

The risks of tubo-ovarian abscess in case of endometrioma and assisted reproductive technologies are both under- and overreported

Claire Villette, M.D.,^a Antoine Bourret, M.D.,^a Pietro Santulli, M.D., Ph.D.,^{a,b,c} Vanessa Gayet, M.D.,^a Charles Chapron, M.D.,^{a,b,c} and Dominique de Ziegler, M.D.^a

^a Department of Obstetrics, Gynecology, and Reproductive Medicine, Université Paris Descartes, Paris Sorbonne Cité–Assistance Publique Hôpitaux de Paris, CHU Cochin; ^b Laboratoire d'Immunologie, Institut Cochin, Inserm Ua0af, Université Paris Descartes, Sorbonne Paris Cité; and ^c Département de Génétique, Développement et Cancer, Institut Cochin, Inserm, Ua0af, Université Paris Descartes, Sorbonne Paris Cité, Paris, France

Objective: To study possible associations among endometriosis, pelvic infectious disease, and ART.

Design: Retrospective cohort analysis over 4 consecutive years, based on medical records and insurance coding in a tertiary endometriosis reference center.

Setting: Tertiary university-based reference center for endometriosis.

Patient(s): We retrieved all charts carrying the diagnoses infectious process and endometriosis in 2009–2012. Each chart was individually analyzed for categorization of the infectious episode and determining whether ART had been performed.

Main Outcome Measure(s): Hospitalization for acute infection in women with known endometriosis and possible past ART.

Intervention: Retrospective insurance codes–triggered chart analysis.

Result(s): Ten patients were admitted for an acute infection with fever, acute abdomen syndrome, elevated white blood cell count, and adnexal mass. Three women had oocyte retrieval, and an endometrioma was present 16, 57, and 102 days earlier. In one patient, the complication occurred 37 days after a cesarean section without prior ART. In the remaining six cases tubo-ovarian abscesses (TOAs) occurred spontaneously in endometriosis women who never had ART. Medical treatment succeeded in only two patients, and the remaining eight needed laparoscopic drainage. In 6 out of those 8 cases, laparoscopic drainage was a second-stage measure justified by failure to respond to antibiotic therapy.

Conclusion(s): Our data indicate that some putative complications of ART and endometrioma may actually not be linked to ART, but rather constitute sporadic occurrences in endometriosis. Furthermore, TOAs occurring in women with endometriosis are best treated by early surgical drainage together with intravenous antibiotics. (Fertil Steril® 2016; ■:■–■.

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Key Words: Endometriosis, endometriomas, pelvic inflammatory disease, tubo-ovarian abscess (TOA), ART

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Management of endometriomas in women undergoing assisted reproductive technologies (ART) has changed. Over the past decade, many publications have questioned

whether endometriomas should be surgically removed before ART (1, 2). Several recent reports suggest that surgery might not improve ART outcome, while risking further hampering already

compromised responses to controlled ovarian stimulation (3–9). Further supporting surgical abstinence are reports indicating that obstetrical complications are rare in women who conceived with the use of ART while endometriomas were present (10, 11).

Taken together, these reports led to not systematically removing endometriomas before ART (3, 6, 12). As a result, oocyte retrievals for ART are commonly conducted while endometriomas—possibly large, multiple, and bilateral—remain present.

Received January 13, 2016; revised April 11, 2016; accepted April 12, 2016.

C.V. has nothing to disclose. A.B. has nothing to disclose. P.S. has nothing to disclose. V.G. has nothing to disclose. C.C. has nothing to disclose. D.d.Z. has nothing to disclose.

Reprint requests: Dominique de Ziegler, M.D., Professor and Head, Reproductive Endocrinology and Infertility, Service de Gynécologie Obstétrique II, Groupe d'Hôpitaux Paris Centre Cochin Broca Hôtel Dieu, Hôpital Cochin, 53, Avenue de l'Observatoire, 75014 Paris, France (E-mail: ddeziegler@me.com).

Fertility and Sterility® Vol. ■, No. ■, ■ 2016 0015-0282/\$36.00

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This new clinical trend—undertaking ART while endometriomas are present—raised fears, however, that this might increase the risk of infectious complications of ART. Several case reports (13–17) indeed described sporadic cases of abscesses, but without truly sizing the reality of this risk, i.e., the incidence of serious post-ART complications. Conversely, a prospective study of 214 ART cycles conducted in women having one or several endometriomas present at the time of oocyte retrieval reported no pelvic infection within 2 months after oocyte retrieval (18).

The discrepancy between isolated reports of infections in women undergoing ART with endometriomas and a fairly large systematic analysis finding no complications led us to question whether certain infections might have eluded the systematic analysis. For clarifying this issue—critical for an adequate risk and safety assessment of ART in women with endometriomas—we analyzed all acute infectious complications that occurred in women with endometriosis at our institution over 4 years. For this, we retrieved the charts of all patients admitted over the 4-year interval that bore at least the two diagnoses of endometriosis and infectious process. Working from this list, we report here all cases of acute tubo-ovarian abscesses (TOA) encountered in women with endometriomas during the observation period, regardless of whether ART had been performed or not.

MATERIALS AND METHODS

We conducted a retrospective analysis of all women who were admitted at our institution with the two diagnoses of infectious process and endometriosis over 4 consecutive years (January 2009–December 2012). At our institution, we conduct ~200 surgical and 450 ART procedures annually in women with endometriosis. All women admitted at our institution consent to the anonymous use of their medical data for quality assessment and/or publication. Therefore, no Institutional Review Board approval was sought for this retrospective analysis, as stipulated in our standard operation procedures which are reviewed yearly through our ISO certification process. All medical diagnoses and procedures (present and past) are coded for each new and returning admission according to the International Classification of Diseases published by the World Health Organization. With the use of this database, we retrieved all charts of patients hospitalized during the defined interval, which bore the diagnoses of: 1) “endometriosis”; and 2) “salpingitis,” “oophoritis,” and/or “other pelvic inflammatory disease (PID).” All charts were individually reviewed to retain only those patients with known endometriomas diagnosed surgically or based on standardized imaging procedures (ultrasound or magnetic resonance imaging) and had an emergency admission for an acute infectious process. Patients having a history of pelvic infection (former PID, appendicitis, etc.) but not related to the actual hospitalization were therefore excluded from the present analysis.

Demographic data collected in this chart review included age, parity and gravidity, and infertility history. Endometriosis was staged with the use of the revised American Fertility Society classification for endometriosis (rAFS), based on surgical or imaging data. Presence of endometrioma and history

of surgical resection of endometrioma were noted. When reviewing the infertility history, we noted whether ART had been performed at our institution or elsewhere. For patients who had ART, the use of prophylactic antibiotics and/or possible accidental puncture of endometrioma(s) during oocyte retrieval were also noted when available. During the hospital stay, the following parameters were followed: pelvic pain, fever, metrorrhagia, white blood cell (WBC) count, ultrasound findings, computerized tomographic (CT) scan results, antibiotic use, whether surgical drainage was performed or not (noting the number of days after admission), surgical findings, results of bacteriologic cultures, and duration of hospitalization. Women whose hospitalization for acute infectious process occurred <1 month after pelvic surgery for endometriosis or delivery (vaginal or by cesarean section) were arbitrarily excluded from analysis.

This retrospective study received no specific funding.

RESULTS

A total of 230 patients were admitted at our department between January 2009 and December 2012 with the dual diagnostic coding of endometriosis and one of the selected infectious diagnoses. After a thorough chart review, 213 of these 230 endometriosis cases were excluded because they underwent scheduled surgery and simply had a former history of pelvic infection that justified the diagnostic coding but was unrelated to the actual hospitalization. Five more patients were excluded because they had undergone surgery for endometriosis <1 month before their admission for an acute infectious process. One more patient was excluded because she had a vaginal delivery 18 days before the admission for an infectious complication. Finally, one more patient had to be excluded because insufficient data were available. Ultimately therefore, ten patients were retained for analysis, as illustrated in the patient flow chart (Fig. 1). All had endometriosis diagnosed by means of surgery or standardized imaging criteria with or without endometrioma and underwent emergency hospitalization for a TOA.

The baseline characteristics of these ten patients are presented in Table 1. Median age was 33 (range 27–44) years. Four women were infertile, four had children, and two were nulliparous with no immediate desire for pregnancy. All were classified to have endometriosis stage III or IV according to the rAFS scoring system. Seven women had one or more endometriomas and the remaining three had no cyst.

Details on the clinical course of each case are described in Table 2. All ten patients reported pelvic pain and had fever (38°C–39.5°C). Three of them reported metrorrhagia. WBC count ranged from $10.8 \times 10^9/L$ to $25 \times 10^9/L$. Pelvic ultrasound with or without CT scan performed on admission supported the diagnosis of TOA in all of the admitted women. Eight of the ten patients were first treated medically (patients 1, 2, 3, 4, 5, 6, 8, and 9) with intravenous antibiotics. Despite using two or three large-spectrum antibiotics, six of these eight failed to improve, which prompted surgical exploration 2–9 days later. Patient 4 developed septic shock 2 days after admission and onset of antibiotic therapy. In two patients, 7 and 10, physical examination at admission revealed high

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