. s.* or *A. n.* per group ; Mf/mm² : mean microfilarial densities in the ear-skin lobe during the patent phase (based on the microfilarial counts performed each three months until 18 months) ; Chor-ret atrophy Sc : mean score of chorioretinal atrophy (maximal theoretical value : 5) ; SPK-IPK Sc. : mean score of superficial punctate keratitis and interstitial punctate keratitis (maximal theoretical score : 3).

DRUG TRIALS WITH *MONANEMA MARTINI* : EFFECT ON THE ADULT WORMS, THE DERMAL MICROFILARIAE AND THE NATURAL MURID HOST

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KEYWORDS : macrofilaricides, side-effects, histopathology, filariasis with dermal microfilariae, onchocerciasis, murids.

SUMMARY :

The filaria *Monanema martini*, with skin-dwelling microfilariae, which induces onchocerca-like lesions, is well appropriate for drug trials. These are performed together with a histopathological study of side-effects on the murid host.

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