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Uterine Myoma, Risk Factor and Pathophysiology: A Review Article

Gofur NRP[1*], Gofur ARP[2], Soesilaningtyas[3], Gofur ANRP[4], Kahdina M[4] and Putri HM[4]

[1]Department of Health, Faculty of Vocational Studies, Universitas Airlangga, Surabaya, Indonesia

[2]Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia

[3]Department of Dental Nursing, Poltekkes Kemenkes, Surabaya, Indonesia

[4]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

[*]Corresponding author:

Nanda Rachmad Putra Gofur,
Department of Health, Faculty of Vocational Studies, Universitas Airlangga,
Surabaya, Indonesia,
Email: nanda.rachmad.gofur@vokasi.unair.ac.id

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1. Abstract

Uterine myoma is a benign neoplasm composed of uterine smooth muscle and connective tissue that supports it and is often referred to as fibromyoma, leiomyoma, fibroids. Can be single or multiple and reach large sizes (100 pounds). It has a tough consistency, with a clear cap boundary so that it can be removed from the surroundings. Uterine myoma, also known as leiomyoma or fibroid is a benign tumor that is often found in women of reproductive age (20-25%). At age> 35 years the incidence is higher, that is, closer to 40%. The high incidence of uterine myomas between the ages of 35 and the ages of 50 indicates a relationship between the incidence of uterine myomas and estrogen. At the age of menopause, uterine myoma regression occurs.

1.1. Discussion: Uterine myoma is a benign tumor in the uterine area or more precisely the uterine muscle and connective tissue around it. Myomas have never been found before the occurrence of menarche, whereas after menopause only about 10% of myomas are still growing. According to localization, myoma uteri is found in cervical (1-3%), and corporal. The cervix is less common but when it reaches a large size it can compress the bladder and cause impaired micturition and is also technically more difficult to operate. Uterine myomas are usually multiple, separate and spherically or irregularly lobulated. Although myomas have a pseudocapsule, they can be clearly distinguished from normal myometrium and can be enucleated easily from the surrounding tissue. Macroscopically in cross section, the myoma is paler, rounded, slippery and usually dense and if the myoma that has just been removed is cleaved, the tumor surface separates and is easily distinguished from the pseudocapsule. Microscopically, myoma uteri consists of bundles of smooth muscle and connective tissue, which are arranged like a whorled like appearance.

1.2. Conclusion: Some conditions also provide continuous estrogen exposure which triggers the formation of uterine myoma. This risk factor including age, family history, ethnic, bad habit, diet, weight loss and pregnancy.

2. Introduction

Uterine myoma is a benign neoplasm composed of uterine smooth muscle and connective tissue that supports it and is often referred to as fibromyoma, leiomyoma, fibroids. Can be single or multiple and reach large sizes (100 pounds). It has a tough consistency, with a clear cap boundary so that it can be removed from the surroundings [1].

Uterine myoma, also known as leiomyoma or fibroid is a benign tumor that is often found in women of reproductive age (20-25%). At age> 35 years the incidence is higher, that is, closer to 40%. The high incidence of uterine myomas between the ages of 35 and the ages of 50 indicates a relationship between the incidence of uterine myomas and estrogen. At the age of menopause, uterine myoma regression occurs [2].

Black women in the USA suffer from uterine myoma 3-9 times than white women. But in Africa, white women suffer very little

from uterine myoma. The differences between America and Africa may be attributed to differences in life patterns. In the USA, of the 650,000 hysterectomies performed per year, 27% (175,000) are due to uterine myoma arenas. Based on the residive incidence of uterine myoma as much as 15% (4-59%), then as much as 10% (3-21%) must be performed again [2].

Uterine myoma are often found in women of reproductive age (20-25%), where the prevalence of uterine myomas increased by more than 70% by pathological examination of uterine anatomy, proving that many women suffer from asymptomatic uterine myomas. It is estimated that the incidence of uterine myoma is about 20% -30% of all women [3]. Aims of the article is to review uterine myoma, risk factor and pathophysiology.

3. Discussion

Uterine myoma is a benign tumor in the uterine area or more precisely the uterine muscle and connective tissue around it. Myomas have never been found before the occurrence of menarche, whereas after menopause only about 10% of myomas are still growing. According to localization, myoma uteri is found in cervical (1-3%), and corporal. The cervix is less common but when it reaches a large size it can compress the bladder and cause impaired micturition and is also technically more difficult to operate [4].

Uterine myomas are usually multiple, separate and spherically or irregularly lobulated. Although myomas have a pseudocapsule, they can be clearly distinguished from normal myometrium and can be enucleated easily from the surrounding tissue. Macroscopically in cross section, the myoma is paler, rounded, slippery and usually dense and if the myoma that has just been removed is cleaved, the tumor surface separates and is easily distinguished from the pseudocapsule. Microscopically, myoma uteri consists of bundles of smooth muscle and connective tissue, which are arranged like a whorled like appearance [5].

According to the position of the myoma to the uterine lining, it can be divided into 3 types:

a. Submucosal Myomas

It grows just below the endometrium and protrudes into the uterine cavity. Often also growing long and protruding stem through the cervix into the vagina so that it can be seen inspeculo and is called Myom Geburt. Myoma in the cervix can protrude into the cervical canal so that the OUE is crescent shaped [6].

Because it grows under the endometrium and in the endometrium, the uterine bleeding is the most abundant, so that this submucosal myoma most often causes profuse and irregular uterine bleeding (menometrorrhagia). As a result, a hysterectomy is required in cases of myoma with profuse bleeding despite its small size. Myoma submucosa with a stem is often infected (ulcerated) and torsion (twisted) or becomes necrotic and if this happens then this condition is a major concern before treating the myoma itself (a syndrome similar to acute abdomen) [3].

The possibility of sarcoma degeration is also greater in this type of myoma submucosa. The presence of sub mucosa myoma can be felt as a "curet bump" (lump curettage time) [6].

b. Intramural / Interstitial Myomas

It grows on the uterine wall between the myometrial fibers. The size and consistency varies, if large or multiple can cause uterine enlargement and lumps [4].

c. Subserous / Subperitonal Myoma

It grows under the tunica serosa (grows outside the uterine wall) so that it protrudes outward on the surface of the uterus, covered by serosa. This type of myoma can also be stemmed. If the myoma subserosa with this stem gets extrauterine bleeding from the blood vessels of the omentum, then the stalk can atrophy and be absorbed so that it is released so that it becomes "parasitic myoma". Sometimes the veins on the surface rupture and cause intra-abdominal bleeding. This subserous myoma can also grow between the 2 peritoneal layers of the broad ligament into an "intraligamenter myoma" which can compress the ureter and A. iliaca, causing urinary disorders and pain [1, 7].

4. Risk Factors of Uterine Myomas

4. 1. Age of the Patient

Most women are diagnosed with uterine myoma in their 40s; but it is not certain whether uterine myomas occur due to increased formation or increased enlargement secondary to hormonal changes at this time of age. Based on the autopsy, Novak found 27% of women aged 25 years had a myoma nest. Myomas have never been reported before menarche and after menopause only 10% of myomas are still growing [8].

4. 2. Endogenous Hormones (Endogenous Hormonal)

Very few uterine myomas were found in specimens taken from the results of hysterectomy for women who had menopause, it was explained that the endogenous estrogen hormone in menopausal women was low or low. Early menarche (age under 10 years) was found to increase the risk (RR 1.24) and past menarche (age after 16 years) decreased the risk (RR 0.68) for suffering from uterine myoma [8].

4. 3. Family History

Women with first-degree lineages with uterine myoma sufferers have a 2.5 times increased risk of suffering from uterine myoma compared with women without lineage with uterine myoma. Myoma sufferers who have a family history of uterine myoma sufferers have 2 times the power of expression of VEGF-α (a myoma-related growth factor) compared to myoma patients who do not have a family history of uterine myoma sufferers [9].

4. 4. Ethnicity

From a study conducted involving self-reports by patients regard-

ing uterine myoma, medical records, and sonographic examinations showed that African-American ethnic groups have a 2.9 times likelihood of suffering from uterine myoma compared to women with caucasian ethnicity, and this risk is not related to risk factors. another. It was also found that African-American women suffer from uterine myomas at a younger age and have myomas that are many and larger and show clinical symptoms. However, it is not clear whether these differences are due to genetic problems or differences in circulating estrogen levels, estrogen metabolism, diet, or the role of environmental factors. However, a recent study demonstrated that the Val / Val genotype for an essential enzyme for estrogen metabolism, catechol-O-methyltransferase (COMT) was present in 47% of African-American women versus only 19% of white women. Women with this genotype are more prone to suffer uterine myoma. This explains why the high prevalence of uterine myoma among African-American women is higher [8].

4.5. Weight Loss

One prospective study was conducted and found that the possible risk of developing uterine myoma was as high as 21% for every 10kg increase in body weight and with an increase in body mass index. The same findings were also reported for women with 30% excess body fat. This occurs because obesity causes increased conversion of adrenal androgens to estrone and decreased sex-binding globulin. The result causes an increase in estrogen biologically which could explain why there is an increase in the prevalence of uterine myoma and its growth [7].

Several studies have found an association between obesity and an increased incidence of uterine myoma. A study at Harvard conducted by Dr. Lynn Marshall found that women who have a Body Mass Index (BMI) above normal are 30.23% more likely to suffer from uterine myoma. Ros et al, (1986) found that the risk of uterine myoma increases by 21% for every 10 kg of weight gain and this is in line with the increase in BMI [1, 7, 8].

4.6. Diet

There are studies that link the increase in the occurrence of uterine myoma with consumption of such as beef or red meat or ham which can increase the incidence of uterine myoma and green vegetables can reduce it. This study is very difficult to interpret because this study does not calculate the caloric value and fat intake but for information only and it is also not certain whether vitamins, fiber or phytoestrogens are associated with uterine myoma [7, 8].

4.7. Pregnancy and Parity

Increased parity reduces the incidence of uterine myoma. Uterine myomas exhibit the same characteristics as normal myometrium in pregnancy including increased extracellular matrix production and increased expression of receptors for peptides and steroid hormones. The postpartum myometrium returns to original weight, blood flow and size by apoptosis and differentiation. This remodeling process may be responsible for the reduction in the size of the uterine myoma. Another theory also says that the blood vessels in the uterus return to their original state or size in postpartum and this causes the uterine myoma to lack blood supply and lack of nutrients to continue to enlarge. Pregnancy at mid-reproductive age (25-29 years) was also found to provide protection against myoma enlargement [7, 8].

4.8. Smoking Habits

Smoking can reduce the incidence of uterine myoma. Many factors can reduce the bioavailability of the hormone estrogen in tissues, such as: decreased conversion of androgens to estrone by inhibition of the aromatase enzyme by nicotine [7, 8].

5. Patophysiology of Uterine Myomas

Each uterine myoma is derived from a single myocyte progenitor cell. Thus, various tumors of the uterus indicate their respective cytogenic origins. Some of the defects involve chromosomes 6, 7, 12, and 14 and some correlate with the rate and direction of tumor growth. Some of the specific genetic mutations, including the MED12 and HMGA2 genes, which are less common are the COLAA5-A6 or the FH gene, causing most uterine myomas. Of the genes, the FH (Fumarate Hydratase) gene is a rare gene murasi but can lead to Hereditary Leimyomatasis and Renal Cell Cancer (HLRCC) syndrome. This is characterized by skin and uterine leiomyoma and renal cell cancer [8, 9].

Based on its origin, myoma uteri is a tumor that is sensitive to estrogen and progesterone, so as a result, myoma uteri grows during the reproductive period. In the postmenopausal period, uterine myoma generally shrinks and new tumor growth rarely occurs. The above sex steroids may have an effect either stimulating or inhibiting transcription or cell growth factor production. Myoma uteri itself creates a hyperestrogenic environment, which is needed for its growth and maintenance. Compared with normal myometrial cells, cells from myoma uteri have a higher density of estrogen receptors, which makes more bonds from estradiol. Then these tumors also convert less estradiol to weaker estrone. The third mechanism is the large amount of cytochrome P450 in uterine myoma compared to normal myocyte cells, this specific enzyme catalyzes the conversion of androgens to estrogens [10].

Some conditions also provide continuous estrogen exposure which triggers the formation of uterine myoma. For example, in a high BMI condition because obese women produce more estrogen due to the conversion of androgens to estrogen in adipose tissue by aromatase. Women with Polycystic Ovarian Syndrome (PCOS) also have a greater risk of developing uterine myoma. Of the many factors, estrogen and progesterone hormonal therapy in premenopausal women does not have much of an effect that induces the formation of uterine myoma. Smoking alters estrogen metabolism and decreases physiologically active serum estrogens. This ex-

plains why women who smoke have a lower risk of developing uterine myoma [8, 11].

Apart from estrogen, uterine myoma also carries more progesterone receptors than the surrounding myometrium. Progesterone is considered to have an important role in mitogen in the growth of uterine myoma and maintain progesterone receptors. Thus, cell proliferation, accumulation of extracellular matrices, cellular hypertrophy all lead to the growth of uterine myoma directly controlled by progesterone and in some role by estrogen. This relationship is evidenced by the provision of anti-progestins, atrophy occurs in most uterine myomas [9, 11].

6. Conclusion

Some conditions also provide continuous estrogen exposure which triggers the formation of uterine myoma. This risk factor including age, family history, ethnic, bad habit, diet, weight loss and pregnancy.

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