Primary structure of and immunoglobulin E response to the repeat subunit of gp15/400 from human lymphatic filarial parasites.

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Abstract

We have isolated and sequenced clones encoding the repeated subunit of the surface-associated glycoprotein gp15/400 from the two nematode species predominantly responsible for lymphatic filariasis in humans: Brugia malayi and Wuchereria bancrofti. The amino acid sequence of the 15-kDa subunit, derived from the nucleotide sequence of the gene fragment from B. malayi, is identical to that previously reported for B. pahangi, whereas the derived W. bancrofti protein sequence differs in only 7 of 132 residues. The identity of the protein in the two Brugia species allowed us to use a recombinant from B. pahangi to examine the serological response of adult Indonesian subjects infected with B. malayi. The polymerase chain reaction-amplified subunit was expressed in Escherichia coli via the pDS56/RBS11 plasmid and purified by nickel-chelating chromatography. A significant proportion of individuals produced antigen-specific immunoglobulin E (IgE). This was most pronounced in the individuals with elephantiasis, with 14 of 15 showing elevated titers and a mean of 3.2 ng of specific IgE ml\(^{-1}\). Only 2 of 15 microfilaremic individuals possessed elevated titers of specific IgE, with a mean of 0.045 ng ml\(^{-1}\) for the group as a whole. Asymptomatic amicrofilaremic residents showed approximately equal numbers of responders (defined as having a value in the radioimmunoassay greater than two standard deviations above controls) and nonresponders, with a group mean of 1.2 ng of antigen-specific IgE ml\(^{-1}\).