

A Case Report of Tubo-ovarian Abscess Following Saline Infusion Sonohysterography

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ABSTRACT

Saline infusion sonohysterography (SIS) is a widely used procedure for intrauterine lesion diagnosis. It has few side effects and complications. The authors present a case report of a middle-aged Thai woman who presented with metrorrhagia. Malignancy had been ruled out with fractional curettage. Despite hormonal treatment, she had persistent metrorrhagia. SIS was performed and a tubo-ovarian abscess developed. Exploratory laparotomy with TAH and BSO were carried out for treatment.

Keywords: Tubo-ovarian abscess, saline infusion sonohysterography, abnormal uterine bleeding

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In 1981 saline infusion sonohysterography was first introduced for the diagnosis of several intrauterine lesions or abnormalities.¹ Nowadays it is widely used and has been studied to prove the high sensitivity, specificity, positive and negative values of the test.² Saline infusion sonohysterography (SIS) has been accepted so quickly as a routine procedure for intrauterine lesion diagnosis because of several reasons. Firstly, it is really a simple technique which can provide additional information over conventional transvaginal ultrasound while evaluating the uterine cavity. Secondly, it offers a high sensitivity of 88-95% in detecting intracavitary abnormalities, intracavitary mass, submucosal fibroids and endometrial polyps, with an overall specificity of 77-98%.² Thirdly, the procedure has very few complications, with endometritis, fever and peritonitis only 0.95-1%.^{2,3} Lastly, most of the women can tolerate the procedure very well.

The authors present a case report of tubo-ovarian abscess developed after performance of SIS. It was a middle aged Thai woman with persistent metrorrhagia despite fractional curettage to rule out malignancy and hormonal treatment. She was sent for SIS to find out whether there were any intrauterine abnormalities, such as endometrial polyps. Unfortunately she was diagnosed with tubo-ovarian abscess after SIS performance. TAH & BSO were done.

CASE REPORT

A 38-years-old woman presented to the hospital because of a 2-week history of metrorrhagia. She was sexually active without contraception. Gynecologic history reveals that she has already had 4 children and the last one was 15 years old. Last year her Pap smear was negative for malignancy. The pelvic examination revealed normal MIUB, bloody discharge in the vaginal canal, normal cervix, normal sized uterus and adnexae. In order to find out the pathological intrauterine lesions, especially malignancy, fractional curettage was performed. The pathological report was hemorrhaging endometrium with secretory pattern. Thus the diagnosis of ovulatory dysfunctional uterine bleeding was made. Oral combined contraceptive pills were prescribed as a treatment for 2 cycles.

During these two months she still complained of vaginal spotting everyday, although she had had the pills regularly. Intrauterine lesions such as endometrial polyps were considered. Therefore, transvaginal ultrasonography with saline infusion sonohysterography was performed under aseptic technique. With the patient in the lithotomy position a sterile speculum was inserted into the vagina. After the cervix was cleansed with sterile solution, a sterile catheter was inserted into the uterine cavity through the cervical canal. Then sterile saline was instilled into the cavity. The fluid distended the cavity and acted as a negative contrast agent to provide a detailed and well-defined view of the endome-

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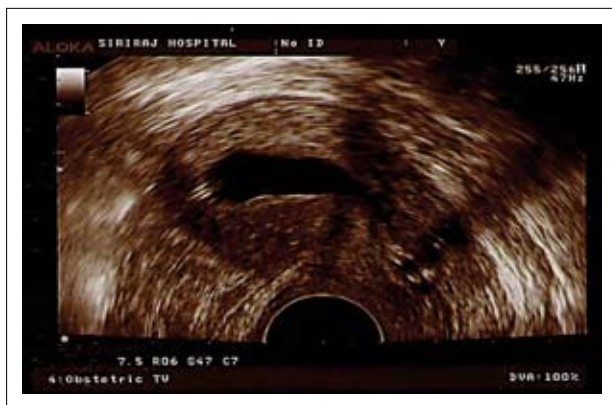


Fig 1. Saline infusion sonohysterography.

trium and its surface contours. The sonohysterography revealed echogenic irregularity with a tiny hyperechogenic lesion protruding from the upper posterior uterine wall (Figure 1). A filling defect in the posterior wall of the uterus, 3.5 cm in diameter, without definite capsule was identified. Adenomyosis was mostly likely suspected. A simple cyst of 4 cm in diameter with clear fluid located inside the left ovary was also identified. The cyst was considered to be a follicular cyst. The patient was discharged with oral combined contraceptive pills.

One day later she came to the hospital complaining of pelvic pain. Physical examination showed generalized guarding and tenderness of the lower abdomen, with rebound tenderness at the right and left lower quadrant of her abdomen. Pelvic examination revealed a normal MIUB, normal vaginal discharge, normal cervix, except positive cervical excitation pain. The uterus and adnexa could not be evaluated because of generalized guarding. The patient was admitted for peritonitis. Stage II pelvic inflammatory disease was the initial diagnosis. At first the patient was kept in semifowler's position and 2 grams of cefoxitin was administered intravenously every 6 hours. Two specimens of hemoculture and cervical swab culture were collected and reported no growth later. After two days' treatment the patient did not get better. She still had tenderness and rebound tenderness of the lower abdomen with both the physical and the pelvic examination. Therefore transvaginal ultrasonography was performed again and a single ovarian cyst of 5 cm in diameter with echogenic content was clearly identified. The uterus and left ovary were found normal. No free fluid was identified in the cul de sac. The clinical manifestations directed the non-responsiveness of the treatment. Therefore, clindamycin with 2,700 mg per day and gentamicin with 240 mg per day were administered instead of cefoxitin. After another two days of treatment the patient had still not improved. The follow-up transvaginal ultrasonography revealed a larger cyst of 6 cm in diameter with turbid content. Therefore, tubo-ovarian abscess was considered and an exploratory laparotomy was performed.

With a low midline incision TAH with BSO was performed successfully. The uterus was found mildly enlarged with smooth endometrium. Tubo-ovarian abscesses with 6 cm and 7 cm in diameter were identified at the left and right adnexae, respectively. There was also marked adhesion among the uterus, adnexae and the rectosigmoidal colon. Unfortunately the

abscess was accidentally ruptured during operation. After the operation the same intravenous antibiotics were prescribed for another 2 days until the patient recovered from fever. Also the oral antibiotics with levofloxacin and metronidazole were prescribed instead for another 10 days. The patient got better after the operation and could be discharged on the sixth day post operation. The bacterial culture of the abscess was *E.coli* which was sensitive to Cefoxitin and Gentamicin. The pathological report revealed pyosalpinx, endosalpingitis and multiple abscesses in the tubal wall and perioophoritis of both adnexae. The cervix and myometrium were unremarkable. The endometrium was in its proliferative phase. One month later the patient came to the hospital for a follow-up pelvic examination. She was healthy and hormonal replacement treatment was administered.

DISCUSSION

Saline infusion sonohysterography is a simple technique with few complications. It involves the slow infusion of sterile saline solution into a woman's uterus during ultrasound imaging. It is usually performed at the mid to late follicular phase to avoid pregnancy interruption. This procedure is indicated in several conditions, such as abnormal bleeding in premenopausal and postmenopausal bleeding,^{4,6,7} infertility,^{4,8,9} habitual abortion, preoperative and postoperative evaluation of uterine cavity,⁴ especially with regard to uterine myoma, polyps^{4,10} and cysts,⁴ inadequate imaging of the endovaginal ultrasonography,⁴ and so on.

In these days saline infusion sonohysterography has been widely used for gynecologic diagnosis. Some side effects and only few complications have been reported. The most serious ones were 2 cases of severe infective complication which needed surgery for salpingitis and pelvic abscess.³ Reviewing the articles in ovid medline and pubmed with the searching words of tuboovarian abscess, saline infusion sonohysterography, saline infusion sonohysterosalpingography and complication the authors found no other reports of such serious infections related with SIS. Therefore TOA following SIS is really a rare complication.

Tubo-ovarian abscess is the third stage of acute salpingitis according to the Gainesville staging. The interstitial inflammation and secondary edema of the fallopian tube result in focal tubal occlusion at the proximal and distal part. The retrograde drainage of the inflammatory exudate into the endometrial cavity increases the intraluminal pressure thus increasing the local diameter of the fallopian tube.¹¹ Ascending infection from the lower genital tract to the uterus and fallopian tubes through the cervix is the common route of acute pelvic inflammatory disease. According to the report of Landers et al.¹² the most common microorganisms were *Escherichia coli*, *Bacteroides fragilis*, *Bacteroides species*, *Peptostreptococcus*, *Peptococcus*, and *aerobic streptococci*. Anyway although the microbiological flora in the vaginal canal includes both the aerobic and anaerobic bacteria, the regulated governance of the commensal bacteria prevents them from transformation to the regional pathogens and producing disease. Meanwhile the cervix has an important resistance to avoid the invasion of such organisms into the uterine cavity and adnexae. The possible mechanism of

infection may be that SIS is a procedure which breaks down the resistance of the natural protection, the cervix. However, the studies of Bonnamy L.² and Dessole S, et al.³ reported that infection had occurred less than 1%. Preoperative antibiotics is a controversial step. Also according to the ACOG technology assessment of saline infusion sonohysterography it is recommended only in cases with risk factors of infection, for example, nontender hydrosalpinx.^{4,5,13}

In this case the patient had only monogamy and no history of sexually transmitted disease. Also so was her husband. Pelvic examination and transvaginal ultrasonography showed no signs of genital tract infection such as leucorrhea. Therefore no antibiotics were administered for prevention. Additionally the total procedure was under aseptic techniques. Theoretically her risk of infection was less than 1%. Anyway unlike the study of Bonnamy² cleansing the external cervix with sterile normal saline instead of iodised polyvidone may not kill the microorganisms. It can just wash them away. Some microorganisms might be introduced into the uterine cavity through the cervical canal with the catheter. At first this patient was diagnosed as stage II of PID. Therefore, Cefoxitin plus Doxycycline were sufficient antibiotics for treatment according to CDC.¹⁴ When cyst of turbid content was identified later, stage III of PID or TOA was diagnosed. Nowadays broad-spectrum antibiotics, conservative surgery, and imaging guided drainage has become the initial treatment of the management of an unruptured TOA. The antimicrobial regimen chosen must have appropriate coverage against common organisms in TOA, including *B fragilis*, peptostreptococci, gram-negative aerobes, *C trachomatis*, and *N gonorrhoeae*, and the antibiotics such as Clindamycin, or Metronidazole, should be able to penetrate the abscess cavity. Clindamycin combination regimen has been reported to achieve the highest response rates (68%) of antimicrobial treatment.^{15,16} Therefore, in this case Clindamycin and Gentamicin were chosen to be the treatment. However, after 48 hours of antibiotic therapy the clinical manifestation was the same. Therefore surgical intervention was taken. In this case TOA was maybe already developing during the early days. The microorganism cultured from the TOA pus was *E.coli*. It might be the vaginal flora in this woman, but became a pathogen without the governance of its commensal bacteria.¹⁷ Although it was also sensitive to Cefoxitin, the clinical signs would not get better without surgical removing the pus.

Anyway infection developing in only one day after SIS performance was rather faster than it should usually do. It was speculated that abnormal uterine bleeding

made the patient more susceptible to infection. Other possibilities such as chronic PID which already existed and SIS was just a procedure to cause the exacerbation. However, the history and pelvic examination could not prove the signs and symptoms of PID before the SIS performance. Therefore prophylactic antibiotics was not indicated.

In conclusion the authors report a case of severe condition, TOA, following SIS performance in a woman with metrorrhagia. It is rare evidence that TOA can develop following SIS. Awareness should be focused on an aseptic technique. Antiseptic solution instead of normal saline used in case of cervical cleansing might reduce the chance of infection in such conditions.

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