

Efficacy of Ovarian Stimulation and Intrauterine Insemination in Women with Unilateral Tubal Occlusion Diagnosed by Hysterosalpingography

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ABSTRACT

Purpose : To assess the usefulness of controlled ovarian hyperstimulation (COH) and intrauterine insemination (IUI) in women with unilateral tubal occlusion diagnosed with hysterosalpingography (HSG).

Methods : Retrospective, case-controlled study. The study group consisted of all consecutive patients from 2003 through 2008 who met the following criteria : (1) absence of endometriosis ; (2) normal sperm parameters ; (3) findings of a normal uterine cavity on HSG, and normal transfer and spill from one fallopian tube ; and (4) age < 40 years. The study group comprised 52 patients, and the control group comprised 256 patients. Clomiphene citrate (CC ; 50-100 mg/day) was used for controlled ovarian hyperstimulation. We compared the pregnancy rates (PRs) and cumulative PRs between the study group and the control group.

Results : The PRs per CC and IUI cycle were 8.3% in the study group and 8.2% in the control group. The cumulative PRs after 6 cycles were 38.2% in the study group and 35.2% in the control group. There were no significant differences in the CC or IUI cycle between the patients with unilateral tubal occlusion and the control group.

Conclusions : CC and IUI treatment should be considered for patients with unilateral tubal occlusion diagnosed with HSG without any other infertility factors. (Jikeikai Med J 2012 ; 59 : 1-4)

Key words : hysterosalpingography, intrauterine insemination, ovarian hyperstimulation, tubal occlusion

INTRODUCTION

Hysterosalpingography (HSG) is an important procedure for diagnosing tubal patency, and its findings might dictate the treatment strategy for infertility. Although HSG is not a difficult procedure, the diagnostic value of HSG in cases of tubal occlusion is not generally appreciated¹⁻³. Treatments for infertility include adjusting the timing of intercourse and intrauterine insemination (IUI) in patients with normal bilateral tubal patency. Conversely, treatments considered include assisted reproductive technology (ART) and laparoscopy in patients with bilateral tubal oc-

clusion. However, the most appropriate treatment for patients with unilateral tubal occlusion is unclear. To the best of our knowledge, Farhi et al. first reported on the relationship between unilateral tubal occlusion and the results of treatments for infertility⁴, but the results were discussed until only 3 consecutive cycles. The Japan Society of Reproductive Medicine recommends that IUI be performed until 5 or 6 consecutive cycles. We often encounter cases of unilateral tubal occlusion. Tubal occlusion can be caused by infection, endometriosis, or tubal spasm. Before performing ART, some clinicians recommend intercourse timing, IUI, or a second HSG examination. How-

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ever, some patients commonly become pregnant after undergoing salpingectomy for ectopic pregnancy or salpingo-oophrectomy for ovarian tumor. The question becomes: does fertility decrease significantly in patients with unilateral tubal occlusion? Thus, the aim of the present study was to investigate the efficacy of IUI and clomiphene citrate (CC) in patients with unilateral tubal occlusion.

MATERIALS AND METHODS

Patient selection

The study group consisted of all women consecutively referred to The Jikei University of Medicine Hospital from 2003 through 2008 who met the following criteria: (1) absence of endometriosis (diagnosed on the basis of transvaginal ultrasonography and clinical symptoms; diagnostic laparoscopy was not performed); (2) normal sperm parameters; (3) HSG findings of a normal uterine cavity, normal transfer and spill from 1 fallopian tube; and (4) age <40 years; All women received 1 or more IUIs with CC. The case group consisted of 52 patients (144 cycles). The control group comprised patients with unexplained infertility ($n=256$; 790 cycles) who were treated during the same period; (5) no history of chlamydial infection.

Protocol for COH and IUI

In all cycles, controlled ovarian hyperstimulation (COH) was used with CC (50–100 mg/day). Follicular growth was monitored from about the 12th day after the last menstrual period. The timing of human chorionic gonadotropin (hCG) administration was based on the presence of a dominant follicle of ≥ 20 mm; hCG was withheld if more than 5 follicles in both ovaries had a diameter >14 mm. IUI was withheld when no mature follicle appeared on the side of the patent tube. If the criteria were met, the patients received 5,000 IU of urinary hCG. IUI was performed 24 hours after hCG administration. A serum hCG pregnancy test was performed about 20 days after IUI.

Comparison of characteristics between the groups

We compared the following clinical characteristics between the study group and the control group: woman's age, duration of infertility at the time of HSG, total sperm volume, total motile sperm count, percentage of motile

sperm, basal follicle-stimulating hormone (FSH) (IU/ml), and endometrial thickness.

Main outcome measures

The pregnancy rates (PRs) and cumulative PRs were compared between the study group and the control group. The specific occlusion location (right or left, proximal or distal) could not be clearly identified in some cases. We examined the correlation between cumulative PRs and the location of tubal occlusion in 28 cases.

Statistical Analysis

Student's t -test was applied for continuous variables, and the chi-squared (χ^2) test was used for binary variables. A P value <0.05 was considered statistically significant.

This study conformed to the principles of the Declaration of Helsinki.

RESULTS

Comparison of characteristics between the groups

The basic clinical and sperm variables did not differ between the groups (Table 1).

The results of IUI and CC

The PR per cycle of CC and IUI was 8.3% in the study group and 8.2% in the control group. The cumulative PR after 6 cycles was 38.2% in the study group and 35.2% in the control group (Fig. 1). Neither the PR per cycle nor the cumulative PR after 6 cycles differed significantly between the groups. In the 16 patients with left tubal occlusion, 4 pregnancies were achieved; in the 12 patients with right tubal occlusion, 3 pregnancies were achieved.

Table 1. Case Background

	Control group (mean)	Study group (mean)	
Patient age (years)	36.0	35.9	NS
Contraception period (months)	15.1	19.6	NS
Sperm volume (ml)	2.3	3.3	NS
Total sperm concentration ($\times 10^6$ /ml)	87.3	85.0	NS
Sperm motility (%)	53.1	56.9	NS
Basal FSH (IU/ml)	8.6	7.3	NS
Endometrium (mm)	9.1	9.3	NS

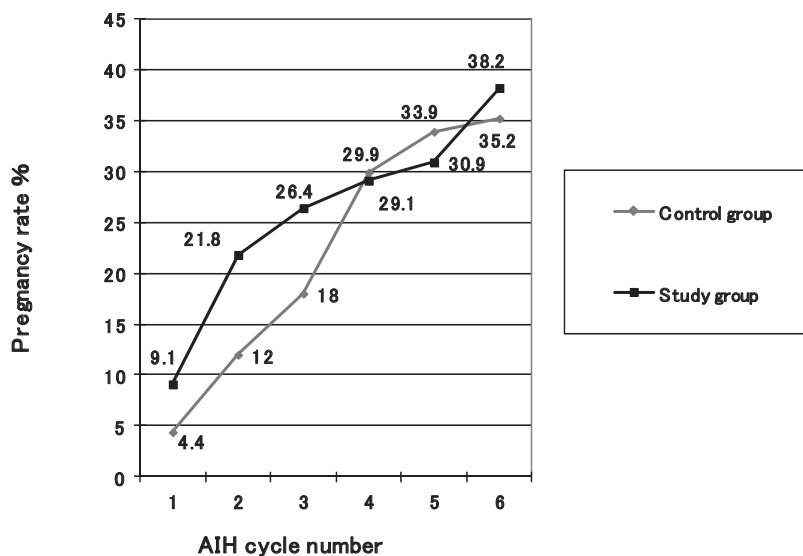


Fig. 1. The cumulative PRs after 6 cycles were 38.2% in the study group and 35.2% in the control group.

The total cumulative PR was 25% (7 pregnancies in 28 patients). The cumulative PR in patients with distal tubal occlusion (7.7%, 1 pregnancy in 13 patients) did not differ significantly ($p=0.06$) from that in patients with proximal tubal occlusion (40% ; 6 pregnancies in 15 patients).

DISCUSSION

This study found that the cumulative PR after 6 cycles of CC and IUI in women with unilateral tubal factor infertility, diagnosed with HSG as the sole abnormal finding of the infertility investigation, was similar to the cumulative PR in women with unexplained infertility and normal HSG findings. Furthermore, the fecundity of women with unilateral tubal occlusion did not decline compared with women with unexplained infertility and normal HSG findings. Farhi et al. have reported that the cumulative PR was lower in women with mid-distal tubal occlusion than in those with proximal tubal occlusion ; however, the difference was not statistically significant (mid-distal : 4 of 21 [19%] ; proximal : 13 of 34 [38.2%] ; $P=0.135$; odds ratio [OR] : 0.38 ; 95% confidence interval [CI] : 0.10-1.38)⁴. Similarly, the cumulative PR was lower in cases of distal tubal occlusion than in cases of proximal tubal occlusion ; however, we found no significant difference between the groups in our study. These findings suggest that some cases of proximal tubal occlusion might actually be cases of bilateral tubal patency.

Poonam have reported that abnormal HSG findings were present in 55 of 105 patients ; most patients were 26 to 30 years of age and had had infertility for 6 to 10 years⁵. He showed that the fallopian tubes were occluded in 34.28% of cases, with proximal occlusion being the most common⁵. Hydrosalpinx was found in 5.71% of the patients, and a beaded and wiry appearance of the tubes was seen in 2.85% of cases⁵. This finding also suggests that some cases of proximal tubal occlusion might actually be cases of bilateral tubal patency. Kitilla has reported that the true-positive rate of cases of HSG-diagnosed bilateral tubal occlusion was 89% ; 25% of cases of cornual occlusion diagnosed with HSG were actually patent, and 14% of cases imaged as bilaterally patent tubes were defective⁶. Furthermore, the false-negative rate for a diagnosis of bilateral tubal patency was 10%⁶. Conversely, Tvarijonaviciene et al. have reported that the sensitivity was 89.5% and the specificity was 90% when the definition of tubal occlusion was limited to bilateral occlusion ; furthermore, as a test for peritubal adhesions, HSG had a sensitivity of 35.5% and specificity of 81.3%⁷. These authors concluded that the diagnostic value of HSG for overall tubal pathology and peritubal adhesions is poor⁷.

With HSG, the inclined catheter in the lumen or tubal spasm may be falsely diagnosed as tubal occlusion. Indeed, we often find that tubal patency is easily confirmed in the cases thought to be occlusive after the portion of the uterus and tube is evaluated via a tubal patency test at lapa-

roscopy. It may be worth considering that cases diagnosed as proximal tubal occlusion should be reconfirmed.

In the present study we found no differences between the study group and the control group in basic clinical and sperm variables, the PR per cycle, or the cumulative PR per cycle after 6 cycles. Some infertility factors are associated with peritoneal and peritubal adhesions due to previous surgery or sexually transmitted diseases; however, we did not include cases with these factors. Nevertheless, CC and IUI might be considered appropriate treatment for infertile patients with unilateral tubal occlusion.

In conclusion, there were no significant differences between patients with unilateral tubal occlusion diagnosed with HSG, the control group, and the CC and IUI group. Although HSG plays an important role in the screening for tubal patency, we suggest that CC and IUI until 6 consecutive cycles can be considered for patients with unilateral occlusion diagnosed with HSG without any other infertility factors.

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