Xenomonitoring of Different Filarial Nematodes Using Single and Multiplex PCR in Mosquitoes from Assiut Governorate, Egypt

Ahmed Kamal Dyab, Lamia Ahmed Galal*, Abeer El-Sayed Mahmoud, Yasser Mokhtar Department of Medical Parasitology, Faculty of Medicine, Assiut University, Assiut, Egypt

Abstract:

Abstract: Wuchereria bancrofti, Dirofilaria immitis, and Dirofilaria repens are filarial nematodes transmitted by mosquitoes belonging to Culex, Aedes, and Anopheles genera. Screening by vector dissection is a tiresome technique. We aimed to screen filarial parasites in their vectors by single and multiplex PCR and evaluate the usefulness of multiplex PCR as a rapid xenomonitoring and simultaneous differentiation tool, in area where 3 filarial parasites are coexisting. Female mosquitoes were collected from 7 localities in Assiut Governorate, were microscopically identified and divided into pools according to their species and collection site. Detection of W. bancrofti, D. immitis, and D. repens using single PCR was reached followed by multiplex PCR. Usefulness of multiplex PCR was evaluated by testing mosquito pools to know which genera and species are used by filarial parasites as a vector. An overall estimated rate of infection (ERI) in mosquitoes was 0.6%; the highest was Culex spp. (0.47%). W. bancrofti, D. immitis, and D. repens could be simultaneously and differentially detected in infected vectors by using multiplex PCR. Out of 100 mosquito pools, 8 were positive for W. bancrofti (ERI of 0.33%) and 3 pools each were positive for D. immitis and D. repens (ERI 0.12%). The technique showed 100% sensitivity and 98% specificity. El-Nikhila, El-Matiaa villages, and Sahel Seleem district in Assiut Governorate, Egypt are still endemic foci for filarial parasites. Multiplex PCR offers a reliable procedure for molecular xenomonitoring of filariasis within their respective vectors in endemic areas. Therefore, it is recommended for evaluation of mosquito infection after lymphatic filariasis eradication programs

Keywords:

Key words: Wuchereria bancrofti, Dirofilaria immitis, Dirofilaria repens, xenomonitoring, mosquito, multiplex PCR, Egypt

Published In: