Diagnosis value of hysteroscopy for chronic endometritis

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Summary

Objective: To investigate the correlation of hysteroscopy in the diagnosis of chronic endometritis (CE) with histology and assess its reliability. *Materials and Methods:* Two hundred eleven patients with CE diagnosed by hysteroscopy were selected as the case group, and 30 cases without endometritis diagnosed by hysteroscopy were selected as the control group. Hysteroscopy and endometrial biopsy were carried out in all patients with endometrial hyperplasia. *Results:* Among 211 patients with CE diagnosed by hysteroscopy, 200 cases were confirmed histologically. There was a significant correlation ($p < 0.001$) between characterization of CE by hysteroscopy and pathological grading. In 173 cases (86.5%), both histological and hysteroscopic grading were consistent (*Kappa* value = 0.62). *Conclusion:* Hysteroscopy is reliable in diagnosing CE and it can assess clinical effectiveness of antibiotic therapy.

Key words: Chronic endometritis; Hysteroscopy; Endometrial biopsy.

Introduction

Chronic endometritis (CE) influences implantation of fertilized eggs, and is one of the important causes of recurrent spontaneous abortion and infertility [1-3]. As these kind of patients often have no symptoms or are only accompanied with a slight pelvic pain, abnormal leucorrhea, irregular vaginal bleeding, etc [4], pelvic examination and ultrasonography have no specific advantages, and endometrial biopsy will cause missed diagnosis, hence clinical diagnosis is a challenge.

Clinically, hysteroscopy is usually used to diagnose CE [1]. CE by hysteroscopy manifests endometrial diffuse hyperemia [3]. Its characteristics lie in the white spots that are at the center of red zone, and exists locally in the uterine cavity or may be dispersed in the entire uterine cavity, with typical "strawberry" characteristics [5, 6]. However, there are many factors influencing endometrial hyperemia. Therefore, the reliability of diagnosing CE by hysteroscopy is always contestable [7, 8]. This study analyzes and compares endometritis diagnosed by hysteroscopy in order to assess whether patients with severe CE is related to histology, and whether it is feasible to assess its severity by hysteroscopy. The final purpose is to assess the reliability of hysteroscopy in diagnosing CE, its evaluation, and its repeated detection.

Materials and Methods

Cases

Among the patients receiving hysteroscopy in the Gynaecology Department of Affiliated Taihe Hospital of Hubei Medical College from January 2007 to January 2010, 211 patients with CE diagnosed by hysteroscopy were selected as the study group, and vaginal bleeding, severe cardiovascular disease, endometrial lesions, and pregnancy related diseases were excluded. In addition, 30 patients without endometritis diagnosed by hysteroscopy were selected as the control group. This study was conducted in accordance with the Declaration of Helsinki. This study was conducted with approval from the Ethics Committee of Taihe hospital Affiliated Hubei Medical College Hospital. Written informed consent was obtained from all participants.

Diagnosis criteria

Main manifestations of CE confirmed by hysteroscopy include [9]: (a) endometrial focal or diffuse hyperemia; (b) endometrial thickening, edema; (c) micro polyp existence; and (d) endometrial polyps complicated with interstitial edema or focal or diffuse periglandular hyperemia.

Endometritis severity grading criteria

Grade 0 (no inflammation); grade I (mild inflammation): focal or diffuse periglandular hyperemia with/without increase of mucosal thickness, no micro polyp; grade II (medium/severe inflammation): diffuse apparent hyperaemia complicated with endometrial thickening, micro polyps or endometrial polyps [10].

Endometrial histology inflammation grading criteria

Grade 0 (no inflammation); grade I (mild inflammation): edema and plasma cell infiltration; grade II (medium/severe inflammation): severe distortion and hyperplasia of inflammatory infiltration gland body [11-13].

Methods

Hysteroscopy was carried out in patients with endometrial hyperplasia (menstrual cycle of six to 12 days). A hysteroscopic lens with outer diameter of 2.7 mm and diagnostic sheath with outer diameter of 3.5 mm was utilized. Firstly, five percent mannitol was used to expand the uterus under pressure of 100 mmHg at a flow rate of 260 ml/min. During the hysteroscopic process, anterior and posterior walls of uterus were completely examined including the endometrial surface in order to confirm any irregular lesion on the latter. After hysteroscopy, endometrial biopsy was carried out in all patients. Histological examination adopted a double-blind principle. Moreover, all operations were conducted under non-narcotic non-anesthetic

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conditions. After histological examination, the patients were administered antibiotics for preventing infection.

Data analysis

The hysteroscopic and histologic findings in case of CE were compared using Fisher test. If $p < 0.05$, there was a significant difference. The consistence of the two methods in grading was calculated *(Kappa index)*.

Result

Out of 211 patients with CE diagnosed by hysteroscopy, 200 cases were confirmed histologically (Table 1).

Based on the above criteria, 51 cases were regarded as patients with mild manifestations in histology (grade I), and 149 cases were diagnosed as patients with medium/severe inflammation (grade II). In the control group, only 2/30 (6.7%) cases presented significant histological inflammation ($p < 0.001$). Between the characterization of CE by hysteroscopy and pathological grading, there was a significant correlation (Table 2).

In 173 patients (86.5%) both histology and hysteroscopy grading were consistent (Kappa value = 0.62).

Table 1. — *Indications in 211 women who were diagnosed with CE by fluid hysteroscopy and histology*.

Clinical symptoms	Hysteroscopic check and diagnosis	Histologic diagnosis
Abnormal uterine bleeding	74 (35%)	67 (33.5%)
Infertility	61 (29%)	64 (32%)
Endometrial polyp	39 (18.4%)	33 (16.5%)
Cervical polyp	15 (7.1%)	15 (7.5%)
Submucous myoma	15 (7.1%)	14 (7%)
Uterine malformation	7 (3.3%)	7 (3.5%)
Total	211	200

Table 2. — *Correlation between each sign of CE by fluid hysteroscopy and histological grading*.

Hysteroscopy	Grade I	Grade II	*p*
Congestion lesions	45	11	0.001
Diffuse congestion	6	138	0.001
Interstitial edema	49	149	n.s.
Small polyps	28	9	0.001
Diffuse micropolyps/polyps	0	140	0.001

Table 3. — *Correspondence between hysteroscopic and histological grading (Kappa index = 0.62)*.

	Hysteroscopy	
	Grade I	Grade II
Histological grade I	34	17
Histological grade II	10	139

Discussion

The results of this study showed that between different characterizations of endometritis by hysteroscopy and severity of histological inflammation, there was a good correlation, namely hysteroscopy and histology were consistent in evaluating the extent of endometritis. Especially, existence of endometrial polyps is related to endometritis severity, mucosal injury severity, and abnormal endometrial proliferative stimulation, and it is a reliable characterization of inflammation existence. Also, this characterization has a high predictive value [4].

Endometrial micro polyp is a new endometrial proliferation in histology, composed of organisms in small vessels coved by endometrium. Characteristics of micro polyps matrix include inflammatory cells (lymphocytes, plasma cells or eosinophilic granulocytes) and interstitial cells of normal gland body that gather around small blood vessels and glandular structures [14, 15]. In addition, as the percent of lymphocytes in endometrial cells is abnormal, leukocyte infiltration in CE not only presents quantitative changes, but also qualitative changes [14, 15].

Although endometrial polyp volume is very small, these subtle lesions in hysteroscopy are very easily detected. In the second examination, Kappa value of hysteroscopy and histology was 0.62. If the control group is included, Kappa value was 0.74. Kappa value of the two shows that the two techniques have a good consistency. Hysteroscopy and pathologic diagnosis of grade II inflammation had a better consistency than hysteroscopy and pathologic diagnosis of grade I (Table 3). Also, inconsistent ratios of detection results were respectively, 6.7% and 33%. Possible explanation for this is that endometrial biopsy uses blind curettage, and micro polyps are possibly missed due to the damage caused by treatment. Therefore, pathological examination is likely to underestimate inflammation severity. Hysteroscopy aims to conduct a comprehensive assessment under direct view and it can compensate for the inadequacy of pathological examination [6-9, 15].

In this study, the number of cases in the study group is greatly different from that of the control group, which possibly causes methodological differences. As physicians of pathological diagnosis conduct double-blind researches of study design and hysteroscopy results, the pathological diagnosis is not influenced by such a difference.

In conclusion, not only is hysteroscopy reliable for diagnosis of CE, but can also reflect the severity. Therefore, hysteroscopy not only assesses inflammatory severity, but also evaluates the effectiveness of antibiotic therapy.

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