IVF Öncesi Diagnostik Histeroskopi: Hangi Kadınlara Yapılması Uygundur?

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Abstract

Diagnostic Hysteroscopy Before IVF: Which Women are Candidates?

Objective: Empirically, hysteroscopy before IVF has been suggested to be performed in women with repeated IVF failures. We aimed to analyse the basis for this indication, and also, to determine other possible predictors for a uterine pathology before an IVF cycle.
Materials and Methods: One-hundred-seventy-six consecutively seen women, who were screened for an intrauterine pathology before the IVF cycle by using office hysteroscopy, were analysed in this retrospective analysis. Women with an endometrial pathology were compared to those without any pathology with respect to their clinical characteristics, such as age, duration of infertility, type of infertility, history of previous curettage, cause of infertility and number of previous embryo transfers. Logistic regression analysis was used for the statistical analysis.
Results: In 16% of subjects, a pathology was observed; 39% of these women had endometrial polyps, 32% had endometrial adhesions, 18% had uterine septum and 11% had leiomyomas. Regression analysis revealed that the number of previous IVF-ET failures was the only predictor for a uterine pathology. Women with at least one IVF-ET failure were 2.7 times more likely to have an endometrial pathology than those, who had no failures. Odds ratios were 3.2 for women with two or more failures, and 4.7 for those with three or more failures. There was an increasing trend in odds ratios with increasing number of IVF failures.
Conclusion: Women with any previous number of IVF failures are good candidates for screening for endometrial pathology before IVF. Increasing number of failures increases the risk for detecting a lesion in the cavity.
Keywords: indication, endometrium, IVF, office hysteroscopy

Özet

Amaç: IVF öncesi histeroskopi, IVF başarısızlığı olan kadınlara iyi bir bilimsel kanıt olmadan önerilmektedir. Amacımız bu endikasyonun bilimsel kanıtı yanında uterin patolojileri tahmin etmede belirleyici diğer muhtemel etkenleri araştırmaktır.
Materyal ve Metot: Yüz yetmiş altı ardışık IVF siklusu öncesi, endometrial patolojileri taramak için yaptığımız ofis histeroskopi uygulamalarının sonuçlarını bu retrospektif çalışmada inceledik. Endometrial patoloji saptanan olgular ile saptanmayan olgular yaş, infertilite süresi, tipi ve sebebi, küretaj anamnezi, önceki embryo transfer (ET) başarısızlıklarının sayısı açısından karşılaştırıldılar. Lojistik regresyon analizi ile endometrial patolojiyi belirleyebilecek bağımsız değişkenler araştırıldı.
Sonuçlar: Yüzde 16 olguda kavitede patoloji saptandı: %39'unda endometrial polip, %32'sinde endometrial adhezyon, %18'inde uterin septum ve %11'inde leiomyom mevcut idi. Regresyon analizinde sadece önceki ET başarısızlık sayısının uterin patolojiyi bağımsız olarak tahmin edebildiği gözlendi. En az bir ET başarısızlığı olanlarda patoloji olma riski olmayanlara göre 2.7 kat artmış idi. En az iki ve üç başarısızlığı olanlarda ise olasılık oranları sırasıyla 3.2 ve 4.7 idi. Olasılık oranlarında, artan ET başarısızlığı ile bir artma eğilimi vardı.
Tartışma: IVF öncesi kavite patolojilerinin ofis histeroskopi ile taranması için ET başarısızlığı olan kadınlar en uygun adaylardır. Başarısızlık sayısı arttıkça kavitede lezyon çıkma olasılığı da artmaktadır.
Anahtar sözcükler: endikasyon, endometrium, IVF, ofis histeroskopi

Introduction

The major determinants of successful implantation during IVF are embryo quality, uterine receptivity and the transfer technique. Despite recent developments in IVF, implantation rates have not been able to exceed the 1:4 rate.

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Structural abnormalities of the uterus and endometrial cavity may affect reproductive outcome adversely by interfering with implantation (1). In women undergoing IVF treatment, the incidence of uterine abnormalities has been reported to range between 19% and 50% (2-5). In addition, hysterosalpingography (HSG), which is frequently performed during the course of infertility evaluation, does not seem reliable before IVF treatment with its false positive rate of 15.6% and false negative rate of 35.4% (4-9). Therefore, screening the uterus before proceeding with IVF has been recommended, and the preferred method for evaluating the uterus in most studies has been hysteroscopy (5,10-12). Empirically, hysteroscopy has been suggested to be

performed in women with repeated IVF failures (10,13). However, there might be other determinants for a uterine pathology before an IVF cycle, e.g. age, duration of infertility. Therefore, in the present study, we aimed to determine factors, which are associated with a uterine pathology after routine application of office hysteroscopy to women undergoing IVF, in our center.

Materials and Methods

One hundred seventy six consecutively seen patients, who were screened with office hysteroscopy for an intrauterine pathology before the IVF cycle, were analysed in this retrospective analysis. The study was approved by the institutional review board at the Marmara University.

All office hysteroscopies were performed in the early proliferative phase using saline distention medium and a 5.0 mm continuous flow office hysteroscope (Compact miniature hysteroscope, Karl Storz GmbH and Co., Tuttlingen, Germany) without cervical dilatation. The scope is based on a rod lens system with a diameter of 3.3 mm at the tip and 0° view. The diameter of the hysteroscope gradually increases to a maximum of 4.3 mm with an incorporated 5 Fr working channel. Intrauterine pressure was maintained at a constant 100-140 mmHg using a pressure infusion cuff for irrigation (Karl Storz GmbH and Co.). Semi-rigid operative hysteroscopic instruments such as scissors, grasping forceps, and biopsy forceps were used for the treatment of small intrauterine lesions such as polyps and focal adhesions. The procedures were carried out at the IVF centre on an outpatient basis and without the use of anesthesia. Women were discharged 20 to 30 minutes after the procedure and no complications occurred.

Abnormal findings during hysteroscopies were noted, and women with an endometrial pathology were compared to those without any pathology with respect to their clinical characteristics, such as age, duration of infertility, type of infertility, i.e. primary versus secondary, cause of infertility, history of previous curettage and number of previous embryo transfers. Since the majority of data was missing or their reports could not be obtained, data on the previous hysterosalpingographic findings were not included in the present analysis. All variables with a P value of ≤ 0.2 in the univariate analysis were then included in the multivariate stepwise logistic regression analysis. The dependent variable during the regression analysis was the presence of abnormality. SPSS, Release 11.5 (SPSS, Inc, Chicago, IL, U.S.A.) was used for the statistical analysis, and a P value of <0.05 was considered significant.

Results

Office hysteroscopies of 176 women were analyzed in the present study. In 28 (16%) of these, a pathology was observed during hysteroscopy. Eleven (39%) women had endometrial polyps, nine (32%) women had endometrial adhesions, five (18%) had uterine septum and 3 (11%) had leiomyomas. Twenty-six percent of women with IVF failure had an endometrial pathology, and 12% of those without an IVF failure had abnormal cavity (P=0.02).

Age, duration of infertility, rate of women with primary infertility, history of previous curettage and cause of infertility were comparable between groups (Table 1). Only the number of previous IVF-ET failures was significantly different between groups.

Regression analysis revealed that the number of previous IVF-ET failures was the only predictor for the uterine pathology during a routine hysteroscopy before IVF (β=0.53; P=0.004). Women with at least one IVF-ET failure were 2.7 times (Odds ratio; 95% Confidence interval: 1.2-6.1) more likely to have an endometrial pathology than those, who had no failures (P=0.025). Women with at least two IVF-ET failures were 3.2 times (Odds ratio; 95% Confidence interval: 1.2-8.8) more likely to have an endometrial pathology than those, who had one or no failures (P=0.0498). Women with three or more IVF-ET failures were 4.7 times (Odds ratio; 95% Confidence interval: 1.2-18.9) more likely to have an endometrial pathology than those, who had two or less failures (P=0.04). There was an increasing trend in the odds ratios with increasing number of IVF failures.

Table 1. Demographic and clinical characteristics of women with an endometrial pathology and those without any pathology

	Normal cavity	Abnormal cavity	p
	(n=148)	(n=28)	
Age (years)	32.4±5.5	33.8±5.1	0.2
Duration of infertility (years)	6.8±5.3	7.3±6.0	0.6
Rate of women with primary infertility (%)	79.7	75.0	0.6
Rate of women with a previous curettage (%)	3.4	0	1.0
Cause of infertility (%)			
Unexplained infertility	22.3	21.4	
Male factor	53.4	39.3	
Female factor	20.9	28.6	
Both partners	3.4	10.7	0.2
Previous IVF-ET failures (%)			
None	73.0	50.0	
One	17.6	25.0	
Two	6.1	10.7	
Three	2.0	3.6	
Four	1.4	10.7	0.03

Discussion

Implantation failure after embryo transfer still has been one of the main problems in IVF. Since intrauterine pathology may lead to implantation failure or abortion, several authors have studied the role of hysteroscopy in IVF-ET to exclude endometrial factors that could negatively influence IVF outcome (4,5,10,11,13). Initial studies have focused on subjects with failed IVF attempts, and suggested that previously undiagnosed, misinterpreted, or subtle newly added intrauterine abnormalities may be a significant cause of IVF failure and correction of these abnormalities may be beneficial in terms of pregnancies (10,13). Although subjects with IVF failures appear to be good candidates for screening hysteroscopy before an IVF attempt, this has not been proven, and also, the question for the number of IVF failures after which a hysteroscopy is necessary remains undetermined. In addition, there may be other predictors for an intrauterine pathology before IVF. The present study showed that previous IVF failure is the only independent predictor for an intrauterine pathology in women undergoing IVF, and therefore, these women seem to be appropriate candidates for screening hysteroscopy before an IVF attempt.

Nawroth et al. have evaluated the importance of routine minihysteroscopy in the diagnosis of primary infertility, and observed that 10% of women had an intrauterine pathology (14). They have suggested that minihysteroscopy should become a routine diagnostic procedure in women with primary infertility, even those with no suspected intrauterine pathology or other risk factors (14). In the present study, the rate of abnormal findings was 16% among women undergoing IVF. This rate seems lower than those reported among unselected women undergoing IVF (40-50%) (5,11). The reported rates of abnormal findings among women with IVF failures are between 18 and 50% (4,10,13,15-17). The corresponding rate in the present study was 26%.

The present study showed that there was an increasing trend in the odds ratios with increasing number of IVF failures; it was 2.7 after an initial failure and 3.2 and 4.7 after two and three failures, respectively. This suggests that each additional IVF failure increases the risk for an intrauterine abnormality, and suggestion for an optimum number of IVF failures after which a hysteroscopy should be performed seems inappropriate.

Because of the relatively high incidence of uterine abnormalities in patients undergoing IVF, the routine use of hysteroscopy has been recommended for screening in an IVF program (2-5,10). However, although hysteroscopy has become an outpatient procedure with recent advances in technology, i.e. optic systems, it is still an invasive procedure and has complications (18). Therefore, it may not be appropriate for all women undergoing IVF.

The major weakness in the present study is that data on previous HSG findings of women were not included. However, since HSG has a high false negative rate, we believe that this is a minor weakness (12). The duration between HSG and hysteroscopy also is an important factor, which may further decrease its specificity. It has been reported that women with initial normal hysteroscopy and subsequent IVF failure have a high incidence of endometrial pathology (18%) (13). Although it has not been proven, a higher rate may be expected for the HSG, when its relatively low specificity and the duration between hysterosalpingographies and hysteroscopies of subfertile women are considered.

In conclusion, women with any previous number of IVF failures are good candidates for screening for endometrial pathology before IVF. Increasing number of failures increases the risk for detecting a lesion in the cavity.

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