

Case Report

A Complex Infectious Case of Typhoid with LRTI (Lower Respiratory Tract Infection), Right Side Ovarian Haemorrhagic Cyst and AGE (Acute Gastroenteritis): Diagnostic Dilemma

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A B S T R A C T

Background: A female with an emphasis on typhoid fever and related complications, the study intends to examine the clinical presentation, diagnostic difficulties, and management approaches of infectious diseases.

Objective: Through extensive laboratory testing, imaging, and clinical surveillance, a case report of a 42-year-old lady with ovarian haemorrhagic cysts, hepatic abnormalities, anaemia, and typhoid was reviewed.

Results: Showed positive serological testing indicating typhoid illness, haematological abnormalities consistent with minor beta-thalassaemia, and a substantial rise of liver enzymes. The instance underlines the value of coordinated diagnostic and treatment techniques as well as the complexity of coexisting illnesses.

Conclusion: The findings highlight the importance of treating haematological and viral diseases with vigilance, particularly in environments with low resources. All things considered, the study emphasises how important comprehensive healthcare methods are for enhancing patient outcomes and tackling complex illness relationships.

Keywords: Typhoid, Infection, Respiratory Infection, Haemorrhagic Cyst, Gastroenteritis

Introduction

Typhoid fever—which is caused by the Gram-negative bacterium *Salmonella enterica* serovar Typhi—has almost completely vanished in industrialised countries but is still widespread in underdeveloped ones. *S. paratyphi* A, B, and C cause similar illnesses. Ingestion of contaminated food or

water is the main way that infection spreads, and sewage contamination and poor hygiene are important causes of transmission from person to person. After the first week of illness, stool and urine cultures turn positive, but they are far less sensitive. This reduced sensitivity in blood cultures is partly caused by the widespread availability of antibiotics in the developing countries. Although more sensitive, bone

marrow cultures are intrusive and useless in public health contexts. Other haematological tests are not specific; blood leucocyte counts can vary greatly, but they may be low in relation to toxicity and fever. Leucocytosis can occur in younger children, occasionally reaching 20,000–25,000/mm³. While abnormal liver function tests can be seen, thrombocytopenia can be a sign of serious illness and can coexist with disseminated intravascular coagulation. Hospitalisation and parenteral antibiotic treatment are necessary for patients who exhibit severe symptoms, such as chronic vomiting, severe diarrhoea, and abdominal distension. Tests intended to directly detect IgM antibodies against different particular *S. typhi* antigens have not been shown to be sufficiently robust, according to extensive studies conducted in community settings. In addition to maintaining a proper diet and water, supportive care is crucial.¹

The virulence mechanisms of acute lower respiratory tract infections are still somewhat unknown, despite the fact that they considerably increase mortality and morbidity. In addition to pointing out how inflammation and the innate immune response work together to eradicate lung infections, this review also highlights the possible risks associated with this process.²

Endovaginal sonography provides clear visualisation of internal details of adnexal masses, allowing for accurate diagnosis of haemorrhagic cysts over other types. Recognising and diagnosing haemorrhagic cysts is crucial, as they can be mistaken for more serious conditions, emphasising the need to identify their distinct diagnostic features.³

A variety of phenotypes, from severe anaemia to asymptomatic cases, are associated with beta-thalassaemias, which are inherited blood illnesses brought on by problems in beta chain haemoglobin synthesis. Thalassaemia major, intermedia, and minor are the three main types. In early childhood, thalassaemia major usually presents with severe anaemia, requiring frequent red blood cell transfusions. In certain developing areas, inadequate therapy might lead to pallor, jaundice, underdeveloped musculature, and developmental retardation.⁴

Instances of acute gastroenteritis—which is typified by nausea, vomiting, diarrhoea, and stomach pain—are caused by contaminated germs each year, affecting over 350 million people. Travellers from developed to developing nations are especially affected. Contact precautions, public health education, and cautious antibiotic usage are all necessary to address the rising prevalence of *Clostridium difficile* in both adults and children. The goal of primary supportive treatment is to prevent or treat dehydration by using the right rehydration techniques.⁵

Case Report

A 42-year-old female was admitted to a multispecialty hospital in western India with complaints of fever (on and off), chills, expectoration, generalised weakness, nausea, vomiting, dyspnoea, and diarrhoea (3 days), with a past medical history of thalassaemia minor.

On arrival at the hospital, she was conscious; she had a high fever (101 °F) with a normal pulse rate, blood pressure, respiratory rate and urine output.

As shown in Table 1, laboratory investigations suggest anaemia due to low haemoglobin (7.5 gm/dl) and red blood cells (3.91 million/cumm). Changes in red blood cell indices, including low packed cell volume (PCV) (22.6%), low mean corpuscular volume (MCV) (57.8 fl), low mean corpuscular haemoglobin (MCH) (17.1 pg), and low mean corpuscular haemoglobin concentration (MCHC) (29.5 gm/dl), have also been linked.

Also, there is an increased level of total bilirubin (3.4 mg/dl), direct bilirubin (2.2 mg/dl), SGPT (180 U/L) and SGOT (259 U/L), confirming hepatic abnormalities. Abnormality in serum potassium (3.2 mmol/l) and sodium (130 mmol/l) levels was identified. Also, a high level of CRP (20.4 mg/l) was identified.

Total protein (4.3 gm/dl) and albumin (2.0 gm/dl) were identified as lower than normal levels, while ferritin (1486 ng/ml) was identified as higher than normal levels. A specific test like the Widal test was positive, and an USG of the bilateral axilla and bilateral inguinal region for ovarian haemorrhagic cysts showed a few oval-shaped lymph nodes.

The patient was admitted to ICU and treated carefully with constant monitoring. Antibiotics like the injection meropenem (1 gm TDS) and the capsule doxycycline (100 mg) were given BD. Injection of hydrocortisone was given 100 mg TDS; injection of paracetamol was given 1000 mg/100 ml for fever. For diarrhoea, the tablet lactic acid bacillus TDS was given. For the lower level of potassium, the tablet spironolactone 25 mg BD and Addkay 750 mg TDS were given. Tablets like Heptagon (lecithin, silymarin, zinc, amino acids and vitamins), BD and Ursodexychoic acid 300 mg BD were given for nutritional supplements and to prevent vitamin and mineral deficiencies and to support liver health, as laboratory investigations suggest hepatic abnormalities. Sachet *saccharomyces boulardii* BD was given to help restore balance in good bacteria in the intestine and act as a probiotic.

Add the progress of the case, whether improved? Any complication or fatal outcome??

The patient showed gradual improvement after treatment and ICU monitoring. Her fever, diarrhoea, vomiting and

breathing difficulty reduced, and her overall condition became stable.

The patient responded to treatment and improved clinically. There was no indication of a fatal outcome in this case.

Table I. Laboratory Findings

Investigations	Findings	Normal Range
Haemoglobin	7.5 g/dl	13.8-17.2 g/dl
Red blood cell	3.91 million/cumm	4.20-5.4 million/cumm
Packed cell volume	22.6%	37-47%
Mean corpuscular volume	57.8fl	78-100 fl
Mean corpuscular haemoglobin	17.1 pg	27-31 pg
Mean corpuscular haemoglobin concentration	29.5 gm/dl	32-36 gm/dl
Total bilirubin	3.4 mg/dl	0.1-1.2 mg/dl
Direct bilirubin	2.2mg/dl	0.1-9.3 mg/dl
SGPT	180U/L	12-78U/L
SGOT	259U/L	6-28 U/L
Serum potassium	3.2 mmol/l	3.5-5.1 mmol/l
Serum sodium	130mmol/l	135-145 mmol/l
CRP	20.4mg/l	0.0-5.0 mg/l
Total protein	4.3 gm/dl	6.0-8.3 g/dl
Albumin	2.0gm/dl	3.5- 5.0 g/dl
ferritin	1486 ng/ml	30-400 ng/ml

CRP- C REACTIVE PROTEIN

SGOT – SERUM GLUTAMIC OXALOACETIC TRANSAMINASE

SGPT – SERUM GLUTAMIC PYRUVIC TRANSAMINASE

Discussion

In poor nations, especially India, typhoid fever remains a fatal illness. Although this condition primarily affects children, it also contributes significantly to morbidity and mortality in older populations. The majority of typhoid fever cases in India are diagnosed clinically, or at most, with the unreliable Widal test. The illness *Salmonella typhi* is the bacterium that causes typhoid fever, an infectious disease that is spread orally. Fever and malaise start to appear after the 7–14-day incubation period. Chills, headache, lethargy, anorexia, nausea, nebulous stomach pain, dry cough, and myalgia follow the fever.⁶ Fever, headaches, exhaustion, and abdominal pain are early signs that might be mistaken for other illnesses, including gastroenteritis or appendicitis. Gastrointestinal symptoms may worsen as the illness worsens, indicating the effect of the bacteria on the digestive tract. Constipation or diarrhoea is a common early symptom, with constipation and loose, watery faeces being typical. Rose spots are tiny, pink, flat blemishes on skin. One of the most common signs of typhoid fever is abdominal pain. Both hepatomegaly and splenomegaly are also prevalent and frequently found through physical examination. These conclusions are the outcome of the

systemic bacterial buildup and the inflammatory reaction in these organs. Management of typhoid fever focuses on effective antibiotic therapy, supportive care, and monitoring for complications. Antibiotic treatment is the cornerstone of typhoid fever management, with commonly used antibiotics including ciprofloxacin, azithromycin, and ceftriaxone. Emerging antibiotic resistance, particularly to fluoroquinolones and other commonly used agents, has become a significant challenge in the treatment of typhoid fever.⁷

Numerous investigations have found that patients with typhoid fever have elevated liver enzyme levels. Alkaline phosphatase (ALP) levels were higher in typhoid than in malaria and dengue, which showed a link between liver enzymes and the course of the illness. IL-1 and IL-6 concentrations at the site of inflammation, but only IL-6 levels in blood and brain fluids. Typhoid fever patients have pyrogenic cytokines; thus, they would have a chronic fever anticipated to be in the bloodstream throughout the acute phase of the disease. The cytokine IL-6 is an important medium for the markers and symptoms of infectious diseases.

The nonspecific acute phase response to the majority of inflammatory, infectious, and tissue damage conditions includes the generation of C-reactive proteins (CRP), which controls its production by the pro-inflammatory cytokine IL-6 in the liver, demonstrating a substantial rise in the blood level of patients with typhoid fever.⁸

Typhoid patients' alkaline phosphatase levels differed significantly from those of healthy people. Although they have little use in differential diagnosis, aspartate amino transferase (AST) and alanine amino transferase (ALT) are both raised in a number of hepatic disorders and are crucial for assessing hepatocellular damage and tracking liver health. They are especially helpful in differentiating between cholestatic and hepatocellular liver damage. AST activity is a sign of erythrocyte, renal, and pancreatic cell injury. Both ALT and AST were noticeably higher in typhoid patients than in healthy people.

Generally speaking, the process behind the link between typhoid fever and liver markers may involve increases in ALT, and serum total protein (AST) was considerably reduced in typhoid patients relative to healthy counterparts. Additionally, globulin and albumin were considerable. lower in typhoid patients than in healthy individual persons from the study's findings Oxidative lipid alteration is a key factor in the inflammation and liver and intestinal ulcers linked to typhoid fever. part in making the illness worse. An increase in LDL cholesterol levels and an increase in them are seen in typhoid patients during the height of fever. The connection between elevated LDL cholesterol levels and elevated cardiac risk illness is well-established and recorded, regardless of TG levels and additional risk factors.⁹

Infections are the leading cause of morbidity and mortality. Depending on the kind, severity, and length of immunosuppression, a wide range of opportunistic organisms may be the cause, although bacterial pathogens are typically the most common etiologic agents.¹⁰

Salmonella typhi that is an Extremely Drug Resistant (XDR) strain. Ampicillin, ciproxacin, ceftriaxone, chloramphenicol, and trimethoprim sulfamethoxazole were once effective treatments for this strain, but their dependability has decreased due to growing resistance. Meropenem and azithromycin, two additional therapy alternatives, have been launched as a result. Furthermore, tigecycline and fosfomycin have demonstrated promising in vitro outcomes.^{11,12}

An ovarian cyst is a sac that is filled with fluid inside the ovary. One type of functional cyst that develops when a cyst bleeds is called a haemorrhagic cyst. One sign of this type of cyst is abdominal pain on one side of the body; in some cases, it might result in bloating, lower stomach discomfort,

or lower back pain. The patient can feel lightheaded or throw up, which could lead to headaches.^{13,14}

Oral contraceptive prescriptions are unlikely to stop the formation of functional cysts or speed their elimination, according to several research studies. More information is required to fully understand how HRT affects ovarian cysts.¹⁵

Conclusion

The clinical profile in our intricate case report demonstrated that all of these severities may have uncommon but potential linkages. Specific tests were used to examine and confirm each anomaly. Furthermore, the intricacies of related disorders like beta-thalassaemias and haemorrhagic cysts underscore the significance of all-encompassing healthcare approaches that tackle infectious diseases and their aftereffects.

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References

1. Crump JA, Mintz ED. Global trends in typhoid and paratyphoid fever. *Clinical infectious diseases*. 2010 Jan 15;50(2):241-6. [Google Scholar]
2. Mizgerd JP. Acute lower respiratory tract infection. *New England Journal of Medicine*. 2008 Feb 14;358(7):716-27. [Google Scholar]
3. Jain KA. Sonographic spectrum of hemorrhagic ovarian cysts. *Journal of ultrasound in medicine*. 2002 Aug;21(8):879-86. [Google Scholar]
4. Galanello R, Origa R. Beta-thalassemia. *Orphanet journal of rare diseases*. 2010 May 21;5(1):11. [Google Scholar]
5. Graves NS. Acute gastroenteritis. *Primary care*. 2013 Jul 19;40(3):727. [Google Scholar]
6. Paul UK, Bandyopadhyay A. Typhoid fever: a review. *Int J Adv Med*. 2017 Mar 23;4(2):300. [Google Scholar]
7. Irakoze Mukamana S. Pathogenesis and Clinical Manifestations of Typhoid Fever. *Research Output Journal of Biological and Applied Science*. 2025;5(1):60-3. [Google Scholar]
8. Al-Dahhan NA, Hussein BJ, Issa IH. Assessment of liver enzymes and cytokines in typhoid fever. *Sys Rev Pharm*. 2020;11(3). [Google Scholar]
9. Ndukaku OY, Emmanuel EU, Mercy EA, Caroline NO. Evaluation of the serum liver enzymes markers, lipid profile and kidney function parameters in typhoid patients. *International Journal of Tropical Disease and Health*. 2015 Jan 10;8(2):79-89. [Google Scholar]

10. Feldman C, Shaddock E. Epidemiology of lower respiratory tract infections in adults. Expert review of respiratory medicine. 2019 Jan 2;13(1):63-77. [Google Scholar]
11. Irfan Z, Afridi FI, Fatima A, Zafar H, Pervaiz YM, Farooq L. Prevalence of Extensively Drug Resistant Salmonella typhi and its susceptibility against meropenem, tigecycline, fosfomycin and azithromycin among clinical isolates from a tertiary care hospital laboratory: Susceptibility in Extensively Drug Resistant Salmonella typhi. Pakistan Journal of Health Sciences. 2024 Aug 31;49-54. [Google Scholar]
12. Inasiyyah R, Kusuma IY, Fauziah F, Nurkholis F, Kurniasih KI. International Journal of Gastrointestinal Intervention. Int J Gastrointest Interv. 2025;14:64-70. [Google Scholar]
13. Gavankar A, Gawai J. Hemorrhagic ovarian cyst: A case report. International Journal of Research and Report in Gynaecology. 2022 Apr 15;5(1):120-24. [Google Scholar]
14. Abbas AM, Amin MT, Tolba SM, Ali MK. Hemorrhagic ovarian cysts: Clinical and sonographic correlation with the management options. Middle east fertility society Journal. 2016 Mar 1;21(1):41-5. [Google Scholar]
15. Knudsen UB, Tabor A, Mosgaard B, Andersen ES, Kjer JJ, Hahn-Pedersen S, Toftager-Larsen K, Mogensen O. Management of ovarian cysts. Acta obstetrica et gynecologica Scandinavica. 2004 Jan 1;83(11):1012-21. [Google Scholar]