INVESTIGATION OF A RECURRENT CASE OF SALMONELLOSIS DUE TO SALMONELLA BOVISMORBIFICANS AND SALMONELLA MATOPENI USING PULSED-FIELD GEL ELECTROPHORESIS ANALYSIS AND ANTIBIGRAMS


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ABSTRACT: A retrospective study on a case of recurrent salmonellosis in a 3 month-old child due to Salmonella bovismorbificans and S. matopeni was carried out using pulsed field gel electrophoresis (PFGE) and antibiogram susceptibility analysis. PFGE clearly distinguished the two serovars and that the recurrent infection was shown to associated with variant forms of S. bovismorbificans. The chromosomal changes detected among the sequential isolates of S. bovismorbificans appeared to be associated with varying antibiogram patterns. The study also showed that the recurrent infection in the patient could be related to prolonged antibiotic therapy. (JUMMEC 1999; 2:103-109)

KEYWORDS: Recurrent salmonellosis, PFGE typing, Antibiograms, Salmonella bovismorbificans.

Introduction

Acute gastroenteritis caused by Salmonella spp. remains a major global public health problem affecting millions of children under 5 years of age. The most common agent of non-typhoidal salmonellosis is S. enteritidis (1). However, outbreaks of salmonellosis caused by S. bovismorbificans do occur although they are relatively rare (2,3,4). Koe et al. (4) (1991) in their study of 97 children with acute gastroenteritis showed that the most common bacteria isolated was food-poisoning Salmonella (25.8%). Among these 20 Salmonella, 5% was S. bovismorbificans. In another study by Jegathesan (1984), S. bovismorbificans accounted for 2% of the serotypes isolated in Malaysia (3). A survey of Salmonella spp. isolated from stools of children admitted to the University Hospital Kuala Lumpur from 1994 to 1996 showed presence of S. bovismorbificans and S. matopeni in 19 (11%) and 9 (5%) out of 173 isolates respectively (1).

There has been great interest in the application of molecular subtyping techniques to examine multiple isolates obtained sequentially from an individual patient (5,6). This may help to differentiate between relapsing infection with the same strain or reinfection with a new strain. Thus, such studies are of value in the epidemiology of human salmonellosis. The objective of this study was to apply the technique of PFGE and antibiograms to investigate the genetic variability of sequential isolates of S. bovismorbificans and S. matopeni from a 3 month-old child admitted to the University Hospital Kuala Lumpur. In addition, this study also enabled us to assess any molecular changes in the genome occurring during relapsing infection.

Methods and materials

Case report. A retrospective study on thirteen sequential isolates obtained from a 3-month old female child between July 22 to September 2, 1994 was carried out. The child was admitted to the University Hospital, Kuala Lumpur with fever, vomiting, diarrhoea, and just an hour before admission, she had an episode of generalised fits. The first isolate was obtained on July 22, followed by 12 subsequent isolates (tables 1,2). The patient was treated with 5 different antibiotics. Antibiotic therapy was stopped on September 21 and subsequent stool samples became culture-negative. The patient was finally discharged on September 29 (Table 1).

Serotyping and identification of the Salmonella spp. were performed by using standard microbiological procedures in the Department of Medical Microbiology, Faculty of Medicine, University of Malaya. All isolates were tested for susceptibility to antibiotics by standard disk diffusion procedures for measuring resistance according to

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