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Letter to the Editor

Significant Association between Epilepsy and Presence of Onchocercal Nodules: Case-Control Study in Cameroon

Dear Sir:

The relationship between epilepsy and onchocerciasis has for a long time attracted the interest of neurologists, parasitologists, epidemiologists, and public health policy makers. Meta-analyses of community data have shown an ecological association between the two diseases[1]; however, most studies conducted at the individual level (case-control studies) led to inconclusive evidence on this association.[2] In the latest study to date, Kaiser and others[3] conducted a case-control analysis in a group of subjects living in a Ugandan onchocerciasis focus.[3] A total of 38 patients with epilepsy (PWE) were matched by time and place of residence and gender (except for 5 patients) to 38 control individuals. Kaiser and others[3] tested the hypothesis that onchocerciasis is related to epilepsy by comparing three indicators of *Onchocerca volvulus* infection between the two groups of individuals: presence of skin microfilariae and presence and number of subcutaneous nodules. Kaiser and others[3] found that the presence of microfilariae in the skin of epilepsy patients was insignificantly elevated compared with controls, but because most of their study subjects had received ivermectin 10–12 months before the study, the comparison of infection rates based on skin biopsies may lack robustness. Besides this finding, Kaiser and others[3] observed a trend for both a higher proportion of nodule carriers ($P = 0.065$, Mantel–Haenszel c^2 test) and a higher mean number of nodules per individual ($P = 0.061$, Kruskal–Wallis test) in the PWEs than controls. In the discussion section of their article, Kaiser and others[3] were eager to know whether similar observations had been made during the case-control study that we conducted in central Cameroon in 2001 of 144 ivermectin-naïve individuals.[4] In our article, we showed that the skin *O. volvulus* microfilarial density was more than two times higher in the 72 PWEs than in their 72 controls matched on age, sex, and village of residence, but we did not provide comparisons based on nodule palpation.[4] After the call for information in the work by Kaiser and others,[3] we reanalyzed our database, which also included information on subcutaneous nodules. In our study, the number of individuals showing at least one palpable nodule was 31 (43.1%) in the control group and 49 (68.1%) in the PWE group. McNemar test of proportion for paired samples showed that onchocercal nodules were more frequent in PWEs than controls ($P = 0.0055$). From this difference, we calculated that individuals with at least one nodule have more than two times the risk of belonging to the PWE group than individuals showing no palpable nodules (odds ratio = 2.5, 95% confidence interval = 1.24–5.36). In some villages included in our study, the nodules were not only searched for their presence versus absence but also carefully counted; thus, the total number of nodules per individual was available for a subset of 22 pairs of persons. The mean number of nodules per individual was lower in controls (mean = 0.82, standard deviation = 1.30) than PWEs (mean = 1.14, standard deviation = 1.04), but *t* test for paired samples did not show statistical significance ($P = 0.1872$). These results corroborate the trend observed in the work by Kaiser and others,[3] which suggests that the presence of onchocercal nodules is associated with epileptic status. Because microfilarial density is expected to be higher in persons harboring palpable onchocercal nodules than in apparently nodule-free people,[5] our observations support the hypothesis that intensity of infection with *O. volvulus* is involved in the pathogenesis of onchocerciasis-related epilepsy.

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