

# SALMONELLA MENINGITIS A RARE PRESENTATION IN ADULT

Dr.SAIRA NAEEM, Dr.SHOBHA LUXMI, Dr Anum latif  
 Medicine Resident  
 Consultant Infectious Diseases  
 Medicine Resident, Liaquat National Hospital, Karachi

Correspondence address: Saira Naeem; Sbnac2009@hotmail.com  
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## ABSTRACT

Salmonella is a leading cause of food-borne infections worldwide. There are more than 2500 different serovars of salmonella enterica found to date, causing primarily gastroenteritis. However, the infection may occur elsewhere and produce characteristic clinical syndromes. Meningitis is a rare complication that occurs in less than 1% of clinical salmonellosis.

**KEYWORDS:**Gastroenteritis, Cerebritis, Meningitis, Salmonellaparatyphi b.

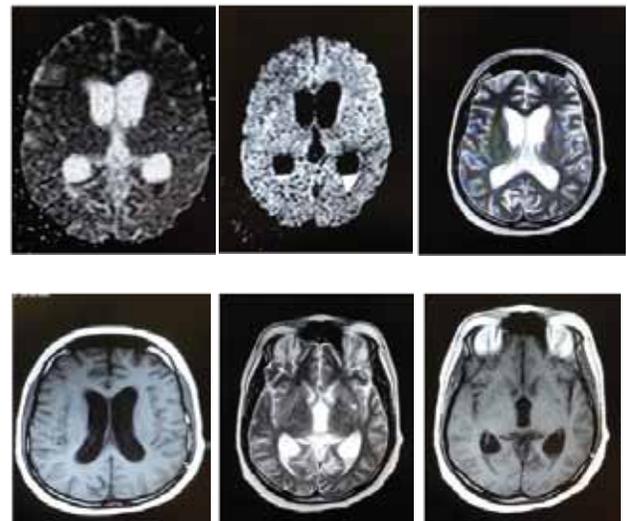
## INTRODUCTION

Here we present a case of Salmonella meningitis in a 32-year man. He was admitted via emergency department with headache in the occipital region. There was associated fever, nausea, vomiting and neck stiffness. Along with other baseline investigations, lumbar puncture was done and was sent for routine investigation, microscopy, culture and sensitivity. Salmonella paratyphi-B was isolated from CSF. Salmonella rarely involves meninges and brain tissues and this report highlights the risk of meningitis/cerebritis as a presentation of salmonellosis.

## CASE PRESENTATION

32 years old male, known Diabetic and bed bound secondary to Chronic inflammatory demyelinating polyneuropathy since 2013, received 5 session of plasmapheresis and 5 session of immunoglobulin IG, taking steroids and immunosuppressant, admitted through ER on 24-8-2015 with presenting complains of high grade fever with chills associated with severe sharp headache which radiate towards neck, along with 2-3 episodes of vomitings. On Examination young male, conscious, awake, following single step command vitals of Blood Pressure 115/83, pulse 125, Temperature 101 degree Fahrenheit, Clinically CHEST ABDOMEN AND CVS finding were unremarkable CNS =GCS E4M5V4, signs of meningeal irritation positive including neck stiffness and kernick's, lower limbs power 2/5 in both legs reflexes diminished.

During hospital course base line test including CBC, UCE, LFT,PT,INR are within normal limits, URINE D/R shows numerous pus cells BLOOD CULTURE and URINE CULTURE were sent and MRI brain with Contrast done



MRI brain shows increase signals in bilateral posterior horn of lateral ventricles and fluid levels, restriction in ADC along with Meningeal Enhancement and Hydrocephalus. Findings are due to Meningitis. On Lumbar puncture opening pressure of CSF was 7mm. Empirically injection Imipenem 1gm TDS and InjVancomycin 1gm BD started. CSF D/R shows Sugar 09, Proteins 475, RBC 160, WBC 670 Monos 20%, polys 80%.gs, Wet mount negative. Urine C/S, Blood C/S and CSF C/S all shows salmonella paratyphi

sensitive to ceftriaxone then antibiotic switched from Meropenem to Ceftriaxone and then it was treated on line of Salmonella Meningitis ,patient responded well ,his repeat CSF D/R shows decrease in Protein count from 475 to 43, WBC count reduces from 670 to 15 with Repeat Cultures including Blood, Urine and CSF become Negative.He remained Afebrile during hospital stay, signs of meningeal irritation resolved and was finally discharged home after 13 days in a better condition.

## DISCUSSION

Salmonella enterica are motile, non-lactose fermenting, non-spore forming, gram-negative, rod-shaped bacterium. Salmonella enterica has the ability to ferment glucose resulting in the production of acid and gas. Within the subspecies, S. enterica, there are three serotypes; Paratyphi A, B, and C. These serotypes are human pathogens that cause paratyphoid fever. Paratyphi A and B are responsible for more cases of disease than infection from Paratyphi C. Salmonella Paratyphi, causes 3% of invasive Salmonella infections and is correlated to poor sanitation and lack of clean drinking water, contaminated from feces from an infected individual or an asymptomatic carrier of the disease. Salmonella enterica serovars Paratyphi is transmitted primarily through humans, although there are rare cases of transmission from domestic animals. Milk, raw vegetables, salads, shellfish, and ice can also transmit the pathogen if not properly washed or prepared. Also, there are rare reports of the disease being transmitted sexually <sup>[1]</sup>Salmonellosis is classified into four manifestations: enteric infections, sepsis, non-enteric focal infections (including meningitis) and a chronic carrier state. Salmonella meningitis presents as acute onset of fever, headache and one of the following signs: neck stiffness, altered consciousness or other meningeal signs. In our case patient present with 1 week history of high grade fever, occipital headache, neck pain which was actually neck stiffness and irritability. The first case of Salmonella meningitis in the literature was reported in 1907 by Ghon [2][3]. In a study of 7,779 infections identified at the New York Salmonella Centre, meningitis accounted for only 0.8%] hence salmonella meningitis is rare manifestation of salmonella infection it is common in childhood and if in adults, is most commonly seen in patients with intercurrent illness or immunosuppressive states[8], as in our case patient is known case of CIDP (chronic inflammatory demyelinating polyneuropathy)

secondary to GBS since 3 years and having history of 2 to 3 episodes of exacerbation for which he took multiple sessions of IVIG and plasmapheresis and taking Steroids and CellCept (mycophenolatemofetil) which is an immunosuppressant, a medicine that lowers your body's immunity other host risk factors for nontyphoidal Salmonella bacteremia include extremes of age and chronic or immunosuppressing conditions, including malignancy, rheumatological disease, TNF blockade (e.g., agents such as etanercept or infliximab), transplantation, HIV infection, and congenital immune defects. Other predisposing comorbidities include liver disease, hemoglobinopathies (especially sickle cell disease), schistosomiasis, and chronic granulomatous disease. Alteration of the GI tract also predisposes to progression from enteric to systemic salmonellosis (e.g., by suppression of gastric acid, malnutrition, recent antibiotic use, or rotavirus infection). The incubation period of nontyphoidal salmonellosis is 6–72 hours, but illness usually occurs within 12–36 hours after exposure. Illness is commonly manifested by acute diarrhea, abdominal pain, fever, and sometimes vomiting. The illness usually lasts 4–7 days, and most people recover without treatment. Approximately 5% of people develop bacteremia or focal infection (such as meningitis or osteomyelitis). Salmonellosis outcomes differ by serotype. Infections with some serotypes, including Dublin and Choleraesuis, are more likely to result in invasive infections. Rates of invasive infections and death are generally higher among infants, older adults, and people with immunosuppressive conditions (including HIV), hemoglobinopathies, and malignant neoplasms. Diagnosis is based on isolation of Salmonella organisms. About 90% of isolates are obtained from routine stool culture, but isolates are also obtained from blood, urine, and material from sites of infection. Isolates of salmonellae are needed for serotyping and antimicrobial susceptibility testing

## REFERENCES:

1. [ncbi.nlm.nih.gov/PubMed/12830419](http://ncbi.nlm.nih.gov/PubMed/12830419) (Sexual transmission of typhoid fever: a multistate outbreak among men who have sex with men.)
2. Ghon J. Bericht über den XIV. Internationalen Kongress für Hygiene und Demographie. Berlin. 1907;4:21–23,
3. [ncbi.nlm.nih.gov/pmc/articles/PMC3039577/](http://ncbi.nlm.nih.gov/pmc/articles/PMC3039577/) (Clinical features, acute complications, and outcome of Salmonella meningitis in children)

4. under one year of age in Taiwan)  
ncbi.nlm.nih.gov/pmc/articles/PMC4031895 (Salmonella entericaserovar Virchow meningitis in a young man in Italy: a case report)
5. msdmanualsprofessional/infectious-diseases/gram-negative-bacilli/nontyphoidal-i-salmonella-i-infections
6. microbewiki.kenyon.edu/index.php/Salmonella enterica\_serovar\_Paratyphi(Paratyphi A infections lead to complications in 10-15% of cases, such as meningitis, endocarditis, hepatic abscess, gall bladder cancer, and pancytopenia)
7. cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to-travel/salmonellosis-nontyphoidal
8. eurosurveillance.org/ViewArticle.aspx?ArticleId=19489(Salmonella meningitis, although rare, is most commonly seen in patients with impaired immunity, particularly in infection with human immunodeficiency virus (HIV) )

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**Author's contribution:**

**ShobhaLuxmi:** data collection, data analysis, manuscript writing, manuscript review

**Anum Latif:** data collection, data analysis, manuscript writing, manuscript review

**Saira Naeem;** Study concept and design, protocol writing, data collection, data analysis, manuscript writing, manuscript review