FILARIAL ANTIBODIES IN EXPATRIATES

the 2 groups. The indoor workers had a prevalence of 24% and outdoor workers 74% (Fisher's exact test P = 0.002). None of the indoor workers was positive for IgG4 antibody.

Discussion

It is obvious from these results that there was a significant exposure to filariasis in the mine workers, resulting in the production of anti-filarial antibodies. In the case of IgG1 it is possible that the antibody response was due to exposure to in-coming infective larvae rather than infection with the adult parasite, as there is an active IgG1 and low IgG4 response to infective larvae (KUR-NIAWAN-ATMADJA et al., 1998). As previously noted, IgG4 is strongly associated with active filarial infection and it is possible that these subjects who were positive for IgG antibody had an adult worm in situ, but it is difficult to explain why they were filarial antigen negative as IgG4 positivity in indigenous populations is almost invariably associated with antigenemia (TURNER et al., 1993). It is known from previous work that unlike infected indigenous inhabitants, who have a down-regulated immune system against filarial antigens, expatriates mount a vigorous tissue response against the adult worm (WARTMAN, 1947) and it is possible that the filarial antigen is bound into an immature near the site of the worm and not liberated into the blood. It is also possible that the subjects' immune response killed the worm shortly after it became established and that the filarial antigen had been cleared from the blood before the person was tested. This study suggests that filariasis is a threat to expatriate workers and travellers; especially if their work environment and lifestyle constantly expose them to mosquito bites. This possibility should be considered when investigating illness in returnees from filarial-endemic areas. There is no proven prophylaxis against filariasis and the only effective means of control is protection from mosquito bites. A follow-up study which will include collection of clinical data, testing for microfilaremia, the use of scrotal ultrasound to detect adult worms (DREYER et al., 1999) and the effects of treatment, is being planned.

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References


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**Short Report**

Detection of ehrlichiae in African ticks by polymerase chain reaction

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In Africa, tick-borne ehrlichioses are considered among the most important livestock diseases (SONNENSHINE, 1993). In recent years, useful and rapid molecular tools such as sequence analysis of polymerase chain reaction (PCR) products have been developed for the detection and identification of microorganisms in arthropods (HIGGINS & A2AD, 1993). The aim of this work was (i) to select broad-spectrum specific primers that could amplify, by PCR, DNA of ehrlichia and (ii) to use them to detect ehrlichiae in ticks collected in Mali.

Two oligonucleotide primers EHR16SD (GGTAC CYACAGAAGAGTCC) and EHR16SR (TAGC
Anaplasma marginale nucleic acids were amplified from the negative control of the 16S rRNA sequencing gene of the ehrlichia is a known vector of this microorganism in Africa. No detect primers to detect ehrlichiae in ticks. In February 1998, positive control (HGE agent DNA) in each test. No ticks were removed from cattle in Mali. The DNA of each the PCR procedure was carried out with DNA from all programme including an annealing temperature at 53°C. A 345-bp DNA fragment was consistently amplified when the PCR procedure was carried out with DNA from all the ehrlichiae isolates available in our laboratory including Ehrlichia senatsus, E. phagocytophila, E. chaffeensis, E. risticii, E. canis, Neorickettsia helminthoeca, Cowdria ruminantium and the agent of the human granulocytic ehrlichiosis (HGE). EHR16SR and EHR16SD primers appeared to be specific because PCRs did not result in any amplified bands when performed with the DNA from species of 19 different genera belonging to the different subgroups of Proteobacteria including Richesttia rickettsii, Barretella elizabethae, Brucella melitensis, Escherichia coli, Salmonella typhiurium, Proteus mirabilis, Yersinia enterocolitica, Pseudomonas aeruginosa, Coxella burnetii, Neisseria gonorrhoeae, Campylobacter jejuni, Chlamydia trachomatis, Borrelia burgdorferi, Staphylococcus aureus, Clostridium perfringens, Mycoplasma arginini, Enterococcus faecalis and Listeria monocytogenes. Furthermore, our broad-spectrum primers were demonstrated to be as sensitive as previously published specific primers Ge9F and Ge10r (PAROLA et al., 1998) to detect serial dilution of HGE DNA by PCR.

We aimed to test the usefulness of our broad-spectrum primers to detect ehrlichiae in ticks. In February 1998, 50 Amblyomma variegatum and 30 Boophilus decoloratus ticks were removed from cattle in Mali. The DNA of each tick was amplifiable as previously described (PAROLA et al., 1998) and used in PCR including EHR16SR and EHR16SD, as described above. No DNA amplification was obtained from the 50 A. variegatum tested. PCR amplification produced a fragment of the expected size (345 bp) from 1 of the 30 screened B. decoloratus (Figure). A similar fragment was amplified from the positive control (HGE agent DNA) in each test. No nucleic acids were amplified from the negative control (sterile water instead of DNA) in each test. The determined sequence of the amplified fragment was compared with the corresponding sequences of the Ehrlichia species available in GenBank as previously described (PAROLA et al., 1998). It was found to be similar to those of Anaplasma marginale (100% similarity).

In most of the PCR procedures which were used previously to detect ehrlichiae in ticks, primers were group (PAROLA et al., 1998) or species specific (STICH et al., 1993). In this work, we selected a primer pair which appeared to be useful to detect all the ehrlichiae with 16S DNA sequence available in Genbank. This allowed us to detect Anaplasma marginale DNA in B. decoloratus which is a known vector of this microorganism in Africa. No ehrlichiae were detected in the A. variegatum ticks, although they are known to transmit Cowdria ruminantium, the agent of heart water in cattle. However, as these ticks are vectors but not reservoirs of C. ruminantium (Sonnenshine, 1993), our results do not exclude the presence of the disease in the studied area.

Although ehrlichiae are well established as veterinary pathogens, they are currently considered as causes of emerging diseases in humans (DUMLER & BAKKEN, 1998). According to our results, EHR16SD and EHR16SR primers may be useful in detecting ehrlichiae in ticks or other biological samples and may constitute epidemiological tools for studies of tick-borne ehrlichioses in animals and in humans.

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