ISOLATION OF SALMONELLA ENTERICA SEROTYPE ISANGI FROM A SUSPECTED CASE OF ENTERIC ENCEPHALOPATHY

Nontyphoidal salmonella species are thought to be potentially infectious to humans and many are documented to cause human diseases. We isolated S. Isangi from the blood of a 30-year-old man with complaints of diarrhoea, fever, and altered sensorium. The serotype of the isolate was confirmed at National Salmonella Centre (Vet.), Division of Bacteriology and Mycology, Indian Veterinary Research Institute, Izzatnagar, India. The isolate was not an extended spectrum beta-lactamase (ESBL) producer and the patient responded well to ceftriaxone. We reviewed the literature concerning infections caused by salmonella; however, did not find any report related to S. Isangi infection in human beings from India.

Key words: Non salmonella, salmonella, Salmonella Isangi

Nontyphoidal salmonellae typically cause intestinal infections manifesting with diarrhoea, fever, and abdominal cramps that may last a week or longer.1 Bacteremia is a serious and potentially fatal outcome of gastrointestinal illness caused by nontyphoidal salmonellae. Among them, S. Isangi is a lesser known enteric pathogen having a propensity to invade the blood stream and capable of acquiring multidrug resistance, which may pose serious problems in management.2,3 S. Isangi isolates producing Extended Spectrum β-Lactamase (ESBL) are also reported in literature and therefore, they need careful attention.2,4

Case Report

A 30-year-old man presented to our hospital on 19th December, 2006, with a 6-day history of high-grade fever with chills, loose stools, generalized weakness, and one day history of altered sensorium. On examination, the patient was febrile (temperature, 102 ºF); pale, with a pulse rate of 100/min, blood pressure of 110/70 mm Hg, and respiratory rate of 46/min. There was no icterus or lymphadenopathy. Abdominal examination showed mild hepatomegaly. There were no signs of meningeal irritation. Cranial nerve and sensory examination showed no abnormalities. Fundus examination showed early papilloedema. The case was presumptively diagnosed as enteric encephalopathy with paralytic ileus based on history and clinical findings, and investigated further. He was empirically started on injectable ceftriaxone (2 gm, twice a day), gentamicin (80 mg, thrice a day) and metronidazole (100 ml, thrice a day).

On the same day, abdominal X-ray revealed slightly distended bowel loops in AP-supine view, and ultrasonography confirmed hepatomegaly. There were no significant findings in the CT scan of the abdomen. Blood examination showed a total leucocyte count of 3800/mm³ with 68% polymorphs. ESR was 25 mm at the end of 1st hour by Westergren’s method. Blood urea and serum creatinine were 36 mg/dL and 1.1 mg/dL, respectively. CSF analysis was as follows: sugar, 82 mg/dL; protein, 25.6 gm/dL; nucleated cells, 3; and RBCs, nil. Urine examination showed 6–8 pus cells and 3–4 RBCs, presence of albumin and no bacterial growth. Quantitativeuffy coat test (QBC, Becton Dickinson) for malarial parasite was negative.

Blood was collected under sterile precautions immediately after the clinical diagnosis and inoculated into brain heart infusion broth. Subcultures were made after 24 hours on MacConkey agar and chocolate agar. The media were incubated overnight at 35 ºC aerobically. Nonlactose-fermenting colonies grew on MacConkey agar. The organism was a motile, Gram-negative rod. It was catalase positive, oxidase negative, and reduced nitrate. Triple sugar iron medium showed alkaline slant and acid butt with gas, but no H₂S production. Indole test was negative, methyl red positive, citrate was utilized. Voges-Proskauer and urease tests showed negative results. Glucose was fermented with both acid and gas. The isolate agglutinated with poly O (A-E) antiserum (King’s Institute of Preventive Medicine, Guindy, Chennai). The isolate was identified and reported as S. Paratyphi A.

Antibiotic susceptibility of the bacterium was tested by the standard disk diffusion method as per Clinical Laboratory Standards Institute guidelines.5 The isolate was resistant to ampicillin (10 µg), cefpodoxime (10 µg), and cefepime (30 µg), but sensitive to amoxicillin-clavulanic acid (20/10 µg), ceftazidime (30 µg), ceftriaxone (30 µg), imipenem (10 µg), ofloxacin (5 µg), ciprofloxacin (5 µg), cotrimoxazole (1.25/23.75 µg), chloramphenicol (30 µg), cefotaxime (30 µg), cefoxitin (30 µg), cefuroxime (30 µg), and aztreonam (30 µg). All disks were purchased from Hi-Media, Mumbai. The strain was negative for ESBL tested by disk potentiation method using ceftazidime (30 µg) and ceftazidime-clavulanic acid disks (30/10 µg).5

The isolate was sent to National Salmonella Centre (Vet.), Division of Bacteriology and Mycology, Indian Veterinary Research Institute, Izzatnagar, India for further identification where it was identified as S. enterica serotype Isangi (antigenic formula - 6, 7:d:1, 5).

After the culture and sensitivity reports became available, intravenous ceftriaxone (2 gm, twice daily) was continued for 3 days and switched to 200 mg, orally twice daily for 10 more days. On complete recovery, patient was discharged on 28th December, 2006. He was advised to continue oral...
infection

Key words: Phaeoacremonium parasiticum, subcutaneous infection in India.

responded well. We report this case, being rare and treated by intravenous amphotericin B and itraconazole to which she responded well. The patient was treated with surgical debridement followed by intravenous amphotericin B and itraconazole to which she responded well. The patient was treated with surgical debridement followed by intravenous amphotericin B and itraconazole to which she responded well.

Discussion

To the best of our knowledge, this is the first documented report of human infection caused by S. Isangi from India. Two isolates of S. Isangi have been reported, one from a worker’s palm and the other from a table in a pig slaughter house in Ranchi, India.[6] We searched for English language manuscripts published on ‘any date’ through PubMed, Google Scholar, ScienceDirect, MDConsult, Ovid, QMed, MedInd, and Medknow. The search terms used were salmonella, nontyphoidal salmonella, S. Isangi, isangi, enteric fever, and food poisoning with and without the combination of the term India. However, we could not come across any report of isolation of this pathogen from human infection in India.

Increasing number of ESBL producing nontyphoidal salmonella isolates, particularly S. enterica serotype Typhimurium and S. enterica serotype Isangi are of considerable importance.[2,3] However, the isolate from our case was not an ESBL producer.

Awareness of the likelihood of uncommon salmonella causing human infection should prompt identification of all salmonella strains up to species level and preferably serotype identity. If this is not possible at the local laboratory, such strains should be sent to reference centers. The genus salmonella has approximately 2500 serotypes being potential pathogens. Therefore, laboratories should make a conscious effort to subspeciate all salmonella isolates. This will help us to understand the distribution of various serotypes prevalent in our country. Careful attention needs to be paid to species having potential to acquire ESBL enzyme.

References


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