

## TUBO-OVARIAN ABSCESS: RISK FACTORS FOR FAILED RESPONSE TO CONSERVATIVE TREATMENT

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### SUMMARY

**Objectives:** To define the epidemiologic, clinical and laboratory risk factors associated with failed response to conservative antibiotic therapy in tubo-ovarian abscess (TOA).

**Material and methods:** The charts of 108 patients, admitted with clinically and sonographically diagnosed TOA between 1988 and 2010 were reviewed. On admission, all patients were treated with broad-spectrum antibiotics, and were divided into two groups according to the response to medical treatment. 47 patients, responding to antibiotic therapy, constituted group A, whereas 61 patients who did not respond and were further treated by surgery, were included in group B. The groups were compared with respect to patient characteristics, clinical and sonographic presentation, laboratory findings.

**Results:** There was no statistical difference between the mean age of patients ( $38\pm 2,8$ ) responding to medical therapy (group A) and the age of patients who did not respond (group B) ( $38\pm 3,4$ ) ( $p>0,05$ ). The gravidity, parity, use of intrauterin device (IUD) and history of tubal ligation were similar between the groups ( $p>0,05$ ). The size and bilaterality of TOA, evaluated sonographically were significantly increased in group B compared with group A ( $p=0,008$  and  $p=0,002$ , respectively). On admission, fever  $>38,0^{\circ}\text{C}$  was determined in %32 of group B and %8 of group A ( $p=0,003$ .) The only laboratory finding differentiating between two groups was C-reactive protein (CRP), being significantly higher in group B ( $p=0,03$ ). The duration of hospitalization was significantly shorter in group A ( $8,21\pm 1,9$ ) ( $p<0,05$ ). %85 of patients in group A were treated with Clindamycin+ Gentamycin  $\pm$  (Amoxicillin+Clavulonic acid) regimen ( $p=0,0043$ ).

**Conclusion:** In the presence of certain risk factors, if conservative treatment fails in TOA; additional interventions (surgery, drainage) may be necessary.

**Key words:** Tubo-ovarian abscess, conservative treatment, pelvic inflammatory disease, surgery

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## TUBO-OVARYAN ABSE: KONZERVATİF TEDAVİ BAŞARIZLIĞINDAKİ RİSK FAKTÖRLERİ

### ÖZET

**Amaç:** Retrospektif olarak, konzervatif tedaviye yanıt vermeyen tubo-ovaryan abse (TOA) olgularındaki epidemiyolojik, klinik ve laboratuvar risk faktörlerini belirlemek.

**Gereç ve yöntemler:** 1988-2010 yılları arasında, klinik ve sonografik olarak TOA tanısı almış 108 hastanın dosyası retrospektif olarak incelendi. Hastaların hepsine ilk olarak geniş spektrumlu antibiyotik tedavisi başlanmıştı ve hastalar medikal tedaviye yanıtına göre 2 gruba ayrıldı. Antibiyotik tedavisine yanıt veren 47 (%43) hasta grup A, yanıt vermeyen ve sonrasında opere edilen 61 (%57) hasta ise grup B olarak belirlendi. Gruplar hastaların demografik,

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*klirik ve sonografik bulguları, laboratuvar deęerlerine göre kıyaslandı.*

**Bulgular:** Medikal tedaviye yanıt veren hastaların (grup A) ortalama yaşı ( $38\pm 2,8$ ) ve yanıt vermeyen hastaların (grup B) ortalama yaşı ( $38\pm 3,4$ ) arasında fark bulunmadı ( $p>0,05$ ). Benzer şekilde hastaların ortalama gravide ve pariteleri, rahimiçi araç (RİA) kullanımı ve tüp ligasyonu açısından da istatistiksel fark görülmedi ( $p>0,05$ ). TOA boyutu ( $p=0,008$ ) ve absenin bilateral olması ( $p=0,002$ ) cerrahi yapılan grupta anlamlı olarak daha fazla bulundu. Başvuru anında ateş; grup B'de %32, grup A'da ise %8 hastada tesbit edildi ( $p=0,003$ ). Grup B'de daha yüksek olmak üzere iki grup arasında anlamlı olan tek laboratuvar deęeri C-reaktif protein (CRP) olarak bulundu ( $p=0,03$ ). Hospitalizasyon süresi grup A'da daha kısa idi ( $8,21 \pm 1,9$ ) ( $p<0,05$ ). Konzervatif tedaviye yanıt veren grubun %85'i Klindamisin + Gentamisin ± (Amoksisilin+Klavulonik asit) ile tedavi edildi ( $p=0,0043$ ).

**Sonuç:** Medikal tedaviye yanıt vermeyen TOA olgularında risk faktörleri de mevcutsa ilave girişimler (cerrahi, drenaj) gerekebilir.

**Anahtar kelimeler:** cerrahi, konzervatif tedavi, pelvik enflamatuvar hastalık, tubo-ovaryan abse

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## INTRODUCTION

Tuboovarian abscess (TOA), typically the end result of acute pelvic inflammatory disease (PID), is a condition characterized by a walled-off inflammatory mass in the pelvis. One third to one-half of patients diagnosed with TOA acknowledge a history of PID (1,2). Risk factors for TOA are similar to those of PID and include nulliparity, a history of PID, multiple sexual partners, intrauterin device (IUD) and immunosuppression(3). Traditionally, TOA has been most commonly encountered in their third or four decade of life(4). While the majority of TOA respond to antibiotic therapy, in approximately 25% of patients, surgery or drainage is indicated(5).

The aim of this retrospective study was to define the epidemiologic, clinical, and laboratory risk factors of TOA associated with the need for additional intervention following failed response to initial antibiotic therapy.

## MATERIAL AND METHODS

TOA was sonographically diagnosed in 108 women admitted to our gynecologic department between January 1988 and December 2010 with a palpable mass and classical symptoms, signs and laboratory findings of PID. The records of all these patients were retrospectively reviewed. The sonographic diagnosis of TOA was based on the demonstration of a complex cystic mass with irregular walls, partitions, and internal echoes, and no peristalsis(6).

On admission, patients were initially treated with one of the broad-spectrum antibiotic regimens: either

Amoxicillin+Clavulonik acid or Ceftriaxone+ Metronidazole or Clindamycin+Gentamicin± (Amoxicillin+Clavulonik acid). 47 patients, managed conservatively with intravenous antibiotics and demonstrating a clinical improvement, constituted group A; whereas 61 patients, requiring additional intervention were included in group B. Failure of response was determined as a persistant fever following treatment with antibiotics through 72 hours or positive peritoneal signings after 48 hours of treatment. The groups were compared with respect to patient characteristics, clinical and sonographic presentation, laboratory findings, duration of hospital stay, and antibiotic regimen on admission.

Statistical comparison between the two groups was performed using Student's t-test and chi-square test.  $p<0.05$  was considered statistically significant.

## RESULTS

Table I summarized demographic characteristics of patients. The mean age of patients responding to medical therapy (group A) was similar ( $38\pm 2.8$  years) with the age of patients who did not respond to conservative management (group B)( $38\pm 3,4$  years)( $p>0.05$ ). There were no differences in the gravidity and parity of the two groups ( $p>0.05$ ). The use of IUD and history of tubal ligation did not differ significantly between the two groups ( $p>0.05$ ).

The size of TOA, differed significantly between the two groups ( $p=0.008$ ) (Table II). In addition, bilaterality of abscess was more observed in group B ( $p=0.002$ ). On admission, fever  $>38.0^{\circ}\text{C}$  and C-reactive protein

(CRP) level was higher in group B ( $p=0.003$  and  $0.03$ , respectively), yet the white blood cell count (WBC) did not differ between the two groups.

**Table I:** Patient characteristics.

	group A	group B	P value
Number of patients	47 (%43)	61 (%57)	
Mean age, years ( $\pm$ SD)	38 ( $\pm$ 2,8)	38 ( $\pm$ 3,4)	>0,05
Gravidity	3 ( $\pm$ 2,1)	3 ( $\pm$ 2,3)	>0,05
Parity	2 ( $\pm$ 1,8)	2 ( $\pm$ 2,0)	>0,05
Use of IUD (%)	11 (%23)	15 (%24)	>0,05
History of tubal ligation (%)	2 (%4)	3 (%4,9)	>0,05
Diabetes Mellitus (%)	4 (%8)	6 (%9,8)	>0,05

**Table II:** Clinical and laboratory data on admission.

	group A (n:47)	group B (n:61)	P value
Size of the mass sonographic evaluation, mm ( $\pm$ SD)	53,01 $\pm$ 1,2	61,25 $\pm$ 1,8	0,008
Bilateral abscess	4 (%8)	12 (%19,6)	0,002
Mean WBC, $\times 10^9$ /L ( $\pm$ SD)	14130 $\pm$ 765	14158 $\pm$ 856	>0,05
Mean CRP, mg/L ( $\pm$ SD)	135 $\pm$ 76	159 $\pm$ 48	0,03
Fever > 38.0°C	4 (%8)	20 (%32)	0,003

WBC: White blood cell count

There was a significant difference in duration of hospitalization, being shorter in group A ( $8.21 \pm 1.9$  days) than in group B ( $16.22 \pm 3.1$  days) ( $p=0.003$ ).

Patients were then evaluated by initial antibiotic regimen (Table III). 85.1% of patients in group A versus 57.3% of patients in group B were treated with Clindamycin+Gentamycin $\pm$ (Amoxicillin+Clavulonic acid) regimen ( $p=0.0043$ ). Ceftriaxone+Metronidazole regimen was more preferred in group B ( $p=0,0001$ ). Single agent antibiotherapy regimen (Amoxicillin+Clavulonic acid) was similar in both groups ( $p>0,05$ ).

**Table III:** Treatment results.

	group A (n:47)	group B (n:61)	P value
Hospital stay, days	8,21 $\pm$ 1,9	16,22 $\pm$ 3,1	0,003
Clindamycin+Gentamicin $\pm$ (Amoxicillin+Clavulonic acid) regimen	40 (%85,1)	35 (%57,3)	0,0043
Cephalosporin+Metronidazole regimen	1 (%2,1)	17 (%27,8)	0,0001
Amoxicillin+Clavulonic acid regimen	6 (%12,2)	9 (%14,9)	>0,05

## DISCUSSION

The aim of this study was to define the epidemiologic, clinical, and laboratory risk factors of TOA associated with the need for additional intervention following failed response to initial antibiotic therapy.

Intravenous broad spectrum antibiotics are usually preferred as a first-line therapy in unruptured TOA. Center for Disease Control (CDC) suggests the patients to be hospitalized at least 24 hours and to be treated with the parenterally regimens that are effective against N.Gonorrhea, C.Trachomatis, and the anaerobes<sup>(7)</sup>. These regimens are: Cefotetan (2gr i.v. 2x1) or Cefoksitin (2gr i.v 4x1) and Doxycycline (100mg oral/i.v 2x1) ile Clindamycin (900mg i.v. 3x1) ve Gentamicin (3-5mg/kg 1x1). Parenteral therapy should be discontinued 24 hours after clinical improvement, but oral therapy with Clindamycin (450 mg 4x1) and Doxycycline (100mg 2x1) should continue to complete 14 days of therapy. But the optimal management is controversial. According to Mc Nutt et al. study, surgery or drainage should be considered when the patient displays a failure to respond in 48 to 72 hours<sup>(8)</sup>.

Most pelvic abscesses respond to intravenous broad-spectrum antibiotics followed by oral antibiotics over a prolonged period of time. Triple antibiotic regimen seems to be the treatment of choice. A success rate of 87.5% following treatment with clindamycin plus gentamycin and ampicillin in women with TOA was reported by Mc Neeley and co-workers<sup>(9)</sup>. In our study, the success rate with the same regimen was lower (%53,40/75) (Table III).

Historically, surgical management ranging from posterior colpotomy, transabdominal surgical drainage, unilateral salpingo-ophorectomy (USO) to total abdominal hysterectomy and bilateral salpingo-ophorectomy (TAH+BSO) in combination with antibiotics was performed in women with TOA. Although this approach offered high cure rates, it resulted in hormone deficiency and left women of child-bearing age without reproductive potential. In addition, due to the presence of friable inflammatory tissues and adhesions, surgery in this group of patients is often technically difficult and associated with complications. Kaplan et al, Karakulak et al. reported 8.4% and 12.8% (respectively) bowel injury in patients who underwent laparotomy<sup>(10,11)</sup>. According to our data, 57% of patients needed surgery. And these operations were TAH+BSO

(32%), laparatomic abscess drainage (14%), USO (5%), and laparoscopic abscess drainage (6%). Today, the aim of management is to be as minimally invasive and conservative as possible. Imaging-guided (ultrasonography or computed tomography) drainage of pelvic abscesses with concomitant antibiotics seems to be an efficacious mode of treatment<sup>(5)</sup>. In a Norwegian study involving 302 women with TOA it was found that transvaginal needle aspiration of abscess together with antibiotics was successful in 282 (93.4%) of the women. And in only 20 women (6.6%) operation was performed<sup>(12)</sup>.

Similarly with the literature, we found that increasing abscess size is associated with increasing need for operative management<sup>(13,14)</sup>. Similarly, Reed et al. showed that surgery was necessary in 60% of the patients with abscesses  $\geq 10$  cm, whereas it was only required in 20% of those with abscesses  $< 5$  cm<sup>(13)</sup>. CRP level is increased in TOA, as an acute phase reactant. But, the negative value does not exclude the diagnosis and intravenous antibiotic treatment should not be delayed in the clinical suspicion.

Although Halper et al. did not show an association between fever on admission and treatment failure in TOA, we found statistical significance ( $p=0.003$ )<sup>(15)</sup>.

In conclusion; an increased size of pelvic mass, bilaterality of abscess, higher CRP level and fever  $>38.0^{\circ}\text{C}$  on admission were all associated with failed response to conservative treatment.

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