

PANORAMIC HYSTEROSCOPY IN THE DIAGNOSIS AND TREATMENT OF PYOMETRA

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ABSTRACT

Pyometra, a collection of purulent material in the uterus, is a rare pathologic entity. The clinical manifestation of this condition is classically a purulent discharge through the external os, and it is frequently associated with cervical and endometrial cancer. A registry of office hysteroscopic procedures spanning nearly 7 years was searched retrospectively seeking for cases of endometrial cavity purulent collections. Thirty six cases were identified, all medical records were available for review, most of the patients were postmenopausal women, and no patients were lost to follow up.

Pyometra was diagnosed only by means of hysteroscopy in 13 patients. In other cases (23), pyometra was found in association with: abnormal uterine bleeding (16 cases), lost IUDs (4 cases), infertility (2 cases) and genital prolapse (1 case). Vaginoscopy allowed hysteroscopic examination in six patients with narrow introitus and in whom the use of speculum was not possible.

Pathologic findings among these patients were uterine cancer in 5 cases, atrophic endometrium in 17 cases, polyps in 3 cases, and 3 cases of foreign bodies within the uterine cavity. It was found that in 31% of cases, more than one procedure was performed in establishing definite diagnosis.

In patients with pyometra and atrophic endometrium, estrogens, as initial replacement therapy, was initiated. This treatment made possible a gradual reversal of pyometra and a good assessment of the uterine cavity in iterative hysteroscopies.

This study demonstrated that iterative hysteroscopy, vaginoscopy and estrogen replacement therapy are essential tools for appropriate diagnosis and management of pyometra. The goal of hysteroscopy is to avoid missing a significant lesion such as cervical or endometrial cancer.

INTRODUCTION

Pyometra has been classically described in association with uterine cancer, presenting with symptoms of uterine enlargement, vaginal discharge and acute abdomen requiring antibiotics and surgical

intervention¹. This management is mandatory in cases of spontaneous perforation leading to generalized peritonitis with pneumoperitoneum²⁻⁶, pyometra associated with retained products of conception^{7,8} and pyometra resulting from degenerated and infected leiomyoma⁹. Notwithstanding, pyometra has also been described solely as a condition in postmenopausal women or elderly outpatients^{10,11}. In these cases there are no obvious signs or symptoms of systemic infection allowing a more direct approach.

The diagnosis of pyometra is currently made when a collection of purulent material is found within the endometrial cavity by means of gynaecological examination or detected by ultrasound. Office panoramic diagnostic hysteroscopy has become a valuable diagnostic procedure in gynecologic practice in recent years¹². It can elucidate the nature of any intrauterine fluid collection and also provide an adequate diagnosis of endometrial pathology involved. Hysteroscopy, as an office procedure, can be repeated if the first procedure is not conclusive in ruling out

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PANORAMIC HYSTEROSCOPY IN THE DIAGNOSIS AND TREATMENT OF PYOMETRA

endometrial pathology because of inadequate procedure¹³. Most of postmenopausal women requiring diagnostic hysteroscopy are placed in estrogen replacement therapy for a period of 15 to 30 days before the procedure. This allows the hysteroscope to be introduced in the internal cervical os in a painless and atraumatic manner.

The purpose of this study is to review 36 cases in which non systemic infectious pyometra was diagnosed with panoramic office hysteroscopy and treated with heavy estrogen therapy.

We analyzed the hysteroscopic findings and diagnoses related to endometrial pathology and if one or more iterative hysteroscopies were necessary for establishing definite diagnosis.

MATERIALS AND METHODS

We searched the registry of office hysteroscopic procedures retrospectively, to find cases of pyometra. Thirty six hysteroscopies were performed, in a seven year period, in which the diagnosis of pyometra was established. All patients were referred for outpatient hysteroscopy, and procedures were done with or without local anesthesia (intracervical block), depending on patient requirement. The usual time required for the hysteroscopic examination was 2 to 5 minutes. Indications for office hysteroscopy are summarized in Table 1. In 12 patients inspection of the cervix using a speculum noted a purulent discharge from cervical os, suggesting the clinical diagnosis of pyometra. Sixteen patients were studied for postmenopausal bleeding, including two patients with prior diagnosis of uterine cancer established with blind endometrial biopsy in whom hysteroscopy was performed as a staging procedure. Other indications included lost IUDs (4 cases), infertility (2 cases), pre-operative evaluation of genital prolapse (1 case) and a fluid-filled uterine cavity on ultrasound examination (1 case).

Diagnostic hysteroscopy was considered optimal when the examination of the entire uterine cavity including both tubal ostia, cornual regions and both walls was possible. Hysteroscopic finding of pyometra was established after visualisation of yellowish fluid mixed with or without blood, within the uterine cavity. In case impaired complete visualisation of uterine cavity, hysteroscopy was considered "inadequate"¹³.

As most cases were postmenopausal patients and partial visualisation of endometrium suggested atrophy, estrogenic treatment was initiated prior or within the first hysteroscopic procedure until the next hysteroscopy was performed (ethinyl estradiol 0,20 mgr per os on a daily basis). Prophylactic antibiotics were given to infertile patients, and in all cases of lost IUDs, removal under endoscopic visualisation was performed.

Hysteroscopies were performed with either the 5mm diagnostic sheath Hamou I colpomicrohysteroscope or 3mm diagnostic sheath Office Hamou hysteroscope. Illumination was provided by a 150 watt light source via fiber-optic lead, and uterine cavity was distended with carbon dioxide via and electronic Hamou hysteroflater adjusted to a pressure not exceeding 100mmHg (Karl Storz GmbH, Tuttlingen, Germany).

Endometrial tissue sampling was obtained with a small

biopsy forceps inserted through the cervical os both with the hysteroscope and performed under direct vision. If not possible, the hysteroscope was removed and a Randall curette inserted obtained material from anterior or posterior walls. All cases were sampled when the hysteroscopy allowed the entire cavity to be inspected.

Patients that were postmenopausal for several years, or patients who never had sexual intercourse, in which a vaginal speculum could not be used, vaginoscopy was performed. The distention of this organ by CO₂ is possible while obliterating the vulva with the left hand (right handed physician holding hysteroscope with his right hand). Avoidance of CO₂ from getting out of the vagina is accomplished by compressing both labia minora against the rigid hysteroscope that is placed between them. Once the external os is identified and the hysteroscope introduced, the examination continues as a standard procedure. If a biopsy is to be obtained, a medical assistant will obliterate the vagina leaving both hands of the hysteroscopist free to perform the examination as in a standard procedure.

RESULTS

Table 2 shows distribution by age of the patients and primary indications for hysteroscopy. Pyometra was established in 36 patients, 33 menopausal women aged 50 to 90 years (91.6%, mean age 66 years) and 3 fertile women aged 32 to 38 years (8,4% mean age 34 years). Indications consisted mainly in abnormal uterine bleeding and clinically suspected pyometra on pelvic examination. In 13 cases of clinical suspicion including one case of only ultrasound suspicion, hysteroscopy confirmed the diagnosis (36%9). In 16 cases of abnormal uterine bleeding, pus or bloody pyometra was observed within the endometrial cavity (44%). Purulent material was seen in the remaining cases. In all cases of IUD, removal of the device was the primary indication, three of them normally positioned and one was partially located in the myometrium.

Pyometra was diagnosed by means of hysteroscopy in different circumstances (Table 3).

Hysteroscopy was the first diagnostic approach in establishing pyometra in cases of abnormal uterine bleeding, lost IUDs, infertility and genital prolapse (all cases with no evidence of pyometra on clinical grounds). Considering this, in 63,9% of cases pyometra was a hysteroscopic finding in otherwise unsuspected pyometra.

The assesment of endometrial mucosa was attempted for establishing definite diagnosis. Atrophic endometrium was the most common finding (47%) and malignancies were found in 13,9% of cases. Two patients with uterine cancer had cervical cancer with atrophic endometrium. In all cases of uterine cancer the calling symptom was abnormal uterine bleeding. None of the pyometra presenting as solely clinical evidence or hysteroscopic findings of pyometra in patients without abnormal, presented with concomitant uterine cancer. In patients with infertility one patient had bone metaplasia and the other had a normal cavity, although a sinechiae of cervical os was not during insertion of the hysteroscope. This last condition was also found in one patient with surgical indication of

PANORAMIC HYSTEROSCOPY IN THE DIAGNOSIS AND TREATMENT OF PYOMETRA

genital prolapse who had been treated with cervical electrocautery ten years ago.

More than one procedure were necessary in some patients. Iterative procedures were performed leading to a final diagnosis as follows: (Table 4).

In 25 patients (69,4%) final diagnosis was established at the first hysteroscopy. Most of them were atrophic endometrium: 14 cases. Malignant disease was present in 4 cases: two patients with cervical cancer and atrophic endometrium, and two patients with endometrial adenocarcinoma. Endometrial benign polyps were found in 3 patients and normal cavities in 4 patients.

Eleven patients (30,6%) with a first inadequate hysteroscopy impaired by the severity of pyometra, had a second procedure. All of them had estrogenic treatment for 15 days. This second hysteroscopy was adequate in 63,6% (7 cases) establishing normal cavities (3 cases) atrophic endometrium (2 cases), bone metaplasia (1 case) and the presence of foreign body (IUD lost fragment) in one case. Finally, in 4 patients with two previous inadequate hysteroscopies a third procedure was attempted within one month from the second one. All of them had began estrogenic treatment since first hysteroscopy. Although at second attempt pyometra was significantly reverted, visualization of the whole cavity by the endoscopist was not possible. Third hysteroscopy established: normal endometrium (one case), atrophy (one case), endometrial adenocarcinoma (one case), and foreign body consisting in a long shaped bone fragment firmly attached to the posterior endometrial mucosa (one case).

In total, fifty one procedures among 36 patients were performed (table 5). Up to three hysteroscopies were performed for final diagnosis, 30,6% of patients requiring repetitive procedures. Six patients benefited from vaginoscopy, 12 procedures were performed among these patients. Four patients agreed to have a second vaginoscopy-hysteroscopy examination and 2 patients agreed in having a third one. No patients refused this technique. In 50% of vaginoscopies, hysteroscopy was performed but not inadequate. Final diagnosis was established in all cases, with either one or iterative hysteroscopy (table 6). All polyps were benign without hystologic findings of complex or atypical hyperplasia. No complications were described.

DISCUSSION

Pyometra is generally considered a serious medical condition because both its association with malignant disease, mainly cervical cancer, and the danger of spontaneous perforation leading to significant morbidity^{14,15}. Cervical occlusion has been implicated in spontaneous perforation with or without malignancy^{16,17}, in fact in a large proportion of cases is associated with, or follows radiotherapy because of a malignant disease of the uterus^{18,19}. Impairment of normal drainage of genital tract and subsequent infection accounts for the case of pyometra and pyocolpos in a uterine hemicavity and hemivagina in a patient with a mullerian anomaly²⁰. Nevertheless, this is not the only mechanism by which pyometra develops inside the uterus. Pyometra has also been described in

cases with or without malignancy in which normal cervical patency was demonstrated^{10,16,17}. In our study, only four patients (11%) had complete cervical stenosis, and there were no cases of spontaneous rupture nor symptomatic pelvic infection within them.

Pyometra has been described in 13% of postmenopausal women in which the uterine cavity could be examined¹¹ and so is a condition associated in posmenopausal women with no symptoms of pelvic infection. Pyometra does not present as a life-threatening condition in all cases as we have demonstrated in this series. Pyometra was suspected mainly on clinical grounds as purulent material was seen exuding from cervical os in 33% of patients and diagnosis was made by the only means of hysteroscopy in 20% of cases. Other conditions, as abnormal bleeding or lost IUDs are not life-threatening conditions as well. Ultrasound may suggest the fluid-filled cavity^{21,22}, but if fluid secretion is not absolutely impaired, in our experience pyometra can be diagnosed mainly from clinical and hysteroscopic findings.

Most of published cases are elderly patients. Pyometra without accompanying malignant uterine disease - "non-malignant pyometra" - is found almost exclusively in postmenopausal patients. In our series, a large proportion of patients (91%) was postmenopausal, and malignant disease was found in 13,8% of cases. In all cases of uterine malignancy the calling symptom was genital bleeding, pyometra or bloody pyometra, these hysteroscopic findings begin associated with cervical or endometrial cancer. Although clinical suspicion of pyometra was not mainly associated with uterine cancer, a purulent discharge from cervical canal must benefit from hysteroscopy to rule out an incipient cervical or endometrial cancer that may be associated with this condition. In this series, two patients with bloody cervical cancers already had cervical stenosis. Pyometra is not an exclusive condition of postmenopausal women. Younger patients with less common pathologies, as lost IUDs and infertility may also present with this symptom. Hysteroscopy needs complete visualization of the endometrial cavity to establish a hysteroscopic diagnosis with adequate histologic specimen. Inadequate hysteroscopies account for iterative procedures in a significant number of cases¹³, making possible follow-up and control of endometrial cavities until hysteroscopic procedure with biopsy is conclusive. Otherwise, diagnosis must rely in other diagnostic tool as diagnostic curetage. Endometrial atrophy was associated in 47% of patients in which hysteroscopy revealed pyometra. The treatment for this low estrogen environment endometrium is estrogen replacement therapy. Inadequate hysteroscopies were satisfactorily reassessed after a short course of estrogen. Reversal of pyometra and eventually clean cavities with normal endometrial pathology was confirmed in all cases treated with hormones. None of these cases received antibiotics. This important therapeutic effect of estrogens support that endometrial atrophy is an underlying cause of pyometra. Pyometra must be treated with antibiotics only if there is evidence of invasive infection in the form of pyrexia, generalised malaise or altered laboratory parameters. Estrogens are necessary for treating pyometra in cases of endometrial atrophy as an underlying pathology

PANORAMIC HYSTEROSCOPY IN THE DIAGNOSIS AND TREATMENT OF PYOMETRA

Nevertheless it is imperative to achieve an adequate final diagnosis with a clean cavity completely inspected, as endometrial malignancy or even bone fragments can be covered" by purulent material, as seen in our series of patients. Iterative hysteroscopies, up to 30.6% of all patients of this series, were essential in rulling out significant lesions of the uterine cavity, mainly adenocarcinoma of the endometrium.

Hysteroscopy was the first diagnostic approach in establishing pyometra in 64% of cases and in 20% of cases it was the only means by which pyometra was established. The use of vaginoscopy allowed the examination of six patients that otherwise would not

have been adequately diagnosed. With the generalization of hysteroscopy as an office procedure and the use of techniques permitting the endoscopic examination under difficult physical circumstances, as vaginoscopy, we can expect a rising number of patients in whom pyometra may be found.

Although ultrasound or the presence of cervical cancer may suggest this condition, pyometra in our experience was diagnosed mainly from clinical and hysteroscopic findings. Adequate management of this condition should include estrogen therapy, iterative hysteroscopy and other techniques such as vaginoscopy for improving final diagnosis and treatment of pyometra.

Table 1: Indication for office hysteroscopy

Indications	number of patients
Clinical suspicion of pyometra	12 (33.3%)
Sonographic fluid-filled cavity	1 (2.8%)
Abnormal uterine bleeding	16 (44.4%)
Lost IUDs	4 (11.1%)
Infertility	2 (5.6%)
Genital prolapse	1 (2.8%)
TOTAL	36 (100%)

Table 2: Age distribution and primary indications for hysteroscopy

Indications:	Postmenopausal patients					total
	Fertile patients 32 - 38	50 - 59	60 - 69	70 - 79	80 - 89	
clinical suspicion of pyometra*	0	3	3	5	2	13 (36.1%)
Postmenopausal bleeding	0	3	8	3	2	16 (44.4%)
Lost IUD	1	3	0	0	0	4 (11.1%)
Infertility	2	0	0	0	0	2 (5.6%)
Genital prolapse	0	1	0	0	0	1 (2.8%)
TOTAL	3(8.3%)	10(27.8%)	11(30.6%)	8(22.2%)	4(11.1%)	36 (100%)

(*) includes one case of fluid-filled cavity on ultrasound as indication for hysteroscopy

Table 3: Final diagnosis in cases of pyometra established by hysteroscopy

	Normal endometrium	Uterine cancer	Polyps	Atrophic endometrium	Foreign body	Total
Hysteroscopy confirmed pyometra in: Clinical suspicion of pyometra *	1	0	1	9	1	13 (36.1%)
Hysteroscopy finding or pyometra in:						
Abnormal uterine bleeding	3	5	2	6	0	16
Lost IUD	3	0	0	1	0	4
Infertility	1	0	0	0	1	2
Genital prolapse	0	0	0	1	0	1
						23 (63.9%)
TOTAL	8 (22.2%)	5 (13.9%)	3 (8.3%)	17 (47.2%)	3 (8.3%)	36 (100%)

(*) includes one case of fluid-filled cavity on ultrasound as indication for hysteroscopy

Table 4: Repeat hysteroscopy procedures and their final diagnosis

	First	Second	Third	Total
Normal endometrium	4	3	1	8
Atrophic Endometrium	14	2	1	17
Polyps	3	0	0	3
Uterine cancer	4	0	1	5
Foreign bodies	0	2*	1	3
TOTAL	25 (69.4%)	7 (19.4%)	4 (11.1%)	36 (100%)

(*) one case of bone metaplasia and one case of an IUD fragment

Table 5: Adequate and inadequate hysteroscopies

	First (n=36)	Second (n=11)	Third (n=4)	
Adequate hysteroscopies	25 (69.4%)	7 (63.6%)	4 (100%)	36 (70.6%)
Inadequate hysteroscopies	11 (30.6%)	4 (36.4%)	0	15 (29.4%)
total	36	11	4	51

Table 6: Final diagnosis and total number of vaginoscopy - hysteroscopies (hysteroscopies in which a vaginoscopy procedure was performed).

	First intent	Second intent	Third intent	total
Normal endometrium	0	0	1	1 (8.3%)
Atrophic endometrium	2	2	0	4 (33.3%)
Adenocarcinoma	0	0	1	1 (8.3%)
Inadequate hysteroscopy	4	2	0	6 (50.0%)
total	6 (50%)	4 (33.3%)	2 (16.7%)	12

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