

CASE REPORT

Tubo-ovarian abscess infected by *Salmonella typhi*

Paban Sharma,¹ Abhusani Bhujū,² Ruhee Tuladhar,¹ Christopher M Parry,³ Buddha Basnyat²

¹Department of Obstetrics and Gynecology, Patan Hospital, Kathmandu, Nepal

²Oxford University Clinical Research Unit, Patan Hospital, Kathmandu, Nepal

³Department of Clinical Sciences, Liverpool School of Tropical Medicine, Liverpool, UK

Correspondence to

Professor Buddha Basnyat, buddha.basnyat@ndm.ox.ac.uk

Accepted 30 July 2017

SUMMARY

We report a case of a tubo-ovarian abscess infected with *Salmonella enterica* serotype *typhi*. A 19-year-old Nepalese woman presented to a hospital in Kathmandu with lower abdominal pain, constipation, fever and a non-healing, suppurative surgical wound from an emergency caesarian section performed 2 months previously at 37 weeks of pregnancy. She also had an exploratory laparotomy for an appendix perforation with peritonitis at 25 weeks of gestation. Her wound infection did not respond to cloxacillin and she had an exploratory laparotomy, and a tubo-ovarian abscess was found from which *S. typhi* was isolated. She had a bilateral salpingo-oophorectomy and responded to 14 days of chloramphenicol. A tubo-ovarian abscess is a rare complication of enteric fever.

BACKGROUND

Salmonella enterica serovar *typhi* (*S. typhi*) is a leading cause of illness in Nepal.¹ A tubo-ovarian abscess caused by *S. typhi* is a rare complication with only two patients reported in the literature.^{2,3} Here we describe a case of tubo-ovarian abscess caused by *S. typhi* in Nepal.

CASE PRESENTATION

A 19-year-old woman presented in January 2017 to Patan Hospital in Kathmandu, Nepal, with abdominal pain localised around the site of a recent incision for a caesarian section. She had a prior history of an exploratory laparotomy for perforated appendicitis and peritonitis at 25 weeks of pregnancy. At operation, 100 mL of pus was aspirated from the bilateral paracolic gutters. At 37 weeks of pregnancy, an emergency caesarean section was performed because of meconium-stained liquor. The baby was born healthy. She was discharged on the fourth day postcaesarean. Suture removal was performed a week later when cloxacillin was prescribed for 7 days because of serous discharge from the wound. A wound culture showed no bacterial growth. She was then well until 2 months later when she presented with abdominal pain.

On examination, her temperature was 100°F, pulse 98 bpm and blood pressure 90/60 mm Hg. Her surgical incision site was red, indurated, with fluctuating tenderness. Ten millilitres of pus was aspirated but had no bacterial growth after 48 hours. Ultrasonography revealed cystic collection posterior to the uterus. Cloxacillin was started at 500 mg four times daily. Further wound debridement with culdocentesis was performed on day 20 of admission and

150 mL of pus was drained. *S. typhi* was cultured from this pus but, because she showed no signs of fever, the cloxacillin was continued for 2 weeks and she was discharged.

She returned to hospital 6 days later having become unwell with fever, pain in the right lower quadrant, nausea, vomiting and constipation. She appeared toxic, with a temperature of 101.2°F, with a 5 cm gap in the abdominal wound, associated with minimal discharge and tenderness. Per-vaginal examination revealed a bulky tender uterus with decreased mobility.

INVESTIGATIONS

An ultrasonography showed a 10×10 cm² mass in the Pouch of Douglas (figure 1).

An exploratory laparotomy was performed which revealed dense adhesions in the rectus sheath, subcutaneous tissue, muscle, omentum and uterus. The left ovary was adherent to the Pouch of Douglas and rectum posteriorly with additional inflammation of the right tube and ovary. Approximately 40 mL of pus was drained from a left ovarian abscess and bilateral salpingo-oophorectomy was carried out (figure 2).

S. typhi was cultured from the pus (figure 3). By disc sensitivity testing, the isolate was susceptible to chloramphenicol, amoxicillin, trimethoprim-sulfamethoxazole, ceftriaxone and azithromycin but resistant to ciprofloxacin and gatifloxacin.

TREATMENT

The patient had already been on antibiotics for a long period of time. Keeping in mind the uprising resistance to ceftriaxone, chloramphenicol at 500 mg four times a day was started.

OUTCOME AND FOLLOW-UP

The fever subsided within 48 hours and the chloramphenicol was continued for 14 days (figure 4). She was reviewed at 1-month follow-up when she was improving and her child was healthy.

DISCUSSION

A tubo-ovarian abscess is an inflammatory mass that presents as a late complication of pelvic inflammatory disease, infected intrauterine devices, acute appendicitis, diverticulitis or any abdominal surgery. Predisposing factors include diabetes mellitus, immunodeficiency and pregnancy. The route of transmission is commonly through an ascending infection from the cervix or haematogenous/



CrossMark

To cite: Sharma P, Bhujū A, Tuladhar R, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-221213



Figure 1 Ultrasound sonography test abdomen pelvis showing cystic area in Pouch of Douglas.

lymphatic spread. Isolation of *S. typhi* from tubo-ovarian abscess has been rarely reported.

The route of infection for this *S. typhi* tubo-ovarian abscess is unclear. It is possible that she was a chronic carrier of typhoid and this colonisation led to the complication. Alternatively, she might have had a recent exposure to typhoid.

The isolation of *S. typhi* from the abdominal wound pus was unexpected and because of the lack of fever the significance was uncertain. The surgical wound infection initially responded to cloxacillin and the *typhi* was not specifically treated. However, she might have been in an incubation period when she did not have fever. In fact, the isolation of *S. typhi* should never be considered as non-pathogenic and she would have benefited with chloramphenicol treatment at that time.

In recent years, there has been an increase in resistance in *S. typhi* in Nepal to the fluoroquinolones,⁴ which have been considered the first-line antimicrobial choice. This has been accompanied by higher levels of susceptibility to chloramphenicol, amoxicillin, cotrimoxazole and azithromycin.⁵ Ceftriaxone is also effective, especially when parenteral treatment needs to be given.

S. typhi isolated from a tubo-ovarian abscess has only been reported previously in Malta and India.^{3,4,6} Non-typhoidal salmonellae (NTS) have been isolated from a tubo-ovarian abscess in Japan (2013) with *Salmonella* O7⁷; in Turkey (2013) in a patient with systemic lupus erythematosus complicated with NTS⁸; in



Figure 2 Histopathology sample of left tubo-ovarian mass excised.



Figure 3 *Salmonella typhi* growth on MacConkey sheep blood agar.

Slovenia (2010) with *S. stanleyville*⁹; in Malaysia (2007) with *S. enteritidis*¹⁰; and in Spain (2007) with *S. manhattan*.¹¹

Typhoidal *Salmonella* has been occasionally isolated from other unusual sites¹² such as a pleural empyema and chest wall cavity,^{13,14} a lung hydatid cyst,¹⁵ a Brodie's ulna abscess,¹⁶ splenic abscess,¹⁷⁻¹⁹ parotid abscess,^{20,21} testicular abscess,²² breast abscess,^{23,24} spondylodiscitis²⁵ and even the myocardium.^{6,26} The development of such extraintestinal infections probably depends on the ingested inoculum size, the virulence of the

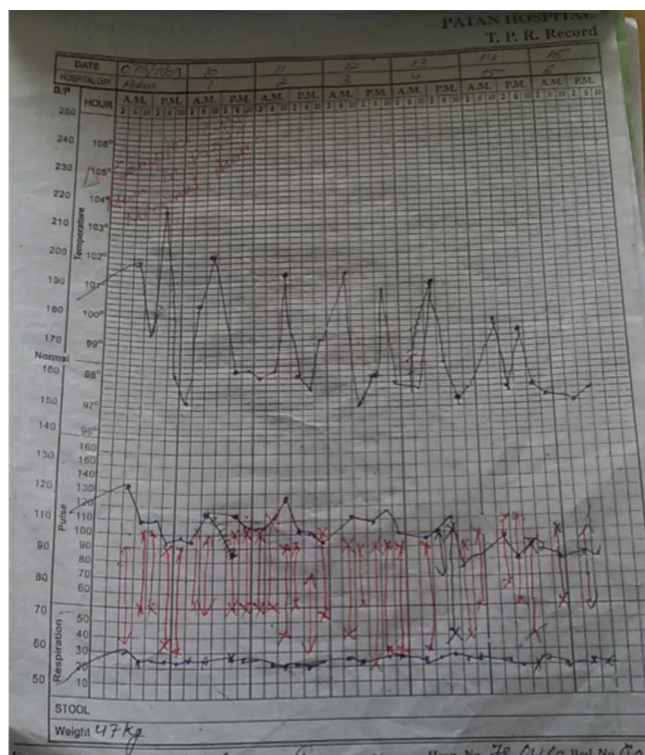


Figure 4 Fever charting showing decline in fever after chloramphenicol administration.

strain, the host's immune response and previous exposure, and local protective factors.²⁷

Learning points

- ▶ *Salmonella typhi* infection should be considered in the differential diagnosis in patients who develop deep abscesses in a typhoid fever endemic region.
- ▶ Pelvic mass may present as infected abscess in tubo-ovarian region in postsurgical patients.
- ▶ Exploratory laparotomy is a treatment to be considered for patients with ovarian mass complicated with non-healing surgical wound.

Contributors All the authors have contributed to the making of this case report. PS, BB and AB conceptualised the report. AB and RT collected informed consent and detailed information from the patient and the related medical staff. BB, AB, RT and PS edited the report into the final presentable manuscript. All the authors were involved in patient care, helped write the manuscript and approved the final version.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

© BMJ Publishing Group Ltd (unless otherwise stated in the text of the article) 2017. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

REFERENCES

- 1 Karkey A, Aryjal A, Basnyat B, *et al.* Kathmandu, Nepal: still an enteric fever capital of the world. *J Infect Dev Ctries* 2008;2:461–5.
- 2 Selvam EM, Sridevi TA, Menon M, *et al.* A case of salmonella enterica serovar typhi tubo ovarian abscess. *J Obstet Gynaecol India* 2015;65:278–80.
- 3 Vasallo L, Attard R. *Tuboovarian abscess as a complication of typhoid fever*, 1968.
- 4 Thompson CN, Karkey A, Dongol S, *et al.* Treatment response in enteric fever in an era of increasing antimicrobial resistance: an individual patient data analysis of 2092 participants enrolled into 4 randomised controlled trials in Nepal. *Clinical Infect Dis* 2017;64:1522–31.
- 5 Gupta V, Kaur J, Kaistha N. Re-emerging chloramphenicol sensitivity and emerging low level ciprofloxacin resistance among *Salmonella enterica* serotype typhi isolates in North India. *Trop Doct* 2009;39:28–30.
- 6 Childs L, Gupta S. *Salmonella enteritidis* induced myocarditis in a 16-year-old girl. *BMJ Case Rep [Internet]* 2012. <http://casereports.bmj.com/content/2012/bcr-2012-007628.full.pdf+html?sid=f888be2e-4850-408f-8111-9511338378a3%5Cnhttp://>
- 7 Tohya T, Yoshimura T, Onoda C. Unilateral ovarian abscess caused by *salmonella*. *Infect Dis Obstet Gynecol* 2003;11:217–9.
- 8 Guler S, Oksuz H, Cetin GY, *et al.* Bilateral tubo ovarian abscess and sepsis caused by *Salmonella* in patients with SLE. *BMJ Case Rep* 2013.
- 9 Gorisek NM, Oresković S, But I. *Salmonella* ovarian abscess in young girl presented as acute abdomen—case report. *Coll Antropol* 2011;35:223–5.
- 10 Thaneemalai J, Asma H, Savithri DP. *Salmonella* tuboovarian abscess. *Med J Malaysia* 2007;62:422–3.
- 11 Alonso D, Muñoz J, Ruiz J, *et al.* *Salmonella* ovarian abscess following travel diarrhoea episode. *Arch Gynecol Obstet* 2007;276:551–3.
- 12 Sudhaharan S, Padmaja K, Solanki R. Extra-intestinal salmonellosis in a tertiary care center in South India. *J Infect Dev Ctries* 2014;8:831–7.
- 13 Afridi FI, Farooqi BJ, Hussain A. Pleural Empyema Due to *Salmonella typhi*. *Physicians and Surgeons Pakistan* 2012;22:803–80.
- 14 Tonziello G, Valentinotti R, Arbore E, *et al.* *Salmonella typhimurium* abscess of the chest wall. *Am J Case Rep* 2013;14:502–6.
- 15 Aslam F, Bhaloi I, Nadeem N, *et al.* *Salmonella typhi*-infected lung hydatid cyst. *Pediatr Infect Dis J* 2005;24:270–2.
- 16 Kc I, Lam YL, Chang RY. Brodie's abscess of the ulna caused by *salmonella typhi*. 2008;14:154–6.
- 17 Rodan BA, Max RJ, Breiman RS, *et al.* Splenic abscess due to *salmonella typhimurium* bacteremia. *South Med J* 1981;74:382–3.
- 18 Cabadak H, Erbay A, Karaman K, *et al.* Splenic abscess due to *Salmonella enteritidis*. *Infect Dis Rep* 2012;4:4–10.
- 19 Comarmond C, Jauréguiberry S, Vaillant JC, *et al.* Giant splenic abscess due to *Salmonella enteritidis* in a returning traveler. *J Travel Med* 2010;17:271–3.
- 20 Moraitou E, Karydis I, Nikita D, *et al.* Case report: parotid abscess due to *Salmonella enterica* serovar enteritidis in an immuno competent adult. *Int J Med Microbiol* 2007;297:123–6.
- 21 Shen CH, Lin YS, Chang FY. Gas-forming parotid abscess in a diabetic patient: an unusual complication of *Salmonella enteritidis* bacteremia. *Am J Med Sci* 2008;336:504–7.
- 22 Al-Obeid K, Al Khalifan NN, Jamal W, *et al.* Epididymo-orchitis and testicular abscess caused by *Salmonella enteritidis* in immunocompromised patients in Kuwait. *Med Princ Pract* 2006;15:305–8.
- 23 Sood S. Breast abscess by *Salmonella paratyphi a*: case report and literature review. *J Clin Diagn Res* 2015;9:DD03–DD04.
- 24 Delori M, Abgueguen P, Chennebault J-M, *et al.* [Breast abscess with *Salmonella typhi* and review of the literature]. *J Gynecol Obstet Biol Reprod (Paris) [Internet]* 2007;36:709–12.
- 25 Zebouh M, Loiez C, Marceau L, *et al.* [Spondylodiscitis due to *Salmonella enteritidis* serotype Typhi]. *Ann Biol Clin* 2005;63:517–8.
- 26 Chakraborty PP, Bhattacharjee R, Bandyopadhyay D, *et al.* Diagnosis and treatment of scrub typhus--the Indian scenario. *J Assoc Physicians India* 2010;58:186–7.
- 27 Huang DB, DuPont HL. Problem pathogens: extra-intestinal complications of *Salmonella enterica* serotype Typhi infection. *Lancet Infect Dis* 2005;5:341–8.

Copyright 2017 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow