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Minimally invasive approach of tubo-ovarian abscesses

Tratamento minimamente invasivo dos abscessos tubo-ováricos

Original Article

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Abstract

PURPOSE: To evaluate the treatment outcome of tubo-ovarian abscesses managed by transvaginal ultrasound-guided aspiration. **METHODS:** Descriptive analysis of all patients with tubo-ovarian abscesses treated with a minimally invasive procedure, ultrasound-guided drainage, at the Department of Gynecology, Centro Hospitalar Vila Nova de Gaia/Espinho, during a period of 5 years (from June 2009 to June 2014). **RESULTS:** Twenty-six cases were included in the study. The mean age of the study group was 42.8 years. All patients were submitted to transvaginal ultrasound-guided aspiration and sclerosis with iodated solution, as well as received broad-spectrum intravenous antibiotics. The mean time from admission to drainage was 2.5 days. Cultures for aerobic and anaerobic pathogens were positive in 14 of the 26 cases. A complete response was noted in 23 of the 26 cases. No complications or morbidity were noted as a consequence of the drainage procedures. **CONCLUSION:** Minimally invasive treatment of tubo-ovarian abscesses by transvaginal ultrasound-guided drainage is an effective and safe approach.

Resumo

OBJETIVO: Avaliar os resultados da aspiração transvaginal ecoguiada no tratamento dos abscessos tubo-ováricos. **MÉTODOS:** Análise descritiva de todas as pacientes com diagnóstico de abscesso tubo-ovárico tratadas com um procedimento minimamente invasivo, drenagem ecoguiada, no Serviço de Ginecologia do Centro Hospitalar Vila Nova de Gaia/Espinho, durante um período de 5 anos (junho de 2009 a junho de 2014). **RESULTADOS:** Vinte e seis casos foram incluídos neste estudo, com média de idade de 42,8 anos. Todas as pacientes foram submetidas a punção aspirativa transvaginal ecoguiada e esclerose com solução iodada, associada a antibioterapia endovenosa de largo espectro de ação. O tempo médio desde a admissão até o procedimento de drenagem foi de 2,5 dias. Os exames culturais para micro-organismos aeróbicos e anaeróbicos foram positivos em 14/26 casos. Resposta completa com o tratamento instituído ocorreu em 23 dos 26 casos. Não houve registro de complicações ou morbidade com os procedimentos de drenagem realizados. **CONCLUSÃO:** O tratamento minimamente invasivo dos abscessos tubo-ováricos, com drenagem transvaginal ecoguiada, constitui uma abordagem terapêutica eficaz e segura.

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Introduction

Tubo-ovarian abscess (TOA) is a consequence of an infectious process and is characterized by a walled-off inflammatory structure involving adnexa. The infection is, in the majority of cases, caused by a mixed flora composed by anaerobic and gram-negative bacteria that ascend causing pelvic inflammatory disease (PID)¹. TOA is classified in primary when it occurs in the context of PID (in about 30% of cases) and secondary if it occurs in the consequence of other intra-abdominal processes, like bowel perforation or pelvic malignancy²⁻⁴.

The diagnosis of TOA is made by clinical, laboratorial and imaging aspects. The gold standard exam for the diagnosis of TOA is ultrasonography, mainly when executed with vaginal transducer. Ultrasound findings suggestive of TOA include a cystic and complex neo-formation in the pelvic compartment, with heterogeneous compound and irregular margins, surrounded by vascularized tissue, with high resistance index in Doppler study²⁻⁵.

The existence of an abdominal or pelvic abscess may be a cause of greatest morbi-mortality and the treatment must be immediate. In the past surgical treatment, through laparotomy was frequent, but nowadays the TOA treatment can be minimally invasive based on earlier diagnosis, intravenous broad-spectrum antibiotics and surgical drainage technics⁶. According to data, medical treatment alone with broad-spectrum antibiotics is successful between 34 and 87,5% of all cases³, and the let of response to conservative therapy can be due to insufficient penetration of antibiotics into the abscess. In these cases, surgical drainage is indicated, which can be made by minimally invasive approaches, like laparoscopic drainage or imaging-guided drainage procedures⁷⁻¹¹. Immediate surgery (laparoscopy or laparotomy) is indicated for all cases with suspected rupture of TOA.

The immediate treatment of TOA reduces the morbidity and it is consensual that the drainage of tubo-ovarian abscesses with concomitant intravenous antibiotics is the most effective management for the primary or secondary treatment of TOA^{3,9,11}.

The aim of this descriptive study was to evaluate the efficacy and results of our minimally invasive treatment of TOA, through drainage procedure, during the last five years.

It was a descriptive study of all cases of TOA treated with transvaginal ultrasound-guided drainage and sclerosis procedure in our Gynecology Department, during a period of 5 years (from June 2009 to June 2014).

The service protocol proposes that all cases of unruptured TOA should be submitted to medical treatment associated to a drainage procedure. All cases submitted to this combined treatment were included in this study.

All patients received a minimum of 24 hours of broad-spectrum antibiotics consisting, in the majority of cases, of gentamicin, 1.5 mg/kg every 8 hours, plus clindamycin, 600 mg every 8 hours. Ideally, the procedure should be performed in the second day of antibiotherapy; however, it can be delayed if the experts in procedure are not available. The TOA aspirations were performed in ultrasound room if all the criteria were present.

All cases of unruptured TOA, regardless of dimension or laterality; women without signs of acute abdomen/peritonitis and clinically stable; Informed Consent signed.

Methods

Technique description

After vaginal cleaning with povidone-iodine preparation, local paracervical anesthetic (1% lidocaine) and intravenous analgesia (with tramadol) were given to the patient. Aspirations were performed with ultrasound control, using a 6.5 MHz endovaginal transducer with an attached biopsy guidance system and 18 Gauge needle with a connection tube and syringe. After drainage, irrigation of the abscess cavity with saline solution was performed followed by sclerosis with iodated solution during 2 minutes (maximum instillation: 2/3 of aspirated volume). The aspirated fluid was sent to microbiology analysis and an ultrasound evaluation was performed one month after the procedure, whenever the patient remained clinically stable during that period.

Results

Twenty-six cases of TOA were treated with transvaginal aspiration and sclerosis, ultrasound-guided, after the institution of broad-spectrum antibiotics.

The mean age was 42.8 years old, with a range of 25–72 years. Existence of other pathologies or medical conditions was present in 12 cases; 23/26 women were in reproductive age, and intrauterine device (IUD) was present in 11 cases, 2 of them in post-menopausal women (Table 1). There was pelvic abscess secondary to a previous surgery in 3 cases: 1 case of laparoscopic cholecystectomy (1 month before), 1 case after a cesarean section and another after previously drained TOA, through laparotomy.

Clinic was insidious in most cases, with present symptoms occurring at a mean of 5 days prior to admission (range: 1–30 days) with previous ambulatory antibiotherapy in 9 cases. Lower abdominal pain and uterine tenderness were present in all cases. An elevated white blood cell count (WBC) was noted in 23 cases and

Table 1. History and socio-demographic characteristics

Socio-demographic and epidemiologic characteristics	n
Age (years)	
25–29	2
30–39	8
40–49	9
50 or older	7
Race	
White	25
Black	1
Other	0
Smoking history	
Yes	4
No	22
Reproductive history	
Gravidity	
0	2
1–2	18
3 or more	6
Parity	
0	2
1–2	19
3 or more	5
Contraception	
Menopause	3
None	3
Condom use	1
Tubal ligation	5
IUD	11
Oral contraceptives	3
Medical history	
Hypertension	3
Diabetes	1
Endometriosis	1
Past of PID	1
Others	5

IUD: intrauterine device; PID: pelvic inflammatory disease.

C-reactive protein (CRP) elevation, in 24 cases. Transvaginal ultrasonography was performed at patient admission, with finding of a pelvic neo-formation, heterogeneous and with high-resistance fluxometry, suggestive of TOA. The mean diameter was 5,7 cm (range: 1–9.2 cm) and TOA were bilateral in 6 cases (Table 2).

Intravenous broad-spectrum antibiotics were started in all cases, with clindamycin combined with gentamicin in 15 cases, as well as clindamycin, gentamicin and penicillin, in 11 cases.

Transvaginal aspiration and sclerosis, ultrasound-guided, were performed in all cases with a mean duration from admission to drainage of 2.5 days (range: 1–13 days). The volume of fluid drained ranged from 20–220 mL. The procedure occurred without immediate

Table 2. Clinical characteristics related to the presence of tubo-ovarian abscess

Clinical characteristics	n
Symptoms	
Pelvic pain	26
Median duration of pain	5 days
Abnormal bleeding	6
Cervical discharge	12
Signs	
Fever	16
Cervical discharge	15
Uterine tenderness	26
Complementary exams	
WBC (mean)	14
WBC	
<10	3
10–15	14
>15	9
CT performed	9
US performed	26
Unilateral abscess	20
Bilateral abscess	6
Largest abscess size (mean - range: 1–9.2 cm)	5.7 cm
0–4 cm	3
5–8 cm	21
>8 cm	2

WBC: white blood cell count; CT: computerized tomography; US: ultrasonography.

complications, with a satisfactory patient tolerance. Due to TOA persistence, in six cases, more than one drainage procedure was needed in three cases and other surgical procedure was performed in three cases.

Bacterial species identification was possible in 14 of the 26 cases and the most frequent isolated agent was *Escherichia coli* (9/14 cases). The infection was polymicrobial in 5 cases and, in 12 cases, there was no growth.

Of the 26 cases, 20 had resolution of signs and symptoms within 24–48 hours after the procedure and were discharged without further intervention. The average time of hospitalization in all cases was 7 days (2–13 days) and, in the 20 cases solved with 1 drainage procedure, it was 4 days.

Nineteen patients had follow-up ultrasound scans, and minimal residual fluid was detected in four cases. At long-term, there was one case of pregnancy after *in vitro* fertilization, in a patient with severe endometriosis.

Discussion

This small casuistic presents the results of a minimally invasive treatment, that can be achieved for almost all cases of TOA. The 26 patients with TOA, treated with minimally invasive procedure in our Institution, had mostly primary abscesses (as a consequence of PID)

and, in 3 cases, they were secondary to other surgeries or abdominal conditions.

In all cases, broad-spectrum antibiotics were administered, in majority of cases with clindamycin and gentamycin association. In IUD carriers, penicillin was added because of higher risk of actinomyces infection.

Risk factors for TOA include previous history of PID, multiple sexual partners and intrauterine manipulation³. Although the IUD is not considered a risk factor for PID, except within the first three weeks after insertion⁴, it was the most used contraceptive method of our population (used in 11/26 cases) and only in 1 case recent intrauterine manipulation was identified. Other risk factors for TOA were identified in three cases and were related with recent pelvic surgery and post-partum period.

Our technique for TOA drainage includes sclerosis with povidone-iodine solution, which is introduced in a proportion of 2/3 of the drained fluid, during 2 minutes. This is a safe procedure that can reduce TOA reappearance risk. Povidone-iodine has been successfully administered percutaneously in lymphocysts after kidney transplantation, pelvic surgery and cervical chylous lymphocel, with success rate ranging between 81 and 100%^{12,13}.

The sclerosing effect of povidone-iodine is supposed to be a result of an inflammatory process caused by the elemental iodine that is released during instillation. There is a potential of increased iodine uptake, but as long as the contact time is limited, an adverse effect is not to be expected. Tetracycline is another sclerosing agent that may be used to reduce the reappearance of non-neoplastic ovarian cysts and, in the future, it can be an option to reduce TOA recurrence rates¹⁴.

Many studies have been published defending the imaging-guided drainage procedure as the first line to TOA treatment, if the patient is stable and without peritonitis^{6,8,15}. Although the medical treatment can be successful, an earlier intervention with this technique can improve the results and minimize women morbidity, time of hospitalization and costs. In our study, the success rate with only 1 drainage procedure was 20/26 cases (77%) and the global success rate was 23/26 (88.4%).

We conclude that, in spite of the small number of cases, ultrasound-guided TOA drainage is a simple and a safe procedure that can promote the antibiotherapy efficacy as well as reduce the need for surgical treatment, and consequently, costs and morbidity.

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