Detection of IgM antibody against phase 1 flagelin for diagnosis of Salmonella paratyphi A infection

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Abstract

Salmonella paratyphi A is a pathogenic bacteria that causes paratyphoid fever. The current laboratory diagnostic techniques available are unsatisfactory. To improve diagnosis, plasmid encoding S. paratyphi A phase 1 flagelin gene nucleotide positions 460-890, pSK-8E, has been constructed. The recombinant protein expressed from pSK-8E has been used to develop an indirect enzyme-linked immunosorbent assay for IgM antibody detection. Sera from patients with hemoculture positive for S. paratyphi A, S. typhi, other gram-positive and gram-negative bacteria, dengue hemorrhagic fever and the healthy control subjects have been tested. The calculated diagnostic sensitivity, specificity, efficacy, positive and negative predictive values are 56.8%, 98.8%, 92.0%, 90.6%, 92.1%, respectively. The sensitivity is not satisfactory, therefore, data about the time taking the serum samples from the patients and the IgM levels are analysed. It has been shown that sensitivity of the test can be increased up to 83.3% if the serum have been obtained 9-12 days after onset of fever. The serum obtained earlier or later (14days) gave only 34.8% and 66.6% sensitivity, respectively. This result suggests that the developed IgM antibody detection assay is powerful for diagnosis of S. paratyphi A infection when the serum samples have been taken at the appropriate time.

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