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VAGINAL SONOGRAPHY & HYSTEROSCOPY;
COMPARISON IN INFERTILITY PATIENTS

DR. MASOMEH ASGHARNIA, MD
Azad Islamic University
Rasht Branch-Iran

DR. MARZIEH MEHRAFZA, MD
Mehr Infertility Institute
Rasht-Iran

MISS. MONA OUDI, B.SC
Mehr Infertility Institute
Rasht-Iran

Dr. Zahra Nikpuri, MD
Mehr Infertility Institute
Rasht-Iran

Dr. Zahra Mohammad Tabar, MD
Mehr Infertility Institute
Rasht-Iran

Miss. Maryam Shakiba, Msc
Guilan University of Medical Sciences
Iran

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ABSTRACT... **Background:** Hysteroscopy is a valuable diagnostic and therapeutic modality in the management of infertility. **Aim:** To evaluate the consistency of hysteroscopy based on a histopathological report from endometrial specimens for intrauterine disorders. **Materials and Methods:** This is a cross-sectional study. The study included 115 infertile patients. All were admitted for investigation of infertile women before assisted reproduction in Mehr infertility institute between 2006 and 2007 hysteroscopy, and histological evaluation of endometrial biopsy performed.We compared the efficacy of hysteroscopy in the diagnosis of benign intrauterine pathology in infertile women in whom the diagnosis was confirmed by histologic studies. The women had a complete evaluation with preoperative hysteroscopy, and histological analysis of uterine cavity specimens. Sensitivity, specificity, predictive and negative predictive values were calculated for hysteroscopy considering the histological study as 100%. **Results:** Sensitivity and specificity of sonography in diagnosing the polyp were stated 81% and 64% respectively. Sensitivity and specificity of hysteroscopy showed of polyps revealed 85% and 84% respectively. The results indicated that Sensitivity and specificity of sonography in diagnosing the myoma were 25% and 98% respectively. Sensitivity and specificity of hysteroscopy in diagnosing the myoma were expressed 50% and 93% respectively. **Conclusion:** Hysteroscopy is a safe and rapid direct visualisation of the uterine cavity. We believe it should be replaced by the diagnostic hysteroscopy as a first line infertility investigation.

Key words: Hysteroscopy, Infertility ,Uterine Pathology.

INTRODUCTION

The infertility related to the uterine cavity is the etiologic factor most commonly found in the 10% to 15% of the cases and uterine anomalies are present in the 34% to 62% of the infertile women[1].

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Correspondence Address:
Dr. Masomeh Asgharnia, MD
Azad Islamic University
Rasht Branch-Iran
dr_sh_asgharnia@yahoo.com

Diagnostic hysteroscopy is widely accepted to be the gold standard for direct visualization of the endometrial cavity[2-3].Hysteroscopy, a safe and rapid direct visualization of the uterine cavity, is superior to HSG in the identification of intrauterine pathology[4]. The fundamental role of hysteroscopy in the diagnosis of intracavitary disorders in gynecology and in particular in female sterility and infertility is stressed[5].Traditionally, hysteroscopy has been utilized for diagnostic and operative intervention for endometrial polyps, sub mucous and pedunculated myomas, intrauterine adhesions, and uterine septa. It is also useful for the diagnosis of congenital anomalies and evaluating endocervical anatomy[1,6-9]. It is clear that submucosal or intramural fibroids that distort the endometrial cavity and are therefore visible at hysteroscopy adversely affect embryo implantation in IVF, and myomectomy should be considered[10-12]. But there are controversies for using of TVS or hysteroscopy methods in the first line diagnosis of benign intrauterine lesions.Transvaginal ultrasound (TVS) is an easy, fast and cheap technique that has become widely used to evaluate the endometrium[13].It is less invasive, well tolerated, and generally painless, without complications and it can diagnose intrauterine, intramyometrial as well as other pelvic lesions. Other advantages includes its use in patients with cervical stenosis where office endometrial biopsy is unsuccessful. TVS is well suited to evaluate persistent bleeding despite a histological diagnosis of atrophy[13,14,18].Other TVS hallmarks of endometrial pathology are heterogeneity and high echogenicity of the endometrium. TVS can identify polyps and sub-mucous myoma, which may appear as hyperechoic endometrial foci differentiated from endometrial polyps by their irregular shape and more precise localization[19].Given the impracticality of performing diagnostic hysteroscopy should be considered only for those whose clinical complaints imply the presence of endometrial disease or whose ultrasonograms are abnormal[20]. It is our current practiced to always evaluate the uterine cavity through either sonography or hysteroscopy in all patients prior to intracytoplasmic sperm injection(ICSI). Evaluation of predictive power was based on sensitivity, specificity, positive, negative predictive value and diagnostic accuracy according to histological diagnosis.

MATERIAL AND METHODS

We conducted a prospective study in Mehr infertility institute, during the period from October 2006 to June 2007.All patients were examined and admitted for Hysterosalpingography(HSG). All patients with normal HSG were included before assisted reproduction in Mehr infertility institute. TVS was performed on admission by a transducer with an emission frequency of 5 MHz (Sono ACE- 4800 Medison - Korea). The chief goal of a TVS examination of the endometrium is to exclude pathological conditions. TVS were done between days 9 and 11 of the normal menstrual cycle. The patients were divided to two groups. One group(54) was normal TVS and other group(61) was abnormal in TVS. The abnormalities that detected by transvaginal sonography were intrauterine adhesions, submucous fibroids, endometrial polyps, endometritis and a non-specific irregular endometrium. The study included 115 infertile patients .The study and procedures were explained to all the patients and written informed consent was given by all patients prior to enrolment in the study. Antibiotics or analgesics were not used prophylactically unless indicated by medical risk factors. All hysteroscopies were performed between days 6 and 11 of the menstrual cycle. Hysteroscopy was performed under general anesthesia immediately before D&C by two operators unaware of TVS findings using (Karl Storz - Germany) hysteroscope, with a 3/5 mm diagnostic sheath. The uterine cavity was distended with CO2 using Hamou Microhyteroflator at pressure not exceeding 100 mmHg. All patients underwent D&C biopsy after hysteroscopy and sent for histopathological examination. The gold standard was based on histological diagnoses. These diagnoses were classified as either negative (secretory/proliferative endometrium) or positive (endometrial hyperplasia-benign endometrial polyps ,myomas .....)[21].Complications of hysteroscopy(<1%) include cervical laceration, uterine perforation, bleeding, reactions to the distention media, or anesthesia. Potential long-term complications include femoral injury resulting in intrauterine scarring or tubal obstruction, as well as injury to contiguous organs. Overall patient satisfaction is

high with HYS.

Statistical Analysis

Sensitivity, specificity, predictive value and predictive value were calculated.

RESULTS

In this study 115 patients were investigated with both TVS and hysteroscopy. The mean age of patients was 33.8+/-6.4 years old. Hysteroscopy diagnosed pathological findings in all of the cases : 52 patients had endometrial polyps, 4 submucous fibroids, and others 59 normal. The distribution of different abnormalities detected on TVS and hysteroscopy are reported in Table I.

Table-I. Ultrasonographic, hysteroscopy and histopathological findings in the patients

	Sonography (%)	Hysteroscopy (%)	Histopathological (%)
Normal findings	54 (47)	48 (41.7)	59
Abnormal findings	61 (53)	67 (58.3)	56
Polyps	38 (33)	49 (42.6)	52
Sub mucous fibroids	8 (7)	6 (5.2)	4
Septum	1 (0.9)	1 (0.9)	-
Irregular / thick endometriu m / atrophy / hyperplastic	14 (12.1)	11 (9.6)	-

Sensitivity and specificity of sonography in diagnosing the polyp were stated 81% and 64% respectively. Sensitivity and specificity of hysteroscopy showed of polyps revealed 85% and 84% respectively. The results indicated that Sensitivity and specificity of sonography in diagnosing the myoma were 25% and 98% respectively. Sensitivity and specificity of hysteroscopy in diagnosing the myoma were expressed 50% and 93% respectively.

Table-II. Sensitivity of ultrasonography and hysteroscopy based on histopathological in infertile women

	Sensitivity (%)	Specificity (%)
Ultrasonography (polyp)	59	88
Ultrasonography (submucous fibroidsa)	50	94
Hysteroscopy (polyp)	81	88
Hysteroscopy (submucous fibroidsa)	75	97

DISCUSSION

The most frequent intrauterine lesions found were polyps and myomas. Our results showed that sensitivity and specificity of sonography in diagnosing polyp and myoma were stated 81% ,64% ,25% and 98% respectively. Sensitivity and specificity of hysteroscopy showed of polyp and myoma revealed 85%,84% 50% and 93% respectively.

The ideal diagnostic method should be safe, less or non-invasive, less costly, simple and giving a rapid result. This is particularly needed if this method will be used as a screening one or repeatedly as in patients of high risk or actually developed endometrial pathology[14]. Hysteroscopy has, for decades, played an important role in the diagnosis and treatment of infertile patients, and will continue to do so[22-23]. It is advocated in the investigation of female infertility for its accuracy, safety, simplicity, and convenience. The improvements in recent years of ultrasound technology have given popularity also to TVS, a non-invasive, low-cost alternative compared with hysteroscopy. It permits the visualization of the endometrial appearance, mid-line echo and uterine cavity[24-25].

Fabres and et al compared TVS and hysteroscopy in the diagnosis of intrauterine lesions in infertile women. Sensivity, specificity were calculated for ultrasound and hysteroscopy considering the histologic study were 95% ,100%, 97.4% and 93.7% respectively. The positive predictive value for benign intrauterine lesions was 100%

for ultrasound and 89.8% for hysteroscopy. The most frequent intrauterine lesions found were polyps and myomas. They indicated TVS is a valuable method of diagnosing benign intrauterine lesions in infertile women, and is especially important as a noninvasive technique to plan hysteroscopic surgery[26]. Loveno and et al evaluated the diagnostic accuracy of TVS in detecting uterine cavity abnormalities in infertile patients, with reference to hysteroscopy as the gold standard method. Hysteroscopy diagnosed pathological findings in 58 out of 133 cases (44%). TVS was in agreement with 50 of the 58 (86%) of the pathological findings diagnosed at hysteroscopy. As a test for the detection of uterine cavity abnormalities, TVS in comparison with hysteroscopy had 84.5% sensitivity and 98.7% specificity, 98.0% positive predictive value and 89.2% negative predictive value. They indicated TVS is able to diagnose polyps, septum and submucous fibroids with quite significant accuracy, while hysteroscopy is indicated for their confirmation and removal. Thus, hysteroscopy provides both diagnostic and therapeutic capabilities, but TVS permits to proceed directly to operative hysteroscopy avoiding the need for a separate diagnostic procedure[4].In contrast Brusco and et al also showed of the 223 women who underwent hysteroscopy screening for infertility 17 (7.62%) had uterine anomalies. Of these 1 was in the cervical canal, 4 had anomalies in both the uterus and cervix, and the remaining 12 had only uterine cavity anomalies. The presence of neoformations was the most commonly found alteration. They concluded that diagnostic is a very important method for investigating the reasons for infertility in a couple. From their casuistry the incidence of uterine anomaly is 7.62% and they suggested hysteroscopy be included among the 1st and 2nd level exams for female infertility[27]. Given the impracticality of performing hysteroscopy on pre-AR patients, diagnostic hysteroscopy should be considered only for those whose clinical complaints imply the presence of endometrial disease or whose ultrasonograms are abnormal[20].

Hysteroscopic findings, accurate diagnosis of the cause of AUB can be made and subsequently the appropriate decision regarding different treatment options can be chosen[28]. Farquhar and et al also showed hysteroscopy was better than transvaginal ultrasound in detecting submucous fibroids[29].Our results showed the sensitivity of TVS in diagnosing polyps was the same as hysteroscopy but it isn't useful in detecting submucous fibroids .TVS is an accurate diagnostic method, but hysteroscopy is a excellent means of diagnosing the cause of uterine pathology in infertile women specially.

Conclusion:Hysteroscopy is indicated as a therapeutic intervention in cases where lesions have been confirmed within the uterine cavity or within the proximal fallopian tube. The uterine cavity can be observed directly under hysteroscopy and this examination can provide a high diagnostic accuracy. Management and treatment can be done at the time of the hysteroscopic examination. Thus it is preferable to transvaginal ultrasound examination.

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