Tinidazole treatment in giardiasis associated with bronchial asthma in children

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Giardia lamblia is an intestinal protozoan living in the upper part of the human small bowel and is one of the most commonly diagnosed parasites from human faeces.

An association between bronchial asthma and the presence of intestinal parasites was demonstrated by KAYHAN *et al.* (1978; *Amer. J. Gastroent.*, **69,** 605-606). We found *G. lamblia* cysts in 22 of the 164 out-patients with bronchial asthma and in only two of the 35 normal controls (LÓPEZ-BREA *et al.*, 1979; *Trans. R. Soc. trop. Med. Hyg.*, **73,** 600).

In the present study 50 children with bronchial asthma aged 0 to 12 years, diagnosed as having giardiasis and all out-patients were studied.

To diagnose giardiasis, at least two stool specimens were investigated for parasites, using a formol-ether concentration technique (ALLEN & RIDLEY; *J. Clin. Path.*, **23,** 545-546). 40 of the 50 children were treated with a single dose of tinidazole (75 mg/kg body-weight/day) and 10 were not treated.

All the children were investigated for parasites 10, 12, 14, 16 and 18 days after the diagnosis of giardiasis was made (whether treated or not). *G. lamblia* cysts were found in faeces in only two of the 40 children who received treatment and in eight of the 10 children who did not receive any treatment.

The treatment of giardiasis with tinidazole has been reported before using a single dose (PETTERSSON, T., 1975; *Brit. Med. J.*, **i,** 395; JOKIPII, A. M. M. & JOKIPII, L., 1978; *Amer. J. trop. Med. Hyg.*, **27,** 758-761). In the present study a single dose of tinidazole resulted in parasitological cure in 38 of 40 children (95·0%). ($\chi^2 = 4 \cdot 5$, $p < 0 \cdot 05$.) All the children's asthma improved after treatment.

Tinidazole could therefore be a good drug for the treatment of giardiasis associated with bronchial asthma in children.

Isolations of small free-living amoebae (*Acanthamoeba* spp.) from waters (including drinking-water) of the city and county of Goettingen. Examination of virulence and pathogenicity in mice

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Until now, Primary Amoebic Meningo-encephalitis (PAME) cases due to *Naegleria fowleri* or *Acanthamoeba* spp. have not been reported from Federal Republic of Germany. But the occurrence of such lethal cases in the neighbouring CSSR and Belgium gave us the occasion to examine the waters of our area for free-living *Limax amoebae*.

Since 1976, we have investigated various waters for amoebae: (i) municipal water supplies and tap-water, (ii) water of in- and out-door swimming-pools and physiotherapeutic baths, (iii) natural waters. The samples were filtered several times through a Sartorius Membrane Filter and cultured on agar-plates, covered with active *E. coli* bacteria, for *Naegleria* (43°C) and for *Acanthamoeba* (37°C). Except for one *N. gruberi* strain from a hydroculture (G. Kaitzis), *Naegleria* amoebaflagellates could not be detected but most of the waters contained *Acanthamoeba* spp.

The pathogenicity of the isolated Acanthamoebae was investigated by intranasal instillation in white, three to four-week-old, male mice. Three of the 29 tested strains were pathogenic in mice. An increase in the pathogenicity and virulence of an *Acanthamoeba* strain (*A. castellanii/rhysoides*), isolated from an indoor swimming-pool could be produced by repeated intracranial inoculation into mice. This strain had not been pathogenic in preceding intranasal instillations. 20 male white mice, three to four weeks old, were infected i.c. with 0·02 ml of a bacteriologically sterile amoeba suspension (10^6 trophozoites). The animals were watched for 30 days. Distinct increases of virulence and pathogenicity have been noticed after the fifth brain-passage, but the amoeba remained non-pathogenic by intranasal instillation. The meningo-encephalitic symptoms of the infected mice were chronologically documented.

In another long term study of 10 clinical healthy rats, *Acanthamoebae* could be re-isolated 1·5 years after intracranial inoculation.

Novel adjuvants in malaria vaccination

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A lipid-soluble derivative of muramyl dipeptide, 6-O-Stearoyl-MurNAc-L-Ala-D-isoGln, incorporated in "hard" (dipalmitoyl DL α phosphatidyl choline-cholesterol) liposomes, has been reported as a successful adjuvant in falciparum malaria vaccination of douroucouli monkeys (*Aotus trivirgatus*) (SIDDIQUI *et al.*, 1978; *Science,* **201,** 1237-1239). In the present work squirrel monkeys (*Saimiri sciureus*) were vaccinated with *Plasmodium knowlesi* antigen, purified from saponin-lysed schizont-infected rbc by sucrose gradient centrifugation, using this adjuvant combination. They were not protected on subsequent challenge with *P. knowlesi,* whereas squirrel monkeys were protected by merozoite vaccine in Freund's adjuvant (MITCHELL *et al.*, 1975; *Immunology,* **29,** 397-407). In a separate experiment neither empty "hard" liposomes nor "hard" liposomes containing a lipid-soluble derivative of norMDP, nMurNAc-L-Abu-D-isoGln, proved effective as adjuvants for mero-