CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES

Volume: 04 Issue: 06 | Nov- Dec 2023 ISSN: 2660-4159

http://cajmns.centralasianstudies.org

Clinical and Morphological Features of Uterine Fibroid

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Received 22nd Oct 2023,
Accepted 23rd Nov 2023,
Online 31th Dec 2023

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Abstract: Uterine fibroid (UF) remains the most common benign tumor in gynecology. The aim of the study was to investigate the clinical and morphological features of uterine fibroid in women with surgical management tactics. We examined 53 women with symptomatic UF and 48 conditionally healthy women of reproductive and perimenopausal age admitted to the Multidisciplinary Clinic of the Tashkent Medical Academy (2020-2021yy). All women underwent standardized studies according to the National Protocol. Clinical and morphological analysis of women with surgical treatment tactics showed that leyomyoma prevails in histological examination of fibroid nodes, and simple typical endometrial hyperplasia on the background of endometritis in scraping morphology

Key words: uterine fibroid, leyomyoma, endometrial hyperplasia, myomectomy, hysterectomy.

Relevance. Uterine fibroid (UF) is the most common tumor, the incidence of which ranges from 20-40% [9, 11], dominates in late reproductive and perimenopausal age up to 70-80% [2, 19], which is one of the urgent problems in the protection of women's reproductive health. Promoting health throughout the life course is the goal of the World Health Organization (WHO), the need to prevent disease, maintain health and cope with illness and disability [18]. It should be noted that only 15% of uterine leiomyoma patients have indications for compulsory surgical procedures because of heavy and prolonged menstrual bleeding, chronic pelvic pain [4, 8].

Myoma accounts for 29% of all gynecologic hospitalizations in women and is the leading cause (40-60%) of annual hysterectomies [12]. However, recurrent formation of new tumors remains a considerable problem with such treatment [15]. In this regard, it is necessary to improve the efficiency of methods for diagnosing morphologic changes in fibroids.

Purpose of the study. To study the clinical and morphological features of uterine fibroid in women with surgical treatment tactics.

Material and Methods. The study design was based on clinical and laboratory examination of 53 women with symptomatic UF (main group) and 48 conditionally healthy women (control group) of reproductive and perimenopausal age admitted to the department of Women's Health Center and Gynecology Department of the TMA Multidisciplinary clinic during 2018-2020. General clinical, special gynecologic, instrumental, morphological and statistical methods of investigation were used. Morphological studies of endometrial aspirates and removed uteri were performed at the Republican Center of Pathological Anatomy. 52 endometrial scrapings/aspirates were obtained by scraping/aspiration of the uterine cavity under local anesthesia. The total number of macro samples was 11 removed uteri and myomatous nodes. The material was processed according to the instructions for unification of histological methods of aspiration/operative material examination.

Results. The mean age of the examined women was 40.9±0.7 years ($p<0.05$). Late reproductive and perimenopausal age prevailed in the main group, which is consistent with the literature data [1, 7]. Women with symptomatically UF in the main group (n=53) presented with different clinical manifestations: bleeding symptom – abnormal uterine bleeding (AUB) and anemia prevailed to a greater extent in 86.8% (n=46), of which 18.9% of women underwent hemotransfusion due to severe anemia; rapid growth in 11.3% (n=6), pelvic pain (n=5) in 9.4% and infertility in 7.5% (n=4) ($p=0.01$).

By analysis of risk factors prevalent factors such as overweight BMI (29.7 + 11.83 and 28.1 + 0.08 kg / m 2 , respectively subgroups and the control group of 23.3 + 0.01 kg / m 2 , $p <0.01$), burdened obstetric and gynecological history. vitamin D levels are affected by dietary intake of vitamin D and factors affecting its absorption metabolism, as well as obesity. We have described the relationship between excess BMI and vitamin D deficiency [6, 7]. Our analysis to identify excess BMI showed that in 47.2% of women

with symptomatically UF, obesity of I, II, III degrees was calculated (28.3%, 11.3% and 7.5%, respectively). We found in our previous studies that with increasing body mass index and decreasing serum vitamin D levels, women with uterine fibroid showed symptoms of the disease.

Ultrasound study on the fibroid node localization in the thickness of the uterus in both groups the main group prevailed intramural node (71.7% and 63.2%, respectively groups. Mixed fibroids in women with symptomatic fibroids were 2 times more likely than women with symptomatically fibroid (13.2% and 6.12%, respectively). The median uterine volume calculated according to Brunn's formula (1981) in the subgroup with symptomatically UF was 237.54 mm^3, asymptomatically UF – 103.45 mm^3 and in the control group – 52.1 mm^3 [5].

The results of surgical treatment of women with symptomatically UF (n=53) were analyzed. All women in the symptomatically UF group (n=52, 98.1%) underwent uterine cavity scraping for therapeutic and diagnostic purposes according to the National Protocol [16], and the scraping was sent for morphological examination. One woman was an exception because she was unmarried (virgo) (Fig. 1).

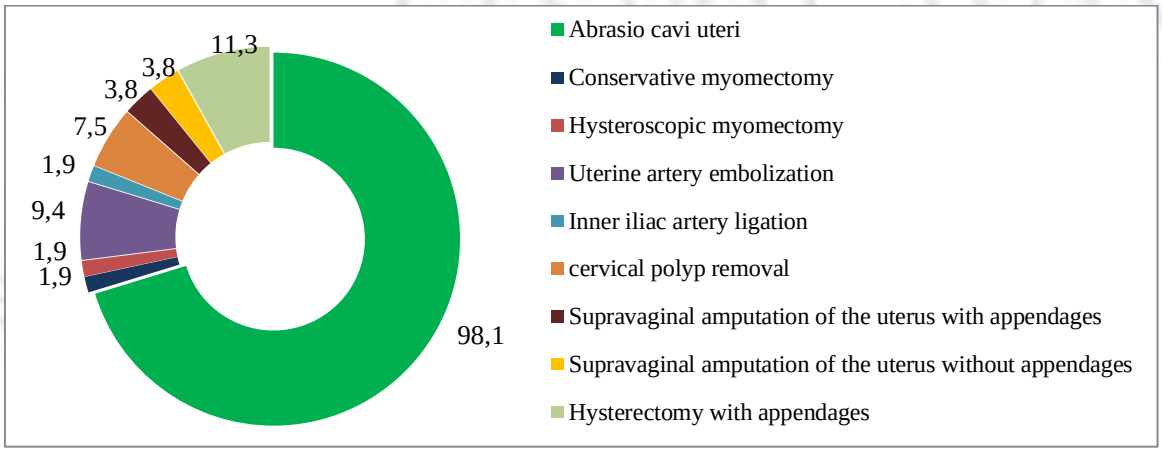

Fig. 1. Types of surgical interventions for women with symptomatically UF, %.

Discussion. Analyzing the performance of radical operations, organ-preserving interventions such as uterine artery embolization (UAE), hysteroscopic and conservative myomectomy were performed in 7 (13.2%) women of reproductive age (18-42 years) who did not realize reproductive function. Whereas, organ-killing surgeries such as supravaginal amputation of uterus and hysterectomy were performed in 1/5 (18.9%) women of late reproductive and perimenopausal age who realized reproductive function, and there was no effect of medical treatment.

Scraping from the uterine cavity of women with symptomatically UF (n=52) was obtained by aspiration of the contents by manual vacuum aspiration (RVA) (Figure 2). The results of uterine cavity scraping morphology in women (98.1%) showed that besides myometrium contractile dysfunction and increased menstrual surface area, the most common cause of AUB in women with symptomatically AUB was endometrial

hyperplasia (EHP). According to the data, UF in perimenopausal women is often combined with EHP [10].

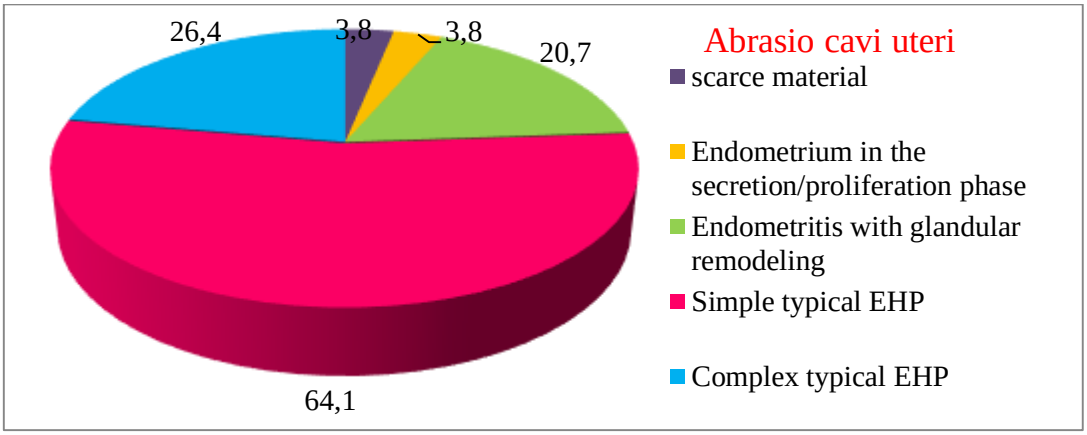

Fig.2. Morphological study of women with symptomatically UF, n=52,%.

According to WHO (2014) classification, typical simple EHP was detected in almost 2/3 of the studied women (64.1%) and complex typical EHP in 1/3 (26.4%) (Fig.2-3) [14, 17, 18].

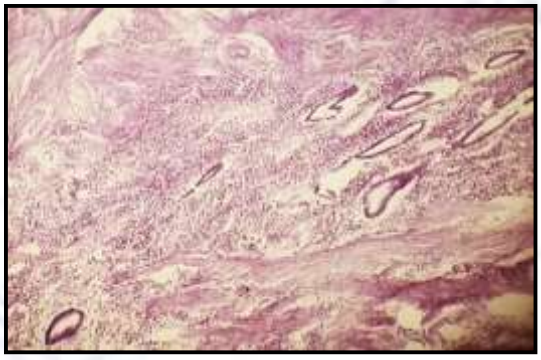

Figure 3. Typical simple EHP (Medical History №11560). Staining: hematoxylin and eosin, magnification 10x10.

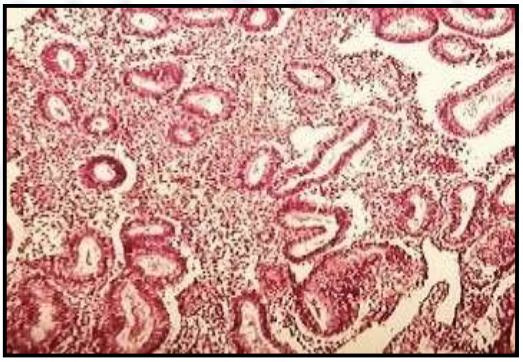

Figure 4. Typical complex EHP (Medical History №10973). Staining: hematoxylin and eosin, magnification 10x10.

Simple typical EHP is characterized by a microscopic picture in which: the endometrium is enlarged in volume, structurally differs from normal endometrium in that the glands and stroma are active, the glands are unevenly distributed, some of them are cystically dilated. There is a balance between proliferation of glands and stroma, blood vessels in the stroma are evenly distributed, atypia of nuclei is absent (Fig. 3). Simple typical EHP is the most frequent variant of the disease. It is characterized by an increased number of glandular and stromal elements without structural reorganization of the endometrium.

In complex typical EHP, the degree of proliferation and the number of glands in the intermediate stroma, which are structurally irregular in shape, are more pronounced

compared to simple typical EHP. Here the balance between proliferation of glands and stroma is already disturbed (glandular overflow), but atypia of nuclei is absent (Fig. 4). Complex EHP without atypia implies a change in the location of glands, a decrease in the expression of the stromal component, i.e. the presence of structural tissue changes in the absence of cellular atypia [10].

Numerous studies over the last decades have proven that simple and complex non-atypical EHP are the result of absolute or relative hyperestrogenism [17], initiating symptomatically UF [3, 11, 13]. It should be noted that in 1/5 of the studied women (20.7%) UF and EHP occurred against the background of histologically confirmed endometritis. In the presence of an inflammatory factor, UFs may occur in response to myometrial damage by an association of microbial flora [1].

Pathomorphological changes showed that the age of the patients in whom hysterectomy was performed ranged from 41 to 50 years (n=10). Histological studies of removed uterine preparations or myomatous nodes showed that leiomyoma (54.5%, p>0.05) and leiofibromyoma (36.4%, p>0.05) were the most frequent in more than half of the women with hysterectomy (Fig.5). When studying the history of the studied women with UF, the fibrous component prevailed in myomatous nodes with a long course of the disease (r=0.431).

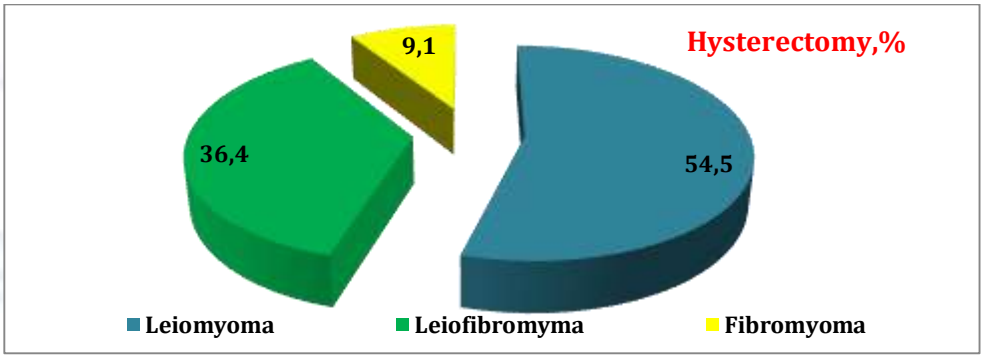

Fig.5. Morphological study of removed uterine preparations or myomatous nodes of women with symptomatically UF, n=11, %.

The results of macroscopic morphological examination of leiomyoma showed a clearly delimited spherical nodule of dense consistency, whitish-gray in color, fibrous structure, surrounded by moderately sclerosed tissue pseudocapsule. Microscopically, leiomyoma consists of multidirectional bundles of smooth muscle cells (SMC) with connective tissue layer in which mitoses were practically not detected (Fig.6-7).

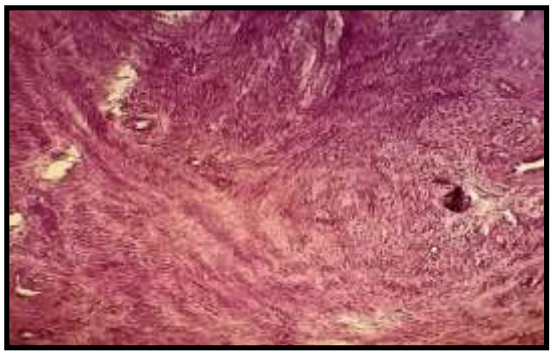

Fig. 6. Patient M. Uterine leiomyoma (Medical History №1148). Hematoxylin and eosin staining, magnification 10x10.

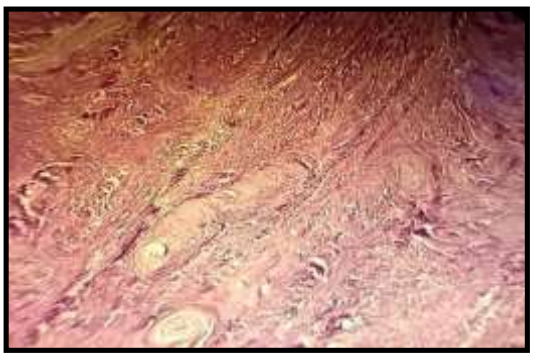

Fig. 7. Patient A. Leiofibromyoma (Medical History №11597). Hematoxylin and eosin staining, magnification 10x10.

Leiofibromyomas are characterized by an increase in the volume of stroma, due to its hyalinosis and vessel walls, with thin fibrous septa myocytes atrophied. In UF nodes there are often blood circulation disorders leading to edema and necrosis of tissue with subsequent formation of sclerosis, hyalinosis foci with lime deposition or formation of cysts, on the periphery of such foci there is increased proliferation of tumor cells and its stromal elements with polymorphism of cellular structures, characteristic of fibroid.

Conclusion. Interpretation of morphologic study of postoperative material in women with surgical treatment tactics showed that leiomyoma predominates in the histology of myomatous nodes, in the morphology of scrapings - simple typical HPE, on the background of endometritis. HPE is the result of absolute or relative hyperestrogenism, which is an initiating factor for the development of symptomatically UF, leading to organ-destroying surgical interventions. Thus, given the high prevalence of the disease in the population, at the present stage the study of clinical and morphologic features of uterine fibroid is one of the topical issues in gynecology. For further study of the pathogenesis of mysterious myoma it is necessary to study these morphological materials by immunohistochemical method of investigation at the level of tissue receptors.

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