Journal of Advances in Medicine and Medical Research

31(10): 1-5, 2019; Article no.JAMMR.53712
ISSN: 2456-8899
(Past name: British Journal of Medicine and Medical Research, Past ISSN: 2231-0614, NLM ID: 101570965)

Flummoxed Presentation of Paratyphoid Fever: A Case Report

Shadan Akhtar[1*], Lenah Bashir[1], Bashir A. Fomda[1] and Yawar Nissar[2]

[1]Department of Microbiology, Sher - i - Kashmir Institute of Medical Sciences, India.
[2]Department of Plastic Surgery, Sher - i - Kashmir Institute of Medical Sciences, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMMR/2019/v31i1030329
Editor(s):
(1) Dr. Sinan INCE, Department of Pharmacology and Toxicology, University of Afyon Kocatepe, Turkey.
Reviewers:
(1) Sri Winarsih, Universitas Brawijaya, Indonesia.
(2) Mustapha Umar, Nigerian Institute of Leather and Science Technology, Nigeria.
(3) Pavlo A. Dyachenko, L.V. Gromashevsky Institute of Epidemiology and Infection Diseases of NAMS of Ukraine, Ukraine.
Complete Peer review History: http://www.sdiarticle4.com/review-history/53712

Case Study

Received 04 November 2019
Accepted 07 January 2020
Published 18 January 2020

ABSTRACT

Enteric fever remains a major disease burden in developing countries. Paratyphoid fever has been described as a less severe infection than typhoid fever. *Salmonella* serovar Paratyphi A has been however seen as an increasing problem in many areas in Asia and can cause a disease with severity proportional to that of *Salmonella* serovar Typhi.
Among Asian countries China, India, Indonesia, Pakistan, and Vietnam are considered to be endemic for typhoid.
This case describes female infant presenting with long standing lymphadenopathy in the cervical and axillary area. Considering the duration of clinical feature she was investigated for Tuberculosis and Hodgkins lymphoma. The extensive course of investigations ruled out both. Sampling of gastric aspirate in pursuit of diagnosing tuberculosis incidentally revealed *Salmonella* Paratyphi B repeatedly as the cause of the generalized lymphadenopathy.This is a first report which describes such a case in the best of our knowledge.

Keywords: Paratyphoid fever; Salmonella Paratyphi B; enteric fever.

**Corresponding author: E-mail: shadan.akhtar@gmail.com;*

1. INTRODUCTION

Enteric fever remains a major disease burden in developing countries. It is caused by *Salmonella* enterica serotype Typhi (*Salmonella* Typhi) and *Salmonella* enterica serotype Paratyphi A, B or C (*Salmonella* Paratyphi A, B or C) [1].

It is rampant in India where proper sanitation remains an unresolved issue. In Pakistan and India the incidence rates are estimated to be 40-50 cases per 1,000,000 population [2].

Among Asian countries China, India, Indonesia, Pakistan, and Vietnam are considered to be endemic for typhoid [3].

Paratyphoid fever has been described as a less severe infection than typhoid fever. *Salmonella* serovar Paratyphi A has been however seen as an increasing problem in many areas in Asia [4,5] and can cause a disease with severity proportional to that of *Salmonella* serovar Typhi [6].

Salmonella enterica serotype Paratyphi B has rarely been reported as a cause of severe disease [7].

A review of literature on *Salmonella* Paratyphi B as a cause of generalized lymphadenopathy with no other distinguished feature revealed no results. *Salmonella* species (spp) though has been reported occasionally associated to cervical lymphadenitis in older children. To the best of our knowledge this is the first case in world literature of such a presentation in an infant at 6 months of age with such an extension of the illness to two years of age where blood cultures did not yield any positive results.

2. CASE REPORT

Herein we present a case of a female child who presented to the pediatric outpatient department. She was second in birth order, born by normal vaginal delivery with normal perinatal history. At 6 months of age she presented with swellings in the neck area. On physical examination she was found to have lymphadenopathy in the cervical and axillary area. On detailed physical examination it was observed that she had a scar at the site where she had received a BCG injection at birth. Considering the ambiguity of clinical features and the endemicity of TB in our region she was labeled as a case of BCG adenitis and advised to take anti tuberculosis treatment (ATT) though there was no history of tuberculosis in the family.

The patient returned to the treating pediatrician after her first birthday day. Six months after receiving ATT (rifampicin & isoniazid). This time she came with generalized lymphadenopathy for the past one month. She did not complain of fever, night sweats, rash, bleeding from any site, vomiting, weight loss or any abnormal bowel or bladder movements.

On present examination, lymph nodes of the cervical area, post auricular area, axillary area, and inguinal area were palpable, non-tender, mobile, and non- erythematous on both sides with sizes approximately ranging from 1.5 to 3 cm. She was developmentally normal achieving all milestones with age till date.

Her hemogram revealed:

Hemoglobin 8.8 g/dl [Normal range 13-16.5 g/dl]; WBC $20x10^3$/µL (Neutrophils 67%, Lymphocytes 27%) [Normal range WBC 4-10 x 10^3/µL, Neutrophils 40-75%, Lymphocytes 20-45%]; Platelets 525 x 10^3/µL [Normal range 150-450 $x10^3$/µL] ; ESR 48 mm [Normal range 26 mm in first hour]. Chemistry profiles showed the following: aspartate transaminase (AST) 23 U/L [Normal range 0-45U/L], alanine aminotransferase (ALT) 18 U/L [Normal range 0-45 U/L], alkaline phosphatase (ALP) 183 U/L [Normal range 30-141U/L]. Peripheral blood film was negative for abnormal cells, reticulocytes were 1.38% [Normal range 0-2%].

Contrast enhanced computed tomography (CT) of the chest showed unremarkable study. Blood samples were sent for cultures and serologies.

A screening ultrasound of the abdomen revealed retroperitoneal and mesenteric lymphadeno-pathy. These findings all the more pointed towards lymphoma or a tubercular aetiology.

Excision biopsy of cervical lymph node was performed in an endeavor to come to a conclusion, which was send for histopathology and culture.

Initial histopathology report was inconclusive which showed thickened capsule with cortical hyperplasia showing polymorphic population of lymphoid cells. Reid Sternberg cells were not seen. Some cells were large with prominent

nucleus. Many clear cells and eosinophils were also noted pointing towards exclusion of Hodgkins Lymphoma by Immunohistochemistry. Final Immunohistochemistry results excluded the possibility of Hodgkins Lymphoma as CD30 was negative. The report was in favour of reactive paracortical hyperplasia with focal acute inflammation.

Rickettsial serology was also carried out in view of negative test results. PCR on EDTA blood sample for Rickettsia Typhi, Rickettsia conorii, Orientia tsutsugamushi were all negative.

In a bid to exclude tuberculosis, gastric aspirate was evaluated by Gene expert and also subjected to Ziehl Neelsen staining, Mantoux test was also done.

Fine needle aspirate of the cervical lymph node was also send for gene expert, Zeihl Neelsen staining, gram staining and culture. Tuberculosis was excluded as the above mentioned battery turned out to be negative.

Blood, urine and stool cultures were all sterile. A 16S rRNA PCR was also carried out on the blood sample yielding negative results.

Incidentally the residents on duty also send the gastric aspirate for gram staining and culture in addition to gene expert analysis. Though gastric aspirate is not a recommended sample for culture it was processed on special requisition. A request for an aspirate from the cervical nodes for gram staining and culture was made to the treating pediatrician. For microbiological processing, the specimens were inoculated on Blood agar and MacConkey agar and incubated at 37ºC for 24 h. Culture results from gastric aspirate, correlated with the lymph node cultures as well as Fine Needle Aspirate Cytology(FNAC) from which a common organism *Salmonella* Paratyphi B was isolated confirming the causative organism of lymphadenitis. The identification of *Salmonella* Paratyphi B was done by biochemical panels a well as confirmed by Vitek -2 automated antimicrobial susceptibility testing system (bioMérieux, Marcy l'Étoile, France). Subsequently Widal agglutination titres were received which revealed the following titres TH 1:40; TO 1:20; AH 1:20; BH 1:320. Since susceptibility testing is indicated for typhoidal *Salmonella* (*S*. Typhi and *S*. Paratyphi A–C) isolated from extraintestinal and intestinal sources. Sensitivity to ampicillin, ampicillin clavulanate, piperacillin tazobactam, ceftriaxone, cefepime, ertapenam and meropenem was observed. Intravenous ceftriaxone (500 mg) was administered to the child for 7 days. In the following days the parents observed improvement in the size and feel of the nodes. They had regressed in the next follow up.

3. DISCUSSION

Salmonella enterica serotype Paratyphi B has been rarely reported in literature as a cause of generalized lymphadenopathy. Though a case of generalized lymphadenopathy with fever in a young adult caused by *Salmonella* Paratyphi A has been reported from Pakistan. *Salmonella* associated lymphadenitis in an infant is yet to be reported [8].

Salmonella spp as a cause of cervical lymphadenopathy has been seen. Lymphadenitis of a solitary node involving only the submandibular node has been reported in an immunocompetent afebrile child but with a positive history of gastroenteritis few months before presentation [9].

The other case is of an 8 year old child with suppurative submandibular lymphatic abscess caused by *Salmonella* Typhi [10].

In endemic areas the gamut of *Salmonella* infections may present unusually. Moreover extremes of age have been observed to present disparately [11].

This vulnerability of children to salmonella infection and its complications is ascribed to decreased neutrophil intracellular killing function, reduced macrophage function, diminished antibody level and poor opsonin activity [12].

Acquisition of *Salmonella* in neonatal age can be by vertical transmission, feco-oral route, feeds, breast milk and transplacental route [13,14,15].

Introduction of *Salmonella* spp through oral passage by ingestion of contaminated food can invade cervical lymph nodes through two different routes. Either by hematogenous seeding [16,17] or direct seeding through tonsillar tissue [18], which could be the mode of spread in our case since blood as well as stool cultures were negative despite extending the incubation time.

Our patient was a case of *Salmonella* enterica serotype Paratyphi B induced lymphadenitis with primary findings of generalized lymphadenopathy without fever in an otherwise healthy child at 2

years of age. The cause of her persistent lymphadenopathy since 6 months of infancy could not be ascertained until cervical proceeded to generalized with no other distinguished symptom. Though the patients guardians did not give any history of gastroenteritis of the patient or themselves, eating any uncooked preparations, food from street vendors, unpasteurized cow's milk or eggs. The infection was most probably acquired through the feco-oral route since children in this age group have a tendency to suck on caretakers fingers or inanimate objects which may have been contaminated.

Salmonella thrives in macrophages even after successful antimicrobial therapy and causes recurrences [19].

In our patient, the delay in onset of generalized lymphadenitis is consistent with the prolonged intracellular survival of *Salmonellae*. Such a case is rarely reported where presentation at such an inopportunate age of 6 months extended to about 1.5 years of age.

4. CONCLUSION

Awareness at the clinicians end about the assorted presentations of paratyphoid fever is an essential. Among the florid manifestations of salmonellosis generalized lymphadenopathy may be added to the list and should prompt the pediatricians for an early diagnosis and treatment especially in areas of the world known to be endemic for the same.

Through our experience we recommend gastric aspirate as one of the non-invasive samples for *Salmonella* isolation since in our case no other evidence of salmonellosis was obtained from any other non-invasive investigation.

CONSENT

All the investigations and procedures were done after seeking the guardians consent.

ETHICAL APPROVAL

As per international standard, written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Buckle GC, Walker CL, Black RE. Typhoid fever and paratyphoid fever: Systematic review to estimate global morbidity and mortality for J Glob Health. 2010;010401.
2. Johnson KJ. Crossing borders: One world, global health: CDC updates recommendations for typhoid vaccination. Clin Infect Dis. 2012;54(7):v-vi.
3. Brady MT, et al. Salmonella infections. Pickering L. Red Book: Report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics. 2012;635-41.
4. Woods CW, Murdoch DR, Zimmerman MD, Glover WA, Basnyat B, Wolf L, et al. Emergence of Salmonella enteric serotype Paratyphi A as a major cause of enteric fever in Kathmandu, Nepal. Trans R Soc Trop Med Hyg. 2006;100:1063–1067.
5. Ochiai RL, Wang X, von Seidlein L, Yang J, Bhutta ZA, Bhattacharya SK, et al. Salmonella Paratyphi A rates, Asia. Emerg Infect Dis. 2005;11:1764–1766.
6. Maskey AP, Day JN, Phung QT, Thwaites GE, Campbell JI, Zimmerman M, et al. Salmonella enterica serovar Paratyphi A and S. enterica serovar Typhi cause indistinguishable clinical syndromes in Kathmandu, Nepal. Clin Infect Dis. 2006; 42:1247–1253.
7. Chart H. The pathogenicity of strains of Salmonella paratyphi B and Salmonella java. Journal of Applied Microbiology. 2003;94(2):340–348.
8. Ahmed N, Saeed ZI, Tariq M. Abdominal lymphadenopathy: An atypical presentation of enteric fever. Asian Pac J Trop Biomed. 2012;2(5):409–10.
9. Murray JC, Singh RR, Brandt ML, Kearney DL, Ogden AK. Granulomatous submandibular lymphadenitis caused by Salmonella species in a healthy child. Clin Infect Dis. 1994;19:1175-6.
10. Singh NP, Manchanda V, Gomber S, Kothari A, Talwar V. Typhoidal focal suppurative lymphatic abscess. Ann Trop Paediatr. 2002;22:183-6.
11. Ferreccio C, Levine MM, Manterola A, et al. Benign bacteremia caused by Salmonella typhi and paratyphi in children younger than 2 years. J Paediatr. 1984; 104:899–901.
12. Watson KC. Salmonella meningitis. Arch Dis Child. 1958;33(168):171–5.
13. Mohanty S, Gaind R, Sehgal R, Chellani H, Deb M. Neonatal sepsis due to

Salmonella Typhi and Paratyphi A. J Infect Dev Ctries. 2009;3:633‑8.

14. Raveendran R, Wattal C, Sharma A, Kler N, Garg P, Gujral K et al. Vertical transmission of Salmonella Paratyphi A. Indian J Paediatr. 2007;74:784‑6.
15. Cooke FJ, Ginwalla S, Hampton MD, Wain J, Ross‑Russell R, Lever A, et al. Report of neonatal meningitis due to salmonella enteric serotype agona and review of breast milk‑associated neonatal Salmonella Infections. J Clin Microbiol. 2009; 47:3045‑9.
16. RG, Goldstein E. Testicular abscess caused by Salmonella typhi. South Med J. 1991;84:1156–7.
17. Hanel RA, Araujo JC, Antoniuk A, da Silva Ditzel LF, Flenik Martins LT, Linhares MN. Multiple brain abscesses caused by Salmonella typhi: Case Report. Surg Neurol. 2000;53:86–90.
18. Singh NP, Manchanda V, Gomber S, Kothari A, Talwar V. Typhoidal focal suppurative lymphatic abscess. Annals of Tropical Paediatrics. 2002;22(2):183–6.
19. Hayani KC, Pickering LK. Salmonella infections. In: Feigin RD, Cherry JD, eds. Pediatric infectious diseases. Philadelphia: W. B, Saunders. 1992;620-36.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/53712