1909

TEST AND NOT TREAT (TNT): A SAFE STRATEGY TO PROVIDE COMMUNITY-BASED TREATMENT WITH IVERMECTIN IN *LOA LOA* ENDEMIC AREAS

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Implementation of ivermectin (IVM)-based community treatment for onchocerciasis or lymphatic filariasis (LF) control/elimination has been delayed in Central Africa because IVM can induce serious adverse effects (SAE) in people with *Loa loa* microfilaremia exceeding 30,000 microfilariae (mf)/mL blood. The recent development of CellScope-Loa, a rapid field-friendly diagnostic tool to quantify *L. loa* mf in peripheral blood, permits point-of-care (POC) identification of the few "at risk" individuals for exclusion from IVM treatment (to prevent SAEs) while the rest of the population can be safely treated. This "Test and not Treat" (TNT) strategy was evaluated in Okola district (Central Cameroon) where onchocerciasis and loiasis are co-endemic and where IVM distribution was halted in 1999, after the occurrence of SAEs including fatalities. Between August and October 2015, 16,205 individuals from a target population (>5 years) of 22,800 (participation: 71.1%) were tested at the point of care (POC) using the CellScope-Loa; those with fewer than a pre-determined threshold (20,000 mf/mL) were given IVM (n=15,469), whereas those above this threshold (n=343, 2.1%) were excluded from IVM treatment, in addition to 167 pregnant women and 226 people in a poor state of health). Adverse events were closely monitored by local volunteers and mobile medical teams visiting each village 1, 2, 3 and 6 days after treatment. No SAE was observed. A total of 970 individuals (6.3% of the IVM-treated population) experienced mild adverse effects (itching, rash, headache, arthralgia, myalgia, fever) that resolved within one week. About half of adverse events occurred in individuals who had no Loa mf before treatment. The TNT strategy based on the CellScope-Loa is an extremely promising and practical approach to the safe implementation of large-scale IVM-based treatment for LF and onchocerciasis elimination in Loa endemic areas.

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THE MACROFILARICIDAL ACTIVITY OF A SINGLE DOSE OF IVERMECTIN, ALBENDAZOLE AND DIETHYLCARBAMAZINE AGAINST *WUCHERERIA BANCROFTI* IN CÔTE D'IVOIRE

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Current single dose treatments for lymphatic Filariasis (LF) have limited ability to kill adult worms. In a recent pilot study in Papua New Guinea we showed a single dose of co-administered ivermectin (IVM, 200ug/kg), diethylcarbamazine (DEC, 6mg/kg), and albendazole (ALB, 400mg, IDA) completely cleared microfilaria (mg) 1 year after treatment compared to 8% clearance with DEC/ALB. However, the effect of IDA on macrofilaria is not known. We used ultrasounds of the spermatic cord and inguinal lymphatic vessels immediately prior to treatment and 6 months later to compare the effects of two drug regimens on adult filarial worms in infected men in Côte d'Ivoire. The first group included 46 men treated with a single dose of IVM+ALB (IA, mean number of worms nests=3.2±1.4 [range 1-13]) and the other group included 28 men who received IDA. Number of worm nests was the same at baseline (IA=3.2±1.4 range [1-13], IDA=3.0±1.4 [1-8]). Thirty-six men treated with IA and 21 men treated with IDA underwent repeat ultrasound after 6 months. Worm nests were cleared more often after IDA (15 of 21, 71%) than after IA (9 of 36, 25%, P=0.0009). IDA also showed a reduction in nest size of 83%, compared to 9% in the IA group, as well as 95.3% clearance of mf compared to 28.6% clearance of mf in IA (P<0.0001). These results suggest that a single dose of IDA killed most adult W. bancrofti and that IDA is more effective against adult filarial worms than IA.

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NEXT GENERATION IMMUNOASSAYS PROVIDE ONE-STEP SPECIES-SPECIFICITY FOR THE DIAGNOSIS OF FILARIAL INFECTIONS AND *STRONGYLOIDES STERCORALIS IN* TRAVELERS AND IMMIGRANTS

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Antifilarial antibody testing in the evaluation of returned travelers and immigrants to North America has relied on IgG- and IgG4-specific responses to crude filarial extracts (BmA). The anti-BmA IgG response is highly sensitive (~100%), but suffers from relatively poor (50%) specificity. It also suffers from significant cross-reactivity with *Strongyloides stercoralis* (Ss) and cannot distinguish among the infecting filarial species. Conversely, the IgG4 anti-BmA antibody test is close to 100% specific but has sensitivities that range between 50%-70%. Of the 10173 CLIA-certified antifilarial antibody tests performed, 1809 (18%) filarial infections were diagnosed based on a positive IgG4 anti-BmA antibody response, and 4908 (48%) were excluded using an IgG anti-BmA test below the defined cutoff. Over the same period, filarial- (Ov16, Wb123, LL-SXP1) and Ss (SsIR, Ss-NIE)-species-specific recombinants have been identified and characterized. Each of these, when configured in a variety of single antigen IgG4-based immunoassay formats have demonstrated close to 100% specificity for the species of interest but with variable sensitivities depending on the antigen. Thus, to create an all-in-one assay for screening of returned travelers and immigrants where infections with filariae or Ss