

Lifestyle characteristics and endometrial polyps' development

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Abstract

Introduction. Endometrial polyps are single or multiple focal hyperplastic formations that originate from the endometrium. The purpose of this study was to identify uterine polyps risk factors related to lifestyle. **Materials and method.** A prospective cohort type 1 study, based on STROBE statement, was designed. The study group included women diagnosed with endometrial polyps at the "Bucur" Maternity, "Sf. Ioan" Emergency Clinical Hospital, Bucharest, Romania, between January 2015 and December 2016. Patients' lifestyle-related features were collected by applying a questionnaire. **Results.** The study included 56 patients, aged between 28 and 82 years old (mean age: 29.57, standard deviation: 9.79). The main characteristics of women diagnosed with endometrial polyps were as follows: urban area citizens (82%), non-smokers (73.2%), premenopausal (71.4%) and obese (65%). These women (91.07%) used to eat meat daily or more than three times per week, 55.36% of them eating chicken meat, 28.57% red meat, and 14.29% eating fish. Furthermore, 83.9% used to eat refined carbohydrate daily and 39.29% for about three times per week. The meat and carbohydrates consumption was associated with endometrial polyps' development ($p < 0.001$). **Conclusions.** Patients diagnosed with endometrial polyps have a high meat consumption, increased intake of refined carbohydrates and reduced daily activity. Future extensive randomized studies are required to prove our associations between endometrial polyps' development and women's daily behavior.

Keywords: endometrial polyps, meat consumption, red meat, obesity

Rezumat

Introducere. Polipii endometriali sunt formațiuni hiperplazice focale unice sau multiple care provin din endometru. Scopul acestui studiu a fost de a identifica factorii de risc legați de stilul de viață asociați cu dezvoltarea polipilor endometriali. **Materiale și metodă.** Am realizat un studiu de cohortă prospectiv de tip 1, bazat pe STROBE. Lotul de studiu a inclus femei diagnosticate cu polipi endometriali la Maternitatea „Bucur”, Spitalul Clinic de Urgență „Sf. Ioan”, București, România, în perioada ianuarie 2015 – decembrie 2016. Caracteristicile pacientelor legate de stilul de viață au fost colectate prin aplicarea unui chestionar. **Rezultate.** Studiul a inclus 56 de paciente, cu vârsta cuprinsă între 28 și 82 de ani (vârsta medie: 29,57 de ani, deviație standard: 9,79 ani). Principalele caracteristici ale femeilor diagnosticate cu polipi endometriali au fost următoarele: proveniența din mediul urban (82%), nefumătoare (73,2%), premenopauză (71,4%) și obezitate (65%). Aceste femei (91,07%) consumă carne zilnic sau de mai mult de trei ori pe săptămână, 55,36% dintre ele consumând carne de pui, 28,57% carne roșie și 14,29% pește. Un procentaj de 83,9% consumă carbohidrați rafinați zilnic, iar 39,29% consumă de aproximativ trei ori pe săptămână. Consumul de carne și carbohidrați a fost asociat cu dezvoltarea polipilor endometriali ($p < 0,001$). **Concluzii.** Pacientele diagnosticate cu polipi endometriali au un consum mare de carne, un aport crescut de carbohidrați rafinați și o activitate fizică zilnică redusă. Sunt necesare studii viitoare randomizate, extinse, pentru a demonstra asocierea dintre dezvoltarea polipilor endometriali și comportamentul alimentar al femeilor.

Cuvinte-cheie: polipi endometriali, consum de carne, carne roșie, obezitate

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Introduction

Endometrial polyps are single or multiple focal hyperplastic formations that originate from endometrium and consist of endometrial glands, stroma and blood vessels⁽¹⁾. Uterine polyps are a common gynecological pathology, but their incidence is unknown because in most cases the disease is asymptomatic^(2,3). According to the population samples that have been studied so far, the prevalence of the disease was reported between 7.8% and 34.9%, most cases being recorded in patients aged between 40 and 50 years old⁽⁴⁾. There were observed

a gradual increase in prevalence of the disease before this age range and a decrease in disease prevalence after reaching the age of 50 years old; however, it is generally accepted that these data are relative, because their demonstration is difficult to achieve⁽⁵⁾.

The etiology and pathogenesis of endometrial polyps are not very clear, but various theories have been proposed, among which the one that supports the hormonal hypothesis is most commonly accepted. This theory states the involvement of excess estrogen activity in relation to progesterone activity at the endometrial

level. Thus, it has been observed that uterine polyps are frequently associated with disorders caused by excess estrogen, such as endometriosis, leiomyomas, endometrial glandular hyperplasia, uterine adenomyosis, mastopathy, or polycystic ovary syndrome^(6,7).

Since relatively few data related to the risk factors for uterine polyps triggering are described in literature, the purpose of this study was to identify potential associations between aspects that concern patients' lifestyle and the appearance of endometrial polyps. The identification of such associations may contribute to a better understanding of the pathogenic processes of the disease and may represent a starting point in conducting wider studies on how environmental factors are involved in uterine polyps triggering.

Materials and method

A prospective cohort type 1 study based on STROBE statement was designed. The study group included women diagnosed with endometrial polyps at the "Bucur" Maternity, "Sf. Ioan" Emergency Clinical Hospital, Bucharest, Romania, between January 2015 and December 2016. The study received the ethical committee approval from our hospital. The women who underwent hysteroscopy or uterine curettage and accepted to be included in the present study signed the informed consent.

The main inclusion criteria were represented by patients diagnosed with endometrial polyps during hysteroscopy. In cases where the pathological exam confirmed the endometrial polyp, the patients were proposed to complete a questionnaire. The questionnaire is not a

standardized one, but it was created by our research team. The parameters included were: patients' age, residence in urban/rural areas, obstetrical history information, and habitual aspects such as smoking, daily physical activity level or patients' lifestyle including diet (consumption of animal protein, refined sweets, fruits and vegetables). The exclusion criteria from the study were represented by patients who did not give their consent for participation or patients with other pathological results than endometrial polyp after hysteroscopy (myoma, adenomyosis, carcinoma etc.).

The data were analyzed using the SPSS version 25.0 (statistical packages for social sciences). Pearson's correlation and two-sided p values below 0.05 were considered statistically significant. The risk of bias is represented by the reduced number of patients and the subjectivity of the persons that completed the questionnaire.

Results

This study included 56 patients, aged between 28 and 82 years old (mean age: 29.57, standard deviation: 9.79). The majority of the patients live in urban area (82%), whereas 12% live in rural environment. The women included in the study had an obstetric history with multiple births in 30.3% of cases or single birth in 44.6% of cases. The distribution based on menopausal status proved that 28.6% of the patients were in postmenopausal period, and the patients situated in their reproductive period were infertile in 7.1% of cases (Table 1).

The patients presented abnormal uterine bleeding in 58.9% of cases that determined the diagnosis of uterine

Table 1 Population's characteristics

Population's characteristics (n=56)	Percentage
Parity	
Nulliparous	25
Primipara	44.6
Multipara	30.3
Symptoms	
No symptoms	41.1
Abnormal uterine bleeding	58.9
Surgery	
Hysteroscopic polypectomy	55.4
Curettage	12.5
Cervical polypectomy	32.1
Fertility	
Fertile	92.9
Infertile	7.1
Menopause	28.6
Gynecological conditions history	
Uterine myomas	26.8
Cervical dysplasia	5.4
Ovarian cysts	3.6
Pelvic inflammatory disease	10

Table 2 Lifestyle features

Lifestyle features	Percentage
Smoking	
Smokers	26.8
Non-smokers	73.2
Body Mass Index	
Underweight	1.8
Normal weight	33.2
Overweight	65
Intensity of physical activity	
Vigorous	26.8
Light-moderate	57.1
Sedentary lifestyle	16.1
Fruits and vegetables consumption	
Daily	59
Occasionally	41

polyp; meanwhile, 41.1% of them were diagnosed at a routine gynecological examination. The main procedure that was performed to remove the polyp was hysteroscopy (55.4%), followed by cervical polypectomy in 32.1% of cases (when the endometrial polyp was prolapsed through the cervix), and uterine curettage in 12.5% of cases. At the time of diagnosis, most of the patients had no other associated diseases (87.5%), but 8.9% of patients

had arterial hypertension and 3.6% of the patients had diabetes mellitus. Their gynecological history demonstrated the association with uterine myomas in 28.6% of cases, pelvic inflammatory disease in the past for 10% of cases, or cervical dysplasia in 3.6% of cases (Table 1).

According to the lifestyle features, the questionnaire revealed that 26.8% of the patients were smokers. In our study, the prevalence of endometrial polyps was higher

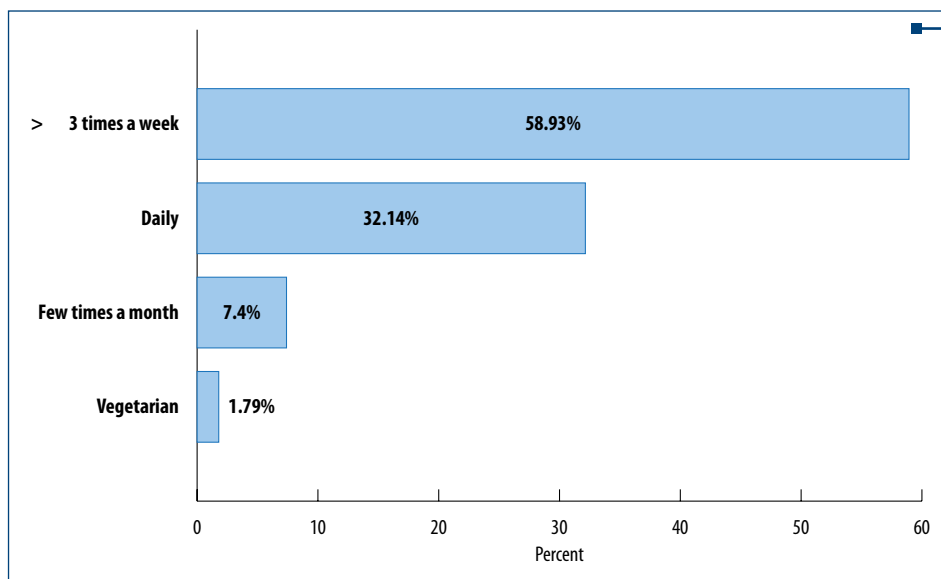


Figure 1. Meat consumption frequency

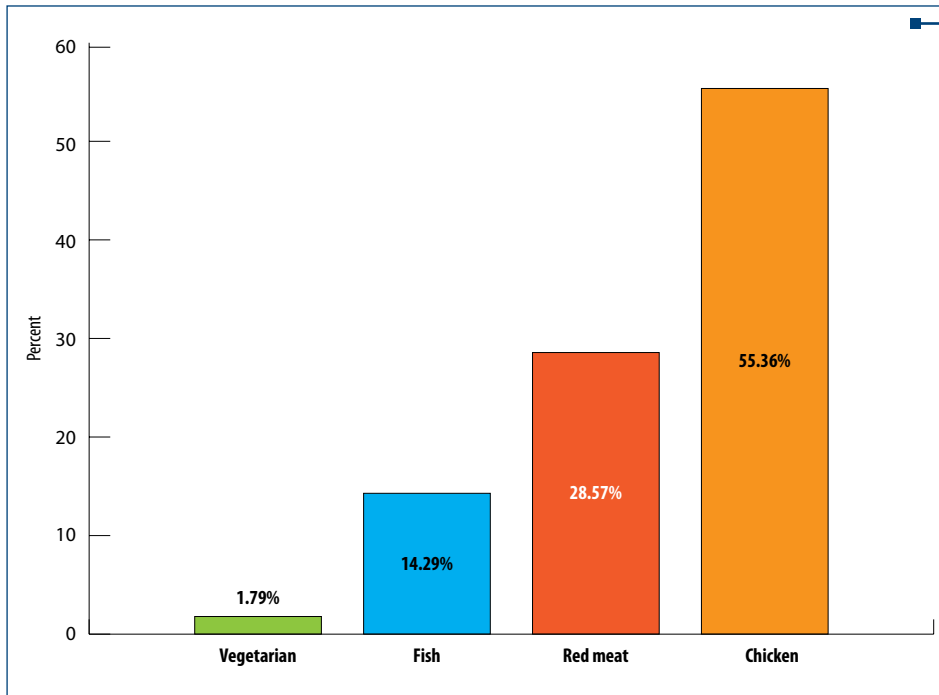


Figure 2. Frequency of the preferred meat type

in obese women. The results demonstrate that 65% of the patients had a Body Mass Index (BMI) higher than 25 kg/m². Regarding their daily activity, 16.1% of the patients admitted that they were sedentary, 26.8% declared that they were practicing intense physical activity, and the majority self-evaluated their level of daily physical activity as light-moderate intensity (57.14%) – Table 2.

Regarding the patients' diet, the questionnaire included many questions. At the beginning, it was noticed that, among our patients, only 1.79% were exclusively vegetarians. The other answered that they used to consume fruits and vegetables daily (59%) in association with milk, egg or meat products. We observed that the majority of the patients (91.07%) used to eat meat daily or more than three times per week (Figure 1). With respect to the main type of meat consumed, 55.36% of the patients used to eat mostly chicken meat, 28.57% red meat and 14.29% fish. Considering the refined carbohydrate consumption, 83.9% of the patients declared that they used to eat daily, 39.29% for about three times per week, and 16.07% occasionally (Figure 3).

In the present study, there were observed the following strong correlations. Patients who used to consume more frequent carbohydrates had an increased BMI ($p=0.017$). Women with endometrial polyps had a diet based on chicken meat and read meat ($p<0.001$) and rich in carbohydrates ($p<0.001$). These women also had a lifestyle with moderate daily activity ($p<0.001$). The endometrial polyp was seldom associated with medical disorders such as arterial hypertension or diabetes mellitus. This pathology was more frequently a unique disorder of the patient at the present hospital admission time.

Discussion

This study evaluated the impact of lifestyle behavior and meal preference on endometrial polyps' development. The patients were referred to gynecologic examination for abnormal uterine bleedings in most of the cases. The main means of diagnosis and treatment was hysteroscopy. The characteristics of women who were diagnosed with endometrial polyps were as follows: they lived in urban area, they reported an obstetrical history that included minimum one birth, and they had an increased Body Mass Index (overweight or obesity). Their lifestyle was characterized by daily moderate activity. The meal preference was dominated by meat consumption (daily or more than three times per week) and daily refined carbohydrate intake.

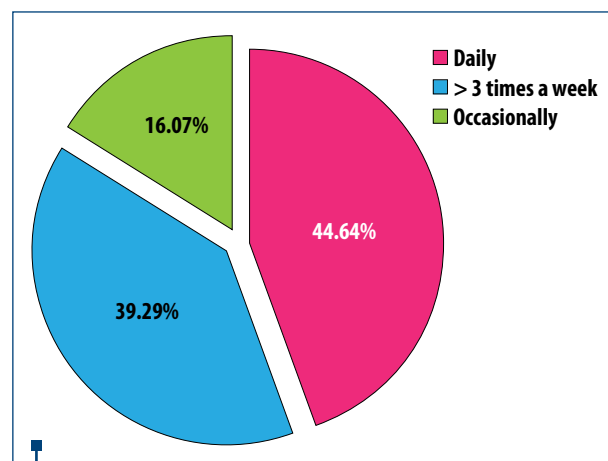


Figure 3. Refined carbohydrate consumption frequency

Regarding the occurrence of endometrial polyps in women of different age gaps, previous studies⁽⁶⁾ have suggested that most patients are aged between 40 and 50 years old, aspect that was confirmed by our study results, as well. Furthermore, our study showed that almost half of the patients interviewed had a gynecologic history that included uterine myoma, cervical dysplasia or ovarian cysts. By far, myoma was the most common condition associated with endometrial polyps. These facts have been also identified and revealed in previous studies^(9,10). The study conducted by Perez-Medina et al. reported an increased prevalence of endometrial polyps in infertile women, although the causal relationship between the two pathologies is not entirely understood⁽¹¹⁾. However, we did not observe an increased prevalence of infertility in our study.

Studies also reported as promoting factors for the appearance of uterine polyps: reproductive age, visceral adiposity⁽¹²⁾, tamoxifen treatment for breast cancer, smoking and arterial hypertension^(13,14), and postmenopausal hormone therapy that includes high amounts of estrogen and/or a progestin with decreased antiestrogenic activity⁽¹⁵⁾. Currently, the most widespread theory of uterine polyps pathogenesis supports the existence of an excess of estrogen activity compared to the endometrial progesterone activity⁽¹⁶⁾. The endometrial polyps were also observed in patients with Cowden and Lynch syndromes, women who have an increased incidence of endometrial cancer, as well⁽¹⁷⁾.

Giving the fact that endometrial pathology such as polyps, endometrial hyperplasia or endometrial cancer can be found even in women younger than 25 years old, more frequently in those with a Body Mass Index >30 kg/m² or polycystic ovary syndrome⁽¹⁸⁾, we tried to find a correlation with daily behavior and meal preferences. The literature has no report about the lifestyle characteristics of women with endometrial polyps. Thus appeared the idea and the protocol of the present study. We searched the literature about the impact of diet on endometrial and uterine benign or malignant tumors impact. The research revealed the diet contribution on uterine fibroids. It was demonstrated that meals rich in beef, ham or red meats and reduced in fruits and green vegetables are associated with an increased relative risk of uterine myomas development⁽¹⁹⁾. Dairy products consumption is associated with a low risk of uterine fibroids in Afro-American women, according to a single report⁽²⁰⁾. Deficiency of vitamin D⁽²¹⁾ and increased dietary glycemic index⁽²²⁾ or high consumption of coffee or caffeine under the age 35 were also described as risk factors for uterine myomas⁽²³⁾. A diet rich in carotenoids⁽²⁴⁾ or vitamin A from animal sources was reported as protective factors for fibroids⁽²⁵⁾.

A large population study (n = 617,119) revealed an association between red meat intake and cancer-specific mortality in individuals aged 50 to 71 years old, but specific types of cancer were not mentioned⁽²⁶⁾. The results were similar with those from another study that included 121,000 men and women where red meat consumption proved an increased risk of cancer mortality⁽²⁷⁾. The International Agency for Research on Cancer (IARC) proved

the strong association between cancer and red meat or processed meat consumption⁽²⁸⁾. The mechanisms remain still uncertain. As the literature prove the role of red meat in cancers and myoma pathogenesis, the results of our study revealed that red meat consumption was at a high level in women with endometrial polyps.

It is already established that the consumed carbohydrates have a crucial role on humans' health. Even though in the last decades there were national programs to promote dietary changes with reduced carbohydrates intake, the prevalence of obesity is still rising⁽²⁹⁾ and it contributes to pathologies in which it represents a risk factor. Endometrial polyps are only an example of that consequence. Our study proved the association between obesity, carbohydrates and endometrial polyps.

The Pooling Project of Prospective Studies of Diet and Cancer reported that the total fruits and vegetables are associated with a reduced incidence of estrogen receptor-negative breast cancer⁽³⁰⁾. There is no other report about fruit and vegetable consumption and gynecological cancers. As mentioned before, it was proven the protective role of this type of diet for uterine myoma development. Our study revealed that patients with endometrial polyps were in a small percentage vegetarian. So far, for more accurate results, the incidence of endometrial polyps should be also evaluated in randomized studies with exclusively vegetarian women.

The limitations of the study were represented by the facts that it was a single-center report and included patients who were diagnosed with endometrial polyps at any age. For a better accuracy of the results, randomized studies should be performed with women at reproductive age and at postmenopausal age separately. Another limit is that we did not evaluate other behavior habits such as coffee, caffeine or beverages intake. These limitations may include the risk of bias.

Despite these limitations, the results of this study provide medical information that can be used as recommendations for patients with endometrial polyps. They should follow the advice to avoid meat abundance in their meal and to reduce carbohydrates intake in order to reduce endometrial polyp recurrence. In addition, general lifestyle changes such as increasing the daily activity are good methods to improve the quality of life and reduce illnesses.

Conclusions

The main characteristics of women diagnosed with endometrial polyps were: urban area citizens, non-smokers and premenopausal obese women. Regarding their lifestyle, it was observed that these patients had a high meat consumption, particularly red meat and chicken meat, increased intake of sugar and refined carbohydrates, and a reduced daily activity. Future extensive randomized studies are required to prove our associations between endometrial polyps' development and women's daily behavior. ■

Conflicts of interests: The authors declare no conflict of interests.

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