

Abstract

Relationships between hemoglobin level and *S. hematobium*, hookworm, and malarial infection before and six months after metrifonate treatment were studied in Kenyan primary school children in an area where anemia, *S. hematobium* and hookworm are common (prevalences 61%, 46%, and 95%, respectively) and malaria is holoendemic. The mean hemoglobin level in children from one school, both with and without *S. hematobium* infection (n = 250), was significantly lower in children with higher *S. hematobium* egg counts, heavier hookworm infections, positive *Plasmodium* slides, and larger spleens. All children with light-moderate *S. hematobium* infection (1-500 eggs/10 ml adj) in four schools were examined (Exam 1), allocated at random to either placebo (MIP, n = 198) or metrifonate treatment (MIT, n = 202) groups, treated, and examined again six months later (Exam 2). Hemoglobin levels rose significantly in both groups between exams, but the rise in the MIT group was 30% higher than in the MIP group (1.3 vs. 1.0 g/dl, P less than 0.014). The increase in hemoglobin level in the MIT group was significantly and positively correlated with decreases between exams in *S. hematobium* and hookworm egg counts and with higher malarial parasite counts at Exam 1 (Pearson r's 0.21, 0.20, 0.20, respectively, P less than 0.01). A stepwise multiple regression equation using hemoglobin rise between exams as the dependent variable showed that decreases in *S. hematobium* and hookworm egg counts were equally important determinants of hemoglobin rise and that malarial parasite count was almost as important as the changes in intensities of the helminth infections. These results show that treatment for *S. hematobium* with metrifonate can increase hemoglobin levels in children in an area where *S. hematobium* and anemia are common. They also emphasize the importance of measuring multiple parasitic infections and using multivariate statistical techniques such as multiple regression analysis in order to define the relationships between parasitic infections and morbidity.