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Independent risk factors for endometrial polyps: diabetes, hypertension, and obesity

Hikmet Hassa¹, Engin Korkmazer², V Yavuz Tokgöz¹, Tufan Öge^{1*}

¹Department of Obstetrics and Gynecology, School of Medicine, Eskisehir Osmangazi University, Eskisehir, Turkey

²Department of Obstetrics and Gynecology, Bursa Zubeyde Hanım Maternal Hospital, Bursa, Turkey

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ABSTRACT

Objective: To study the role of diabetes, hypertension and obesity in etiology of endometrial polyps. **Methods:** A total of 250 patients with endometrial polyp and 256 patients normal endometrial cavity were included, who applied to our outpatient clinic. We recorded the age, fertility state, body mass index, number of polyps, hypertension and diabetes status of the patients by using SPSS Windows 16.0. All patients in polyp group were verified by post-operative pathology report. **Results:** No significant difference was found in patients with diabetes and obesity, but hypertension was a significant factor in patients who had endometrial polyp comparing to total patient population ($n=526$). **Conclusions:** This finding may alert the physician to consider the endometrial cavity in hypertensive patients who applied with abnormal uterine bleeding.

1. Introduction

Endometrial polyps are characterized with locally abnormal growing of endometrial tissue, may be single or multiple in different sizes (0.5–4.0 cm), benign structures which may include glandular, stromal or vascular tissues[1]. Symptomatology varies from an asymptomatic presentation to abnormal bleeding, infertility and pelvic pain[2]. Etiology of endometrial polyps are still unknown. There are a lot of theory about etiology but estrogen stimulation leads in all[3]. Considering that unopposed estrogenic stimulation causes endometrial hyperplasia and cancer, we can assume that estrogen may lead to endometrial polyp formation. The hypothesis about unopposed estrogen leads to endometrial polyp with individual risk factors is plausible. Also co-incidence of tamoxifen or endometriosis with polyps are described[4,5]. In a recent study plasma endometrium-

derived protein glycodefine levels are found higher in patients with endometrial polyp compared to control group. It was claimed that an angiogenic factor glycodefine may play a role in endometrial polyp formation[6,7].

The prevalence of endometrial polyp depends upon the population being studied but the real prevalence is unknown because polyp can be asymptomatic and may regress by time[8]. Although incidence is 10% in an autopsy study, it may rise to 35% in another series of 114 women aged 25–69 with abnormal uterine bleeding[9,10]. Hysteroscopy is the gold standard method in diagnosis but most common method is ultrasound imaging. Sensitivity and specificity of ultrasound and magnetic resonance imaging for diagnosis of polyp are high but their usage are limited because of cost-effectiveness and requirement of experience[11]. Office hysteroscopy (office H/S) is more effective to show localization, diameter and number of polyps. In infertility evaluation with office hysteroscopy showed endometrial polyp at 15.6% of patients with regular menstrual cycle. Routine usage of office H/S in infertility evaluation is still controversial[12].

Endometrial polyps are generally benign lesions but may lead to endometrial adenocarcinoma rarely (2%–3%). Especially unopposed estrogen is responsible from

*Corresponding author: Tufan Öge, Assistant Professor in Department of Obstetrics and Gynecology, School of Medicine, Eskisehir Osmangazi University, Meselik Kampusu, 26480, Eskisehir, Turkey.

Tel: +90 222 2392979/3100

Fax: +90 222 2398412

E-mail: tufanoge@yahoo.com

this progression. Incidence peaks in sixth decade^[13,14]. Tamoxifen usage also increases malign potential in endometrial polyps^[15,16]. Another study showed that postmenopausal endometrial polyps have a higher malign potential in hypertensive patients^[17]. Diabetes mellitus, hypertension and obesity are independent risk factors in endometrial carcinoma. Because of the similarity in pathogenesis of endometrial polyps and carcinoma; we investigated the incidence of diabetes mellitus, hypertension and obesity; independent risk factors of endometrial carcinoma; and compared with the normal population.

2. Materials and methods

The design of this study was a case control retrospective study of risk factors of 526 patients applied to our outpatient clinic by various symptoms. Study includes the patients applied between January 2004 to January 2009. Patients informed about procedure and they signed informed consents. We considered patients' records retrospectively. We performed office H/S in between sixth and twelfth days (early proliferative phase of endometrium) of menstrual cycle for all patients (Storz Office Hysteroscope, Hopkins Forward–Oblique Telescope). We used saline as dilatation fluid. Patients are classified according to existence of polyps and age (≤ 45 years old, >45 years old). Endometrial pathologies except polyps are excluded from the study. We recorded the age, fertility status, body mass index, number of polyps, hypertension and diabetes status of the patients by using SPSS Windows 16.0. Pearson Chi–square and Yeates (continuity correction) *Chi*–square were used in analyses of cross tables. $P < 0.05$ was accepted statistically significant.

For diagnosis of hypertension 90 mmHg diastolic and 140 mmHg systolic blood pressure values were accepted as cut–off. Criteria for diabetes mellitus diagnosis is fasting blood glucose levels higher than 120 mg/dL. Menopause was diagnosed in patients who stopped having menstrual period for one year approved.

Patients with endometrial polyps underwent polypectomy with operative hysteroscopy procedure (10 mm Storz resectoscope, Karl Storz, Tuttingen, Germany). All of the patients in polyp group verified by post–operative pathology report.

3. Results

250 of 526 cases were diagnosed as endometrial polyp and 276 of them had normal office hysteroscopy findings (Tables 1 and 2). Mean ages of patients who have polyp and normal hysteroscopic findings are (45.0 ± 11.4) years and (36.0 ± 11.7) respectively. There are no significant difference between body mass indices of polyp group (25.6 kg/m^2) and control group (25.1 kg/m^2), 27 of patients who have polyps (10.8%) and 20 of control group (7.2%) have diabetes mellitus, there are also no statistically significant difference between two groups. Thirty–four of patients who have polyps (13.6%) and 15 of control group (5.4%) are hypertensive. There were significant difference between two group in hypertension

aspect. Analysing all age groups significant difference is found for hypertension but not for diabetes mellitus and obesity.

The incidence of diabetes mellitus, hypertension and obesity increases with age so we classified patients in two groups as younger than 45 years old and older than 46 years old to eliminate differences between distribution of age groups. Age groups are shown in Table 1.

Table 1

Characteristics of patients (Age, gravidity, menopausal status).

Characteristic	Polyp group		Normal office hysteroscopy	
	<i>n</i>	%	<i>n</i>	%
Age (years)				
≤45	129	51.6	218	79
>45	121	48.4	58	21
Menopausal status				
Pre–menopausal	156	62.4	231	84
Post–menopausal	94	37.6	45	16
Gravidity				
0	57	22.8	128	46
1–3	115	42.0	104	38
≥4	88	35.2	44	16

Table 2

Comparison of two groups according to body mass index, diabetes mellitus and hypertension.

Characteristic	Polyp group		Normal office hysteroscopy		Sig.
	<i>n</i>	%	<i>n</i>	%	
Body mass index (kg/m^2)					
<25.0	89	35.6	162	60.0	NS
25.0–29.9	135	54.0	75	27.0	NS
≥30.0	26	10.4	39	13.0	NS
Diabetes mellitus					
Present	27	10.8	20	7.2	NS
Not present	223	89.2	256	92.8	NS
Hypertension					
Present	34	13.6	15	5.4	$P < 0.05$
Not present	216	86.4	261	94.6	NS

NS, not significant.

In the group which has patients who are below 45 years of age ($n=347$) 129 patients (37%) are diagnosed as endometrial polyp. In the group which has patients who are below 45 years of age; 3(2.3%) patients were hypertensive, 6(4.6%) patients were diabetic. Two (0.91%) patients were hypertensive and 5(2.2%) patients were diabetic in control group. There were no statistically significant difference.

In the group which has patients who are above 45 years of age ($n=179$); 121 patients (67.5%) are diagnosed as endometrial polyp. In the group which has patients who are below 45 years of age 31(25.6%) patients were hypertensive, 21(17.3%) patients were diabetic. Sixteen (27.5%) patients were hypertensive and 15(25.8%) patients were diabetic

in control group. There were no statistically significant difference.

4. Discussion

Endometrial polyp is a benign pathology of endometrium and its incidence raises with improvement of new diagnostic methods. The incidence of endometrial polyp in patients with abnormal uterine bleeding and infertility, found higher than known before, as these new methods became common.

The relationship between endometrial polyp with obesity and diabetes as independent risk factors is not significant. Hypertension was found as a significant risk factor for development of endometrial polyp. Despite the unknown etiology of this relationship it's remarkable that hypertension prevalence is higher in patients with endometrial polyp and endometrial cancer. There are no wide previous studies about this issue but in a study the relationship between endometrial polyps and diabetes mellitus, hypertension and obesity was found significant^[18]. In another study, increased malign potential of postmenopausal endometrial polyps in hypertensive patients was shown^[17].

Most of the patients with polyp are premenopausal which points the importance of estrogen. In reproductive period its known that polyp incidence raises by age. In assessment of mean age of our study group the mean age of patients who have polyps is higher (45.0±11.4) than control group. In consistence with our finding there are studies which show polyp prevalence increases in 40–49 age group^[7].

Endometrial polyp is thought to be disturbing endometrial tissue that cause inflammation and infertility by disrupting sperm transport with an intrauterine device like effect in uterine cavity^[6]. Polypectomy procedure increases the fertility ratios in infertile patients^[19]. It's remarkable that we diagnosed endometrial polyp by office H/S in 57(30.1%) of 185 infertile patients. In a study polyp prevalence was found 15.6% in eumenorrhic infertile women^[12]. In our study the prevalence is higher (30.1%) because of majority of our patients are infertile and our clinic adopted the idea of routine office H/S assessment in infertile patients.

Hypertension was found as a remarkable independent risk factor in endometrial polyp etiology. This data should be cautionary in evaluation of endometrial cavity in hypertensive patients with abnormal uterine bleeding. Furthermore studies are needed to enlighten the etiology of endometrial polyp.

Conflict of interest statement

The authors declare that they have no conflicts of interest.

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