

HUMAN EXPOSURE, IMMUNITY AND REINFECTION RATES IN A COHORT OF SCHOOL CHILDREN AFTER TREATMENT FOR HUMAN SCHISTOSOMIASIS MANSONI

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The purpose of the present study has been to assess the extent, if any, of resistance to reinfection of a cohort of 129 Kenyan school-children in an area endemic for *Schistosoma mansoni*, following treatment. In the post-treatment period a number of studies were carried out on 129 individuals over a two year period. These include water contact studies, biological surveys serological examinations, and a 3 monthly collection of stools. The water contact studies have been carried out at 24 contaminated and stream sites in an endemic areas frequented by the school-children. The results after the completion of the two years have been analysed by means of a mathematical model. In this model the two keys independent variables are, the level of human exposure as expressed by the duration of water contact for each individual, and the level of resistance. Resistance is age dependent with egg outputs, after treatment, oscillating in a downward direction. The model is highly predictive of fluctuations in the means and variances, by age, and season, of egg-outputs over the two years period, and makes it possible to quantitatively assess the relative importance of the two variables 'exposure' and 'resistance.'

THE VECTORS OF MEDITERRANEAN VISCERAL LEISHMANIASIS AND PAPATASI FEVER FOLLOWING 26 YEARS OF OBSERVATION IN ROMANIA
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Entomologic investigations were carried out (1956-1981) in more than 400 places of capture. Sandflies were found at low altitude in all the southern regions but not to the north. This means that Romania is at the northern limit of the Balkan-European sandfly region. The precarious conditions which the local habitat offers the sandflies accentuate the ecological difference between the wild, and the indoor sandfly group.

The wild sandfly group is represented by a number of species: *Phlebotomus* (*Larrousius*) *major*, *P. (L.) perfiliewi*, *P. (Adlerius) balcanicus*, *P. (A.) longiductus*, *P. (Paraphlebotomus) sergenti*, *P. (P.) sp.*, *P. (Sergentomyia) minutus*. They live only in natural shelters. Their density is always low. They rarely approach and penetrate into human dwellings. Most of them are known as vectors of Mediterranean visceral leishmaniasis. The rarity of outbreaks of this disease in Romania may be due in part to the sporadic contact of the vector sandflies with man.

At present, the wild sandfly ecology in the Danube plain is quite distinct. The biotopes are isolated and of an insular nature, found mainly in archaeological sites and in medieval ruins. They are surrounded by vast agricultural areas where the natural landscape is radically modified. On the other hand, the same sandfly species is spread in relatively uniform fashion, like a covering layer, in the limestone plateau and hilly areas to the south of Banat, Oltenia and in many parts of Dobroudja. The insects shelter in cravasses in stone grottoes, in birds' nests in clay banks, and rodent burrows in ruined buildings.

The indoor sandfly group is represented by one species only, *P. (P.) papatasi*, the old vector of papatasi fever. This species is found inside the home and never in any natural shelter. It disappeared from all regions where long term insecticides were sprayed as an anti-malaria *Anopheles imago* weapon. As in other parts of the world, as a result of spraying, *P. papatasi* completely disappeared while malaria *Anopheles* returned, and still *flavipes* *P. papatasi* was recently identified in a limited area to the south of Banat where no malaria ever existed and where no insecticide was ever spread systematically.

A SEROLOGICAL SURVEY FOR CERTAIN ARBOVIRUSES IN RODENT SERA IN EGYPT

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Most serological surveys for antibodies against arboviruses in Egypt have dealt with human and domestic animal samples. In the present study, 826 sera from 5 species of rodents trapped in 9 governorates were tested for complement-fixing antibodies against 21 arboviruses: 18 tickborne, 2 mosquito-borne, and one sandfly-borne.

The results showed that the overall prevalence rates of these viruses ranged from 11 to 0.5%. Ten of the viruses exhibited prevalence of 5% and above of which six (Mataria, Matruh, Bahig, Crimean-Congo hemorrhagic fever (CCHF), Kemerovo (KEM) & Thimiri) are associated with migrating birds. These 6 viruses together with Burg el Arab virus (4% prevalence) appear to originate in Eurasia (Palearctic Faunal Region). Therefore their presence in Egypt, which is part of the Palearctic Region, is not faunistically improbable. Of the seven viruses, only CCHF & Bahig are established in both Eurasia & Africa. Apart from Thimiri virus, the 6 others are apparently associated chiefly with ticks.

Some of the arboviruses found present in rodents are known to infect humans in Egypt and/or elsewhere, and therefore of potential interest in public health. These are CCHF, KEM, Quarantini, Qalyub, Dugbe, Wanorie, Thogoto, Karimabad, Bhanja, and Nymanini.

Rift Valley Fever virus exhibited a very low prevalence in rodents (1.45%); these results together with previous field data and findings of experimental investigations, show that rodents apparently have no role in RVF epidemiology in Egypt.

COMMUNITY EDUCATION IN CHEMOTHERAPY AND CONTROL

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In 1972 the World Health Organization (Geneva) established a project to investigate methods of control of *Schistosoma haematobium* in 26 villages situated on part of the Lake Volta (Ghana) shoreline. The principal methods of control were chemotherapy (Metrifonate) and Molluscicide (Bayluscide); supplementary measure such as standpipes in seven villages and a programme of community education were introduced to reinforce the two principal methods in seven of the 26 villages. A community education programme was established with two major objectives:- a) to influence the villagers to utilise the standpipes and thereby reduce their contact with the lake for domestic purposes(b) to obtain a better response to the collection of urine samples and the acceptance of the drug, metrifonate. Techniques of community education ranged from the use of sophisticated media such as video and films depicting the cycle to a more simple personalised approach by field workers recruited from the area. Villages committees were formed to gain the fullest participation of the residents. The impact of this programme can be assessed in three main ways. Firstly there was a significantly higher reduction in water contact with the lake-side sites by the population in the seven villages; and the response rates with respect to the annual collection of urine samples, and the proportion of the population accepting the drug, was higher in these villages than in the area where no such programme was being conducted. Finally, reinfection rates following treatment were significantly lower for the population exposed to the education programme than for those who were not.

FIRST EVALUATION OF PERMETHRINE IMPREGNATED BED-NETS FOR MALARIA VECTOR CONTROL IN A WEST AFRICA PILOT-VILLAGE

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An entomological and parasitological evaluation of 36 cotton impregnated bed-nets (permethrine E.C. 20%, rate 0,08 gr/m²) was done in Soumouso WHO Collaborative field Station (Upper Volta) for testing the eventual reduction of man malaria vector (*A. gambiae* - *A. funestus*) contacts. 4 designs of bed-nets were used: individual with and without holes, collective with and without holes. 24 bed-nets were impregnated (12 with holes, 12 without holes), 12 not as control (CN). They were put inside 12 Bobo-cases and 12 Mossi-cases, especially designed for insecticide tests. Each night, human beings slept under the bed-nets. Each morning, anophelies were hand caught inside cases and in verandah-trap. 4377 females of *A. gambiae* and *A. funestus* were caught during the 5 months experimentation.

Avoidance insecticide was noticed at 3 levels:

- * Incoming rate of females: the number of females caught in cases with IBN was 2 to 4 times less than in control cases (CN); respectively from 28,1 to 49,8 females / Mossi case; from 23,2 to 90 females / Bobo case / week.
- * outgoing rate of females: the exophilic index was estimated by the ratio: number of females caught in verandah-trap / total number of females caught. Such index appeared to be of 97% in cases with impregnated bed-nets and of 30% in control cases.
- * blood-feeding rate: the blood-feeding rate was estimated by the ratio: number of fully blood fed females caught inside the case / total number of females caught. This index was 87% in cases with impregnated bed-nets and 97% in control cases.

On the other hand, the mortality rate which was of 0% in control cases reach about 17% in cases with impregnated bed-nets (mortality rate: 16% for *A. gambiae* and 16% for *A. funestus*) and the residual effect of permethrine on *Aedes aegypti* was of about 5 months with more than 80% of mortality after one hour contact. Therefore, it appeared that permethrine bed-nets reduced the incoming rate of 50%, increase the outgoing rate of 30%, decrease the blood-feeding rate of 10% and increase the mortality of 20% for at least 5 months.

Thus, permethrine impregnated bed-nets seemed to decrease the anopheline vector contact of about 50% or more.

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THE WOMAN'S ROLE IN THE SOCIO-ECONOMIC STUDY OF SCHISTOSOMIASIS

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At present, Brazil can be considered to be one of the largest endemic foci of *Schistosoma mansoni*. Efforts to restrain the spread of schistosomiasis have been made by the Ministry of Health, mainly through diagnosis, medical treatment, and eventual use of molluscicides, but these efforts have failed to halt the course of the disease and infected people already treated (which are an insignificant number in relation to the untreated ones) are still subject to reinfection. This is because the transmission of diseases or potential health risks depend on social factors, including those related to the environment (housing, water supplies, sewers, control of vectors, etc.), standard of living (income, education, level of community organization, etc.), and medical assistance (physicians, drugstores, hospitals, transport, etc.). In the other hand, even if medical assistance is free, other expenses are generally of high cost. A disease also implies leaving the job, and this generates an opportunity cost which the head of the family can not always afford to. Also somebody has to take care of patient - a woman most of time. Thus, since the beginning women should be invited to participate in a schistosomiasis research project. The mothers time is mostly dedicated to the care for the children and welfare of household's members and they are their children's main educator and socializer. It is known that schistosomiasis affects childhood and that, in most cases, their effects are revealed only in adulthood, causing a reduction in human productivity in its most economic active phase. In this sense, women should be the main object of health education programs viewing the mothers' education and training for the control, prophylaxis, and preliminary diagnosis of the disease mainly in the children. On the other hand, activities associated with health education has to be coordinated in such a way as to count on the participation of local teachers and the whole community. These activities will be conducted according with data collected by questionnaires which take the community's attitudes, beliefs, values, and habits into account. It is known that adoption of preventive sanitary measures depends on the population's knowledge and systems of values in respect of the environment and the human body. Important aspects such as application of new technology, suggestions viewing a change in the behavior of groups in terms of new environmental conditions may be introduced more effectively, if socio-cultural characteristics of local population besides its economic capabilities are taken into account.

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