

Evaluation of the Results of Conservative Management of Women with Tuboovarian Abscess; Single Tertiary Center Experience

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ABSTRACT

OBJECTIVE: To evaluate results of patients with conservative management of tuboovarian abscess (TOA).

STUDY DESIGN: A retrospective cohort study of women with TOA. Between January 2012 and February 2015, all women that hospitalized with diagnosis of TOA enrolled in this study. Cases were analyzed with respect to age, parity, medical conditions, history of intra-uterine device use, size of TOA, C-reactive protein (CRP) levels, white blood cell (WBC) count, CA-125 levels, antibiotic usage, hospitalization period.

RESULTS: Thirty-nine patients with TOA included in to this study. Mean age was 38.2 ± 11.5 years. Mean size of TOA was 5.7 ± 2.1 cm. In comparison between patients with abscesses ≤ 6 cm or >6 cm, TOA size is not associated with important outcomes including duration of antibiotherapy and duration of hospitalization.

CONCLUSION: Women with TOAs should be admitted to the hospital and immediately started in parenteral antibiotics. Due to high levels of success with antibiotherapy, immediate surgical management should always be performed in cases of rupture.

Keywords: Tuboovarian abscess, Antibiotherapy, Conservative management

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Introduction

Tuboovarian abscess (TOA) is an occasional end result of pelvic inflammatory disease (PID) which is a polymicrobial ascending infection that causes endometritis, salpingitis, pelvic peritonitis (1). Several risk factors for the development of PID which include younger age of starting sexual intercourse, high number of sexual partners, decrease in use of barrier contraception and infection with chlamydia or gonorrhea (2). Also the risk factors for TOA are similar to those of PID, including multiple sex partners, age between 15 and 25 years, and a prior history of PID. Although majority of women with PID do not develop TOA, there is still controversy about why some women with PID develop TOA. Prior PID infection, delay in treatment and virulence factors of pathogens are the main risk factors about formation TOA (3). Ascending infection to the fallopian tube causes endothelial damage and edema of the infundibulum which results in tubal blockage. Ovaries might be

affected through invasion of organisms via ovulation site. Also a TOA may also develop from local spread of infection associated with uncontrolled inflammatory disease of bowel, appendicitis, or adnexal surgery. Similar with PID, TOAs are also polymicrobial origin with a mixture of aerobic and anaerobic organisms. The most common isolated organisms for TOAs are *E.coli*, *Bacteriodes species*, *Peptostreptococcus*, *Peptococcus* and *aerobic streptococcus* (3,4).

Management of TOAs largely depends on the status of patient and size of the abscess. When TOAs are diagnosed antibiotics should be initiated promptly. Also the suspicion of rupture of TOA requires urgent surgical intervention. In the case of TOAs without evidence of rupture the role for drainage and operative management of TOA is less clear. Antimicrobial therapy alone is usually effective in 70% of all cases of TOAs (3-6). Proper antimicrobial therapy of TOAs includes antibiotic regimens with activity against anaerobic bacteria in addition to an ability to penetrate abscess cavities while remaining stable in an acidic, hypoxic abscess environment. The need for surgical intervention is related to the size of the TOAs with 60% of those women with abscesses 10 cm or greater in diameter, 30% of those measuring 7 to 9 cm, and only 15% of those 4 to 6 cm in diameter needing surgery (7).

We aimed to evaluate the results of conservative management in women with TOA.

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Material and Method

We performed a retrospective review of women with TOA, who were hospitalized and given parenteral antibiotic therapy in Istanbul University Istanbul Faculty of Medicine, Department of Obstetrics and Gynecology between January 2012 and February 2015. Inclusion criterias were (1) presence of an inflammatory mass in the pelvis, (2) age greater than 18 years, (3) abscess not requiring surgical intervention. Cases were analyzed with respect to age, parity, medical conditions, history of IUD use, smoking history, reason presenting for care, information at admission, size of TOA, C-reactive protein (CRP) levels, white blood cell (WBC) count, CA-125 levels, antibiotic usage, hospitalization period.

Imaging was obtained in almost all cases and included ultrasound (USG), computed tomography (CT) and magnetic-resonance imaging (MRI). Mean TOA diameter had been measured in two dimensions. Fever was defined as a temperature greater than 38.2 °C. The initial antibiotic regimens were categorized to include at least (1) gentamycin and clindamycin, (2) ceftriaxone and metronidazole, (3) ciprofloxacin and metronidazole, and (4) others.

We created two abscess group based on maximal diameter of abscesses: ≤ 6 cm and >6 cm. If bilateral abscesses were noted, we used the larger of the two to quantify the size of abscess. Women with large and small abscesses compared by duration of hospitalization, days of febrile status, and antibiotic-therapy duration.

Statistical analysis was performed with SPSS software (Statistics Package for Social Sciences) version 16. Variables were presented with descriptive statistics as mean \pm SD for continuous variables and number and percentage for categorical variables. Difference in mean values and characteristics between groups were analyzed with independent samples t-test.

Results

A total of 51 patients with TOA were identified. We excluded 12 patients who underwent surgery for TOA which include drainage, salpingectomy, salpingo-oophorectomy and total abdominal hysterectomy and bilateral salpingo-oophorectomy. A final total 39 patients were included in the study. Mean age was 38.2 ± 11.5 years (range 19-68 years). The demographic and clinical characteristics of the patients are summarized in Table 1.

There were 8 patients (20.5%) who had current usage IUDs. Only 6 subjects (15.4%) had concomitant medical problems that could contribute indirectly to abscess formation; 4 with diabetes mellitus and one with chronic hepatitis C and also one with renal insufficiency.

Mean size of TOA was 5.7 ± 2.1 cm (range 2.1 - 8.8 cm). 13 patients (33.3%) were found with bilateral abscess. On admission laboratory evaluation revealed the mean CRP level

was 151.8 ± 118.2 mg/dL (range 11 - 458 mg/dL), the mean WBC level 12.1 ± 5.5 10³ cells/ μ l (range 4800 - 22400) and the mean CA-125 level was 58.2 ± 57.1 U/mL (range 14 - 186). The most common reason for presentation was pain (87.1%) and followed by abnormal discharge (38.5%) and abnormal bleeding (15.4%). Also on admission 14 patients (35.9%) were febrile. On pelvic examination uterine tenderness was found in 21 patients (53.8%), adnexal tenderness was found in 26 patients (53.8%), and cervical motion tenderness was found in 23 patients (58.9%).

Table 1: Demographic and clinical characteristics of patients

| Characteristics | |
|--|-------------------|
| Age, years, mean \pm SD | 38.2 \pm 11.5 |
| Parity, numbers, mean \pm SD | 1.8 \pm 1.7 |
| Vaginal birth, n, percentage | |
| 0 | 15 (38.5%) |
| ≥ 1 | 24 (61.5%) |
| Cesarian section, n, percentage | |
| 0 | 31 (79.5%) |
| ≥ 1 | 8 (20.5%) |
| IUD, n, percentage | |
| Present | 8 (20.5%) |
| Absent | 31 (79.5%) |
| Chronic illness, n, percentage | |
| Present | 6 (15.4%) |
| Absent | 33 (84.6%) |
| Smoking history, n, percentage | |
| Yes | 29 (74.4%) |
| No | 10 (25.6%) |
| Reason presenting for care, n, percentage | |
| Pain | 34 (87.1%) |
| Abnormal discharge | 15 (38.5%) |
| Abnormal bleeding | 6 (15.4%) |
| Information at admission, n, percentage | |
| Fever | 14 (35.9%) |
| Uterine tenderness | 21 (53.8%) |
| Adnexal tenderness | 26 (66.7%) |
| Cervical motion tenderness | 23 (58.9%) |
| WBC, 10 ³ cells/ μ l, mean \pm SD | 12.1 \pm 5.5 |
| CRP, mg/dL, mean \pm SD | 151.8 \pm 118.2 |
| CA-125, U/ml, mean \pm SD | 58.2 \pm 57.1 |
| Unilateral abscess, n, percentage | 26 (66.7%) |
| Abscess size, cm, mean \pm SD | 5.7 \pm 2.1 |
| (Note: range= 2.1 - 8.8) | |
| Antibioterapy duration, days, mean \pm SD | 10.9 \pm 4.2 |
| Hospitalization, days, mean \pm SD | 10.6 \pm 4.0 |

Comparison was made between those patients with abscesses ≤ 6 cm or >6 cm (Table 2). Of these 39 patients with a TOA 29 (74.4%) had an abscesses ≤ 6 cm and 10 (25.6%) had an abscesses >6 cm. There was no significant difference between groups in duration of febrile, duration antibiotic usage and duration of hospitalization.

Table 2: Laboratory evaluation and outcomes by abscess size

| Characteristics | TOA ≤ 6cm (n=29) | TOA >6cm (n=10) | p value |
|--|---------------------|--------------------|------------|
| Days febrile, mean ± SD | 2.1 ± 2.9 | 2.4 ± 3.2 | .64 |
| Antibioteraphy duration, days, mean ± SD | 10.5 ± 4.1 | 11.2 ± 4.4 | .20 |
| Hospitalization, days, mean ± SD | 10.2 ± 3.9 | 10.9 ± 4.1 | .38 |

Patients were then evaluated by initial antibiotic regimen. Twenty-six patients (66.7%) were initially placed on regimens containing gentamycin and clindamycin, 5 patients (12.8%) were ceftriaxone and metronidazole, 3 patients (7.7%) were ciprofloxacin and metronidazole and 5 patients (12.8%) were other antibiotic regimens.

Discussion

Historically, treatment of TOA was thought to require hysterectomy and bilateral salpingoophorectomy. Although this approach offered high cure rates, it was at the cost of high rates of surgical complications, infertility and hormone deficiency (8). Medical treatment with broad spectrum antibiotics is currently considered as initial management for unruptured TOAs (9). With the advent of effective antimicrobial therapy, operative management has become much more conservative moving toward procedures that allow sparing of ovarian function and if possible can even be considered in cases of rupture (4). However, optimal treatment of TOAs still remain unclear. Women with TOA should have direct inpatient observation for at least 24 hours because risk of abscess rupture and sepsis.

Especially the antibiotic regimens who provide broad coverage for not only *N. gonorrhoeae*, *C. trichomatis* and *M. genitalium*, but also for streptococcus, Gram-negative enteric bacteria and bacteria vaginosis-associated anaerobic organisms are recommended (10-13). For the treatment of TOA, when comparing the first-line parenteral antibiotic regimens, none of the regimens have been shown to be superior (3,4,14). In animal models, regimens including clindamycin, metronidazole and cefoxitin were shown superior abscess wall penetration and activity within cavity (15). In a series of 232 patients with TOA that clindamycin plus gentamicin (68%) was more effective than penicillin and gentamicin (49%) for reduction of TOA size, highlighting the importance of anaerobic coverage with clindamycin (16).

Regarding antibiotic regimens for TOA, Weisenfeld and Sweet reported the response rates of TOAs to medical therapy and showed a 72% success rate in patients treated with clindamycin and aminoglycoside versus 82% success rate in patients treated with cefoxitin or cefotetan and doxycycline (3). In contrast, McNeeley et al found this regimen to be less successful (17).

We found that TOA size is not associated with important

outcomes including duration of antibiotherapy, duration of febrile, and duration of hospitalization. Gjeiland et al. noted that treatment success was not affected by the size of abscess (18). In contrast, DeWitt et al. found that TOA size was associated with more complications, longer duration of hospitalization as well as increased an increased need for surgery (19). Thus, it is reasonable to initiate antibiotics alone in women who are hemodynamically stable. In addition, in any postmenopausal women with an abscesses, because malignancy is a concern aggressive surgical management should be considered. Protopapas et al showed that 8 of 17 (47%) postmenopausal women had an underlying malignancy as compared with 1 of 76 premenopausal women (1.3%) (20).

Main limitation of our study, only hospitalizations linked with a primary diagnosis of TOA were included. For this reason, our database does not include patients with TOA treated in outpatient setting, our study does not provide true incidence of this conditions.

As a conclusion, women with TOAs should be hospitalized and started IV broad spectrum antibiotics. Immediate surgical management should always be performed in cases of rupture, because of high cure rates with broad spectrum antibiotics in unruptured cases. Correct decision of therapy will be helpful for patient in reducing morbidity, adhesions, need for radical surgery and conservation of fertility.

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