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Asian Pacific Journal of Tropical Medicine

journal homepage: www.elsevier.com/locate/apjtm

Document heading doi:

Salmonella enteritidis from a case of fever with thrombocytopeniaShamma Arora^{1*}, Naveen Gupta², Ashwani Kumar³, IR Kaur³¹Indraprastha Apollo Hospital, India²Zoonosis Division, National Center for Disease control (NCDC), Delhi, India³UCMS & GTB Hospital Delhi, India

ARTICLE INFO

Article history:

Received 6 December 2010

Received in revised form 27 January 2011

Accepted 15 February 2011

Available online 20 April 2011

Keywords:

Salmonella enterica serotype Enteritidis

Thrombocytopenia

ABSTRACT

Non typhoidal *Salmonella* species are thought to be potentially infectious to humans. We isolated *Salmonella enteritidis* from a 10-year-old boy with fever and thrombocytopenia. We reviewed the literature concerning infections caused by *Salmonella* but we could not find any such case report from India.

1. Introduction

Salmonella has three clinical presentation: self limiting gastroenteritis; a systemic syndrome (enteric or typhoid fever); bacteremia with focal infection. Bacteraemia caused by non typhoidal species is rare. Hematogenous infections can cause focal infections; but unusual manifestations occur more often when predisposing factors such as T cell defect, hemolytic disorder (sickle cell disorder, malaria) or trauma are present[1]. Hematological abnormalities with typhoid fever include leucopenia & anemia[2]. In the present case the patient presented with fever and rash. At the time of admission the patient had thrombocytopenia & *Salmonella enteritidis* (*S. enteritidis*) was isolated from blood culture. We reported the present case because as far as our knowledge there was no such case report from India. Authors have reported association of *Salmonella enterica* in a case of neutropenia, thrombocytopenia, and acute renal failure with carotid artery arteritis[3].

2. Case report

A 10-year-old boy presented in the paediatric department of Guru Tegh Bahadur Hospital with fever, reduced appetite, pain per abdomen, vomiting & loose stools for 6–7 d and rash all over the body for one day. The past history of the child was not significant. The child was immunized for the age.

On examination the child had hepatosplenomegaly. On blood examination the hemoglobin was 10.4 g/100 mL, total leukocyte count was 7 000/mm³. Peripheral blood smear examination revealed 65% neutrophils, 24% lymphocytes, 6% monocytes & 5% eosinophils and was negative for malarial parasite. The tests for malarial antigen were also negative. Platelet count was 70 000/mm³. *S. widal* titres were To ≥ 240 Th, Ah, Bh were < 60. Dengue serology was negative. On blood culture non lactose fermenting gram negative motile bacilli were isolated which were catalase positive, oxidase negative and reduced nitrate. Triple sugar iron medium showed alkaline slant with acid butt with gas production. Indole test was negative, methyl red positive and citrate utilization positive. Voges–Proskauer test was negative, urease negative, lysine decarboxylase positive, ornithine decarboxylase positive, arginine dihydrolase positive. Glucose was fermented with gas production, mannitol fermentation positive, lactose and sucrose

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fermentation negative, On serotyping the isolate agglutinated with poly O (A–G), O 9 & Hg. Based on the results either the isolate was *S. enteritidis* or *S. dublin*; which was sensitive to ceftriaxone, chloramphenicol, ciprofloxacin. We initially presumed that the patient was suffering from typhoid fever. The patient was put on I/V ceftriaxone for three days and then switched on to ciprofloxacin 500 mg twice daily for 10 d. The patient was symptomatically recovered with in 3 d. The platelet count was >100 000 after 5 d of starting the treatment. On stool culture no *Salmonella* grown. After 10 d a repeat blood sample was requested for widal test and the titres were same as at the time of admission leading to the conclusion that the patient had isolated fever with thrombocytopenia as the presenting feature.

Later on the results were analysed by API 32 E and the report was *Salmonella* spp. & the next choice being *Salmonella* Paratyphi A. Then the sample was analysed by VITEK 2. The report was: *Salmonella* spp.

The sample was sent to defence research & development establishment centre Gwalior, Madhya Pradesh where 16S rDNA sequencing results revealed the isolate was *S. enteritidis*.

3. Discussion

Non typhoidal Salmonellosis has been recognized as important cause of bacteraemia. To the best of our knowledge this is the first case of isolation of *S. enteritidis* in a case of isolated fever with thrombocytopenia from India although there is a case report of three children with *Salmonella* typhi bacteremia presenting with fever and urticaria, thrombocytopenic purpura and meningitis[4]. This patient is a case of primary bacteraemia[5] but with no hematological manifestations except for fever. Isolated thrombocytopenia as presenting feature in case of typhoid from Turkey has been reported[6]. Studies have shown that *Salmonella* can enter lymphatics after ingestion and can survive and replicate within macrophages and then disseminate to reticuloendothelial organs such as spleen and bone marrow. Thrombocytopenia may be associated with haemophagocytic histiocytes in bone marrow[2,7].

Although certain viral infections cytomegalovirus, H5N1 human immunodeficiency virus and recently hantavirus have been seen to be associated with thrombocytopenia and fever as co morbid conditions[8–12]. But in our case initial positive laboratory finding was increasing CRP & thrombocytopenia clinching to bacterial infection as a cause of thrombocytopenia. Therefore in endemic areas for salmonellosis in such a case the patient can be put on empirical antibiotics rather than waiting for exact blood culture report to come. Besides this clinician should also keep *S. enteritidis* as a causative agent in differential diagnosis so that adequate antibiotic coverage could be given in time.

As far as diagnosis is concerned serotyping with PCR is still the gold standard method for identification of *Salmonella* spp. API 32E & VITEK 2 is being used nowadays but still they

need standardization or rather the results to be confirmed by serotyping.

Conflict of interest statement

We declare that we have no conflict of interest.

Acknowledgements

The authors wish to thank Defence Research & Development Establishment, Gwalior (Madhya Pradesh; India) for carrying out sequencing of the isolate.

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