esponses to Schistosoma mansoni: the influence of epitopes shared between different life-cycle stages on the response to the schistosomulum

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Abstract:

Sera from 120 Kenyan schoolchildren who were infected with S. mansoni were individually examined, using an enzyme-linked immunoabsorbent assay (ELISA), for the presence of IgG and IgM antibodies reactive with antigens derived from adult worms, the outer membrane of the schistosomulum or from the parasite egg. In addition, antibodies against more purified egg antigens, an egg stage-specific glycoprotein preparation and a polysaccharide egg antigen known to share epitopes with the schistosomular surface were measured in ELISA, as were antibodies reactive with trichloroacetic acid-soluble and periodate-insensitive antigens derived from the outer membrane of schistosomulum and antigens shed when schistosomula were cultured in vitro. IgG subclass responses to the unfractionated egg antigen were also measured. The results from each of these assays were compared with the results of each other assay and with the number of parasite eggs excreted by each child, using Spearmans rank correlations. These comparisons revealed a number of statistically significant positive correlations. IgG4 anti-egg antibodies correlated better with intensity of infection than did other IgG subclasses. Total IgG responses against polysaccharide antigens did not correlate with intensity of infection as well as IgG responses against other antigens; epitopes shared between the schistosomulum surface and the adult worm were different to those shared with the parasite egg; and, there was antigen-directed restriction of IgG subclass responses to some egg and adult worm antigens which carried these shared epitopes. It is argued that this might have a qualitative effect on the nature of the antibodies directed against the schistosomulum by infected individuals and therefore have important consequences for the outcome of a subsequent exposure to infection with the same parasite.