

These observations indicate that the distribution of *B. senegalensis* in The Gambia is not confined to laterite pools, and is similar to the reported distribution in neighbouring Senegal. In particular the species has been identified at two of the sites, Kartong and Tabanding, where SMITHERS (1956) had attributed local transmission of *S. haematobium* to *B. forskali*. It now seems reasonable to conclude in view of the variation in the proportions of the two species during the course of a season and from year to year, that with intermittent sampling, *B. senegalensis* was previously missed or overlooked. Further it is no longer necessary to consider *B. forskali* as a natural host of *S. haematobium*.

This study was made while on secondment to the UK Medical Research Council Laboratories, Fajara Banjul, The Gambia.

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Accepted for publication 30th November, 1980.

TRANSACTIONS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, VOL. 75, No. 4, 1981

## Levamisole compared to mebendazole in the treatment of *Ancylostoma duodenale* in Egypt\*

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### Summary

*Ancylostoma duodenale* in 74 patients and *Ascaris lumbricoides* in 41 were treated with a single 150 mg dose of levamisole, a single 300 mg dose of mebendazole or the standard three-day regimen of 200 mg mebendazole daily. Levamisole cured all of the 25 hookworm patients and all of the seven *Ascaris* carriers to whom it was given and is recommended as the drug of choice in Egypt.

For the treatment of hookworm and *Ascaris lumbricoides* a single-dose drug which causes minimal side effects is the ideal. This paper presents the results of a sequential comparison of a single 150 mg dose of levamisole to a single 300 mg dose of mebendazole and to the standard three-day regimen of 200 mg of mebendazole daily in the treatment of patients with *Ancylostoma duodenale*.

74 patients with hookworm infection were treated; 25 received levamisole, 24 received a single dose of mebendazole and 25 received a standard regimen of mebendazole. An additional 41 patients infected with *Ascaris* were treated; seven received levamisole, 24 received a single dose of mebendazole and 10 received a standard regimen of mebendazole. Stool concentrates were examined for eggs daily for three days by the merthiolate-iodine-formaldehyde concentration (MIFC) technique (BLAGG *et al.*, 1955) and quantitative egg counts were done twice before treatment by the Stoll dilution technique (STOLL & HAUSHEER, 1962).

The mean egg count per gram of faeces was similar in each treatment group of patients with hookworm infection (Table I). All stools were collected

and sieved for worms for five consecutive days after treatment. Patients were then observed in the hospital for an additional 14 to 21 days, after which stools were examined by MIFC on two consecutive days.

For patients with hookworm infection, levamisole cured all 25 patients but the 300 mg single dose of mebendazole only cured two of 24 patients (8%) whereas the standard clinically accepted mebendazole regimen cured 16 of 25 patients (64%) (Table I). For patients with *Ascaris*, levamisole cured all of seven patients, the single dose of mebendazole cured 15 of 24 patients (62%) and the standard dose cured all of 10 patients.

Hookworm infection is a common cause of severe iron deficiency anaemia in Egypt and, as previously reported (FARID & MIALE, 1962), the degree of anaemia correlates with the number of worms as shown by faecal egg counts. Table II shows the relationship for this study.

In earlier reports we have shown that levamisole is superior to bephenium hydroxynaphthoate for treating hookworm and *Ascaris* (FARID *et al.*, 1973). Although mebendazole has been shown to be effective for treating hookworm when a three day schedule is used (KEYSTONE & MURDOCH, 1979), a single-dose treatment in developing countries is clearly preferable. Levamisole remains the drug of choice for the treatment of *Ancylostoma duodenale* and *Ascaris lumbricoides* in Egypt.

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**Table I—Comparative cure rates for patients with ancylostomiasis treated with either levamisole or mebendazole**

| Drug                      | Number of patients treated | Mean egg count per gram of faeces (Range) | Number of patients cured (%) |
|---------------------------|----------------------------|---|------------------------------|
| Levamisole                | 25                         | 1404 (100-6366)                           | 25 (100%)                    |
| Mebendazole Single dose   | 24                         | 1068 (33-9350)                            | 2 (8%)                       |
| Mebendazole Standard dose | 25                         | 946 (100-5180)                            | 16 (64%)                     |

**Table II—Relationship of faecal egg count to admission haemoglobin in ancylostomiasis**

|                          | Eggs per gram of faeces |                   |                  |
|--------------------------|-------------------------|-------------------|------------------|
|                          | 100-500                 | 501-5000          | >5000            |
| Number of patients       | 39                      | 29                | 5                |
| Mean haemoglobin (range) | 10.8<br>(5.2-18.1)      | 9.1<br>(5.1-14.3) | 4.8<br>(3.2-6.2) |

**Acknowledgement**

Supported by Naval Medical Research and Development Command, NNMC, Bethesda, Md. Work Unit No. M0095-PN.002-5054.

The opinions and assertions contained herein are the private ones of the authors and are not to be construed as official or as reflecting the views of the Department of the Navy or the Egyptian Ministry of Health.

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Accepted for publication 25th November, 1980.