CASE REPORT

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Salmonella Ovarian Abscess In A Patient With Systemic Lupus Erythematosus Presented As Acute Abdomen: A Case Report And Review Of The Literature

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ABSTRACT

A Salmonella ovarian abscess is a rare entity, and is similarly uncommon in cases with Systemic Lupus Erythematosus. To the best of our knowledge, thirty four cases of Salmonella ovarian abscess have been published in the literature, and only four of them were related to Systemic Lupus Eritematosus. Our aim is to review this clinical entity using information from our own experience as well as that from published cases.

Key Words: Non-typhoidal Salmonella, tubo-ovarian abscess, enteric fever, lupus

Introduction

In general, tuba-ovarian abscess may occur as a complication after acute and chronic pelvic inflammatory disease (PID). Even though *Neisseria gonorrhea* and *Chlamydia trachomatis* are frequently considered as a determinant in the pathogenesis of a genitourinary abscess, *Escherichia coli* and *Bacteroides* species are the determinants that were commonly isolated. Rarely other microorganisms also can be considered as determinants (1). As *Salmonella spp.* may cause the most frequent table for gastroenteritis, they may also lead to local organ infections. Usually, *Salmonella spp.* may show a tendency to accommodate themselves to a damaged tissue and develop abscesses in multiple organs (2). Salmonella associated ovarian abscess has been described very rarely in medical literature. We review by using key words "Salmonella" and "ovarian abscess" associated with systemic lupus erythematosus (SLE) in the literature published between 1962 and 2019. To the best of our knowledge, thirty four cases of salmonella ovarian abscess have been published in literature and only 4 of these cases were related with SLE. In the current article, we present a patient with SLE who visited our hospital because of acute abdominal symptoms associated with an ovarian abscess due to Salmonellosis. In addition, we have also reviewed the literature on this entity.

Case Report

A twenty-year-old female patient was admitted to our emergency department due to abdominal pain and fever. Patient who receives steroids due to a SLE diagnosis was undergoing hemodialysis for a period of two years because of renal failure. Physical examination demonstrated a moderate-good level of general condition while the patient was conscious, and cooperative and orientated. Fever was 38.9 ºC, pulse 100/minute and respiratory rate was 24/minute. Nulligravida, menstrual cycle regular, no intrauterine

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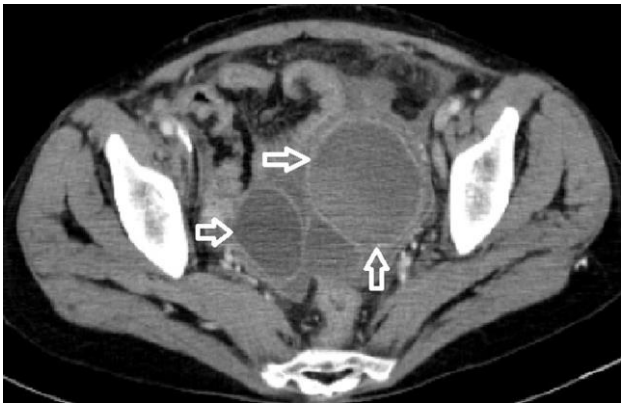

Fig.1. Axial contrast-enhanced CT shows tubo-ovarian abscesses on the left side of the adnex (arrows)

device use. Other system symptoms were natural, however abdominal examination displayed hepatosplenomegaly, pain and rebound at lower quadrants.

Laboratory studies revealed the followings: White blood cell (WBC): 3700/ mm^3, thrombocyte: 89000/mm^3, Hemoglobin (Hgb): 10,9 g/dl, ALT: 42 U/L, AST: 30U/L, gamma glutamyl transferase 850 U/L, creatinine 6,6 mg/dL, total bilirubin 2,8 mg/dL, direct bilirubin 2,1 mg/dL, Erytrocyte sedimantation rate (ESR) 70mm/h, C-reactive protein (CRP) 141 mg/dL (0-5 mg/dL).

Urgent ultrasonography demonstrated liquid loculation with intense content at the pelvic zone and a heterogeneous - hypoechoic appearance with an increased 6 cm in diameter vascularity of a significant membrane located at the left tubo-ovarian area. Contrast enhanced computed tomography demonstrated cystic lesions with high density (36 HU) consistent with complicated cysts on the left side of adnex (figure 1). As a result, the general surgeon and gynecologist operated the patient due to acute abdominal condition. Ischemic torsion and intense pus content were determined during the surgery located at the left ovary accompanied with intense pus at the edematous Douglas with bowel loops and after then the abscess was drained out. *Salmonella spp* grew in abscess material and blood culture. Afterwards, *S.paratyphi BH* 1/40, *S.paratyphi BO* 1/640 were accepted positive in the Gruber-Widal test. Ceftriaxone (1 g every 12 hours IV) intravenously and metronidazole (500 mg every 8 hours IV) were administered to the patient due to intraabdominal abscess and then therapy was continued with ceftriaxone after culture results. Patient was discharged 21 days after with cure.

Discussion

Non-typhoidal Salmonellosis is an important infection that can be transmitted by the source of foods worldwide. Although this infection often results self limited infection, invasive disease may occur with bacteremia. The condition can be frequently seen in such situations especially, such as advanced age, malignity's, diabetes mellitus, rheumatologic disorders, immune-suppressive therapy and conditions related with immunodeficiency such as HIV (3). Bacteremia can be observed in 5% of patients with fever due to Salmonella gastroenteritis. Bacteremia can cause extra-intestinal infections such as endocarditis, mycotic aneurism, osteomyelitis (2,4).

By using key words "Salmonella" and "ovarian abscess", we have reached thirty four cases reported as "Salmonella ovarian abscess" and only four of these cases were associated with SLE in the literature published between 1962 and 2019. As stated above, ovaries are one of the rare sites for Salmonellosis. A number of tubo-ovarian abscess cases were reported due to Salmonellosis in various articles. Many of reported cases were infected by non-typhoidal Salmonella. Although *Salmonella typhi* is a well known pathogen causing systemic disease, only four of the reported cases in the literature was associated with *Salmonella typhi*. Most of the patients with ovarian Salmonella abscess had pre-existing disease and predisposing factors such as a dermoid cyst, simple cystic lesions, endometrioma or cystadenoma (5). In our case, an abscess was found at the left ovary during laparoscopy that was performed on our patient for diagnostic reasons and the abscess was drained.

In most cases, the main route of this infection was supposed to be hematogenous origin, even though the ovary can be infected by direct contact with inflamed bowel or by ascending route (6). Most of the cases have a history of gastrointestinal infection or bacteraemic episode. Most of these cases in the literature have a history of Salmonella infection yet, 6 cases in medical literature had negative history of Salmonella infection (7). Like most of the cases reported in literature, *Salmonella spp* reproduced in the abscess drainage sample and blood culture.

In a meta-analysis, it was shown that the use of antibiotics in non-typhoid gastroenteritis was not advantageous in the treatment of the condition, diarrhea and fever (7). However, this does not include immunosuppressive patients with severe gastrointestinal symptoms and children. Additionally, our patient was considered as immunosuppressive because of long-term glucocorticoid administration due to SLE. This situation comprised a risk, because of Salmonella bacteremia and a formation of an

Table 1. Ovarian abscess caused by Salmonella in patients with SLE

Ref No	Age	Culture result	Antibiotic choice	Surgery	Outcome
Chao et al. (5)	35	S. enterica	Oral antibiotics + ceftriaxone 2x1 g 19 days	Pigtail drainage and laparoscopy (right side)	Favourable response
Li et al. (10)	34	Group D Salmonella	Ofloxacin 2 weeks after surgery	Laparoscopy and laparotomy (bilateral)	Favourable response
Lin et al. (11)	24	S. typhimurium	Cephalexin 4x 500 mg 10 days after surgery	Laparotomy with partial oophorectomy(unilateral/right)	Favourable response
Guler et al. (12)	39	Salmonella spp.	Imipenem/cilastatin 4 days	Laparoscopy (bilateral)	Exitus
Present case	20	Salmonella spp.	Ceftriaxone 21 days + metronidazole 10 days	Laparoscopy (left side)	Favourable response

abscess due to Salmonella. The incidence to develop bacteremia and an abscess is higher in patients with a condition that may create a tendency for non-typhoidal Salmonellosis such as SLE. Abramson et al. demonstrated that Gram-negative bacterial sepsis causes a sinister and life threatening complication in patients with immunosuppressive diseases and in the same study SLE was the most frequent underlying disease. Additionally in the same study, Salmonella was the most common bacterial agent (8). Nevertheless, death risk due to infection demonstrates an increase in individuals with a connective tissue disease. Particularly, mortality ratio due to Salmonellosis in patients with SLE is higher when compared to patients with other connective tissue diseases. In a recent study, 46 patients with a non-typhoidal Salmonella bacteremia displayed a connective tissue disease where SLE was reported in 34 (74%) of these patients (9). As stated above, thirty four cases of Salmonella ovarian abscess have been published in medical literature and only 4 of these cases were associated with SLE (5,10-12). In table 1, 5 cases (including our case) of Salmonella ovarian abscesses in patients with SLE were outlined.

Management of ovarian abscess requires combination of surgical intervention and convenient antibiotherapy for eradication of the disease. The antibiotic choice for Salmonella infection depends on antibiotic susceptibilities of isolated strain. These are usually consist of ampicillin, ceftriaxone and ciprofloxacin. Surgery is the mainstay of all reported cases and incomplete drainage of the abscess may cause the use of prolonged antibiotic treatment and repeated surgical intervention. Chao et al. presented that percutaneous drainage may be insufficient despite prolonged antibiotic regiment and the symptoms of the patient was controlled by conservative surgery using laparoscopy (5). As stated in table 1, one of these patients with lupus died despite appropriate antibiotherapy and surgery (12). Our patient received 21 days of antibiotherapy and 2 months after the antibiotic treatment and surgical intervention, her physical examination and laboratory tests were normal.

In conclusion, Salmonella ovarian abscess with SLE is a rare entity and it should be considered in the differential diagnosis of pelvic infections. Percutaneous drainage for pelvic abscesses is insufficient and appropriate surgical intervention and empirical antibiotic treatment is crucial to prevent further aggravation of the disease.

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Conflict of interest: None

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