FOOD POISONING DUE TO SALMONELLA ENTERICA SEROTYPE WELTEVREDDEN IN MANGALORE

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Abstract

An outbreak of food poisoning due to Salmonella enterica serotype Weltevreden (S.weltevreden) involving 34 students has been reported from a tertiary care hospital in Mangalore. The symptoms developed 8-10 hours, after consuming a non-vegetarian dish, probably fish, from an outside caterer. The identity of the organism was confirmed at Central Research Institute, Kasauli. This report emphasizes the geographical distribution of this organism in the Coastal Karnataka region. S.Weltevreden may be overlooked due to the biochemical similarity to S. Paratyphi B & S. Typhimurium.

Key words: Food poisoning, S.Weltevreden, outbreak

Introduction

The significant role of S. weltevreden in food poisoning has been well documented. The global Salmonella survey conducted by World Health Organization revealed that this organism is the most common cause of non-typhoidal Salmonellosis in the South East Asian Regions (SEAR) and Western Pacific region. It is frequently isolated from sea food, meat, poultry products and water. Prevalence of S. weltevreden was detected in domestic animals like pigs, chicken and ducks in Vietnam and also the most common serovar isolated from humans in Thailand and Malaysia. According to the Salmonella food poisoning data base during 1989-99, S. Weltevreden was the second common pathogen encountered, next to S. enteritidis.

We report here an outbreak of food poisoning, due to S. weltevreden, in a ladies nursing hostel involving 34 students. This report from a tertiary care hospital in Mangalore, the western coastal Karnataka, South India, emphasizes the geographical distribution of this organism in this part of Karnataka State. It also aims at familiarizing Microbiologists with the organism.

Case Report

Thirty four female Nursing students developed symptoms of food poisoning like vomiting, diarrhoea, abdominal pains and fever, 8-10 hours after consumption of a non-vegetarian dish from an outside caterer. A few of them developed signs of nausea and headache also. The stool samples were directly inoculated on Blood agar, Macconkeys agar, Deoxycholate Citrate Agar and for enrichment technique in Selinite F broth and Alkaline Peptone Water. Sub culture from Selenite F broth yielded motile, gram negative bacilli which grew as Non Lactose Fermenting colonies on Mac Conkey’s agar and black centered colonies on Deoxycholate Citrate Agar media. Biochemically, this organism produced catalase, reduced nitrate, fermented glucose, mannitol and xylose with acid and gas, utilized citrate, produced abundant H₂S. On Triple Sugar Iron medium, it showed acid butt, alkaline slant, with abundant H₂S production and gas suggestive of S. Paratyphi B or S. Typhimurium. This isolate could grow as black colonies with a metallic sheen on Wilson & Blair medium. The same organism was isolated in pure culture from 12 cases and mixed culture from seven cases.

The isolates agglutinated with group specific Salmonella Poly ‘O’(A-G) antiserum (Remel Europe Ltd. Dartford, Kent, UK), but not type specific flagellar antisera of S. Typhi, S. Paratyphi A or S. Paratyphi B and reported as Non Typhoidal Salmonella. The Antimicrobial Susceptibility testing of this organism was performed by Kirby Bauer Technique according to the Clinical Laboratory Standard Institute (CLSI) guidelines using commercial discs from HI- MEDIA (Pvt. Ltd.), Mumbai. The isolates were found sensitive to Ampicillin, Amoxycillin- Clavulanic acid, Ciprofloxacin, Cefotaxime, Ceftriaxone Chloramphenicol, Amikacin, Co-trimoxazole and Nalidixic acid. Out of the 19 strains of biochemically similar Salmonella isolated, randomly picked up six strains were sent to Central Research Institute, Kausauli for serotyping and was confirmed as S. Weltevreden 3,10:r:z6.

Prompt administering of appropriate therapy including oral rehydration helped in speedy recovery.

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Discussion

S. Weltevreden is gaining global importance as a significant pathogen causing Non typhoidal Salmonellosis. This serovar was found to be responsible for less than 4% of total human Salmonellosis before 1970. However, it constituted 29.1% of all Salmonella infections in India in 1972. Similar findings were observed in other countries also. Sood and Basu reported the phage typing of 946 strains of S. Weltevreden, from different states of India during 1958-74, using six typing phages. According to them, Phage type 5 was the most predominant type, and types 2, 7 were found exclusively in India. Extensive studies were conducted regarding the surface structures, toxicity, mechanism of virulence and molecular aspects of S. Weltevreden by various workers. 

Pathogenicity of S. Weltevreden from the Indian Subcontinent is confined to the occasional reports in the medical literature. The available data does not provide a true index of regional distribution of this organism in the recent past. To the best of our knowledge, this is the second documented report of human infection due to S. Weltevreden from Karnataka State, the first one being, a report from Hubli, regarding two cases of neonatal sepsis due to this organism. Two outbreaks of food poisoning due to S. Weltevreden were reported earlier from India.

The food responsible for the present outbreak was not possible to trace, as it was provided by an outside caterer. For the present outbreak was not possible to trace, as it was provided by an outside caterer. The observation that S. Weltevreden was the most common isolates from seafood and a water related source was suggested for this serovar, the probability of fish being the causative food is more likely. Outbreaks due to this organism were reported during summer season. This outbreak also took place in the month of April, the summer season, in Coastal Karnataka.

All the strains isolated were found to be sensitive to the routinely employed drugs for Salmonellosis. A report regarding the emergence of resistance to antimicrobial agents like Ceftriaxone, amikacin, Kanamycin, appears to be an alarming signal S. Weltevreden, may be over looked due to the biochemical similarity to S. Paratyphi B or S. Typhimurium. Hence any Salmonella species isolated from clinical specimens, especially food poisoning should be subjected to serotyping to establish proper identity, to assess the magnitude of infection and to know the new pockets in geographical distribution. The present study gives an insight into the potential role of S. Weltevreden in food poisoning in this part of Karnataka. Future studies should be extended to identify the possible sources of human infection and to define the prevention strategies. As S. Weltevreden is widely distributed in domestic and aquatic animals, improvement in the poultry, fish and meat processing industries can significantly reduce the incidence of non typhoidal Salmonellosis due to this organism in the country.

References


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