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Review Article

Exploring uterine fibroids and its treatment in current scenario

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ABSTRACT

Uterine Fibroids (leiomyoma) are made of muscle cells and other grow tissues grow in and around of the wall of the uterus. Uterine fibroids benign tumors in women reproduction age worldwide. Many are discovered incidentally on clinically examination. Approximately 30% of women with uterine fibroids will present with severe symptoms, which can include abdominal uterine bleeding, anemia, pelvic pain and constipation. Infertility and recurrent miscarriage may also be symptoms of fibroids, depending on their location and size, especially for sub mucous and intramural myelomas distorting the uterine cavity. Current option for symptomatic fibroid treatment includes expectant medical and surgical management radiology procedures. Ultrasound can be done, when a patient is symptomatic of uterine fibroids. Fibroids are generally classified by their location; intramural fibroids, subserosal fibroids, submucosal fibroids. The cause of uterine fibroids is unknown, But research and clinical experience proposes that genetics, hormonal imbalance, other growth factor and extracellular matrix accumulation could be the contributing factors. Although uterine fibroids are usually not dangerous, they can cause discomfort and lead to complication such as, drop in red blood cell (anemia) which causes fatigue from heavy bleeding. Our aim is to highlight the new treatments and advancements in treating uterine fibroids. Later we have also highlighted the future advancements and innovations that are used in developed countries for same.

1. Introduction

Leiomyoma, sometimes referred to as uterine fibroids, are the most prevalent benign tumors of the female reproductive system. These benign growths can vary in size, quantity, and position inside the uterine wall. They develop from the smooth muscle layer of the uterus. Even while uterine fibroids are typically thought of as benign, they can result in a variety of symptoms such as excessive monthly flow, pelvic discomfort, pressure, and problems with reproduction. Uterine fibroids are common in women who are fertile, which emphasizes how serious of a health issue they are. With regard to their epidemiology, etiology, pathophysiology, clinical presentation, diagnostic methods, and therapy choices, uterine fibroids are currently poorly understood. This study attempts to offer a thorough summary of that knowledge.[1]

2. Symptoms of Fibroids May Include

2.1. Heavy vaginal bleeding

One typical sign is abnormally heavy or protracted menstrual bleeding. Women report passing blood clots, soaking through sanitary protection in less than an hour, and being unable to leave the house on the day with the most intense flow. Some women get anemia, often known as a low blood count, as a result. Fatigue, headaches, and

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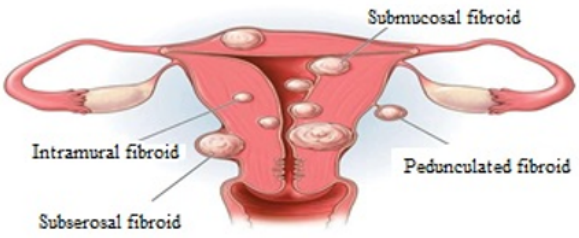

Fig. 1: Types of uterine fibroids

lightheadedness are all symptoms of anemia. You should visit your doctor to explore fibroid treatment options if excessive bleeding makes it difficult for you to carry out your daily activities or if you have anemia.[2]

2.2. Pain in the pelvis

Large fibroids can cause a woman to feel pressure or heaviness in her pelvic or lower abdomen. Rather from being a searing pain, this is frequently characterised as a nagging ache. It can occasionally be uncomfortable to bend over, lie face down, or exercise due to the larger uterus.

2.3. Bladder problem

The desire to pee regularly is the most typical bladder symptom. To empty her bladder, a lady can awaken numerous times over the night. Women can have full bladders yet are unable to pee. The bladder's ability to contain pee or prevent urine from leaving the bladder is decreased or blocked as a result of fibroids pushing against the bladder. Treatment for bladder issues can bring quite a lot of relief.

2.4. A sore back

Rarely, fibroids can strain on the lower back's muscles and nerves and hurt. Rear discomfort is more likely to be brought on by a big fibroid on the rear surface of the uterus than by a little fibroid inside the uterine wall. Due to the prevalence of back pain, it is crucial to rule out other possible explanations of the discomfort before blaming fibroids.

2.5. Rectal force

Additionally, fibroids can squeeze the rectum, resulting in a feeling of rectal fullness, difficulty going to the toilet, or discomfort when doing so. Hemorrhoids can occasionally occur as a result of fibroids.

2.6. Soreness or discomfort during sexual activity[3]

Fibroids can cause pain or discomfort during sexual activity. Only particular postures or periods of the menstrual cycle may trigger the discomfort. Uncomfortability during sexual activity is a serious problem. Make careful to bring up this symptom if your doctor doesn't inquire about it.

3. Risk Factors, Incidence, and Prevalence

Uterine fibroids are becoming more common in some populations, such African American women. However, given that many tumors are asymptomatic or just mildly symptomatic and go untreated as a result, their stated prevalence is probably underestimated. Additionally, only 25 to 30 percent of women generally report having uterine fibroids.

Uncertainty surrounds the pathogenesis of UF. There are a number of risk factors that have been found, from genetic susceptibility to a variety of lifestyle choices.

The likelihood of developing UF is significantly increased by a positive family history; however, the precise genetic component(s) of UF risk are still poorly known. As an example, genome-wide association studies and analyses of UF tumors have shown various genetic and epigenetic variables that are connected with a higher risk for UF. These findings propose unique subgroups of genetic abnormalities.[4]

3.1. Age

Growing older significantly raises the likelihood of developing uterine fibroids, especially in premenopausal women and those under the age of 40 (24, 39, 40). For instance, 80% of African American women under the age of 50 reported having uterine fibroids, compared to 60% of those between the ages of 35 and 49. Uterine fibroids were produced by 40% of White women under the age of 35 and 70% of those over the age of 50. Prepubescent females have not had these tumors because of the modest change in metabolic pathways. Menopausal women had smaller uterine fibroid lesions and less sex hormone production. Notably, the use of hormone replacement medication may trigger the initial signs of uterine fibroids and lead these lesions to develop again.

3.2. Race and ethnicity

According to studies, African-American women are more likely than women from other racial and ethnic groups to get uterine fibroids. Additionally, they typically get fibroids earlier in life and with more severe symptoms. Out of any racial group, Americans are most prone to acquire uterine fibroids. African American women also likely to have more severe uterine fibroid-related complaints. Comparing

African American and Hispanic women to White women, uterine fibroids are 3 times more prevalent in the first group and 2 times more common in the latter. Increased levels of steroid hormones in African American women and gene polymorphism, notably the catechol-O-methyltransferase (COMT) producing gene, may contribute to the increased frequency of uterine fibroids in African American women.[5]

The cause of the greater frequency of uterine fibroids in African American women, however, is still not completely understood. Additionally, vitamin D insufficiency in African American women may be to blame for the association between uterine fibroids and more severe disease symptoms. Vitamin D insufficiency is detected in African American women 5–10 times more frequently than in White women. This finding may be explained by the restricted absorption of ultraviolet (UV) light, which is necessary for the metabolism of vitamin D.

Additionally, there are several ways that perceived racism can harm one's health, and the African American community faces greater rates of racial discrimination. In a significant follow-up analysis of the cohort of the Black Women's Health analysis, it was shown that the prevalence of uterine fibroids was positively correlated with self-reported experiences of racial discrimination. In this regard, Vines et al. discovered a connection between the occurrence of uterine fibroids in the high-stress intensity group of African American women.[6]

3.3. Evaluation research in the lab

A beta-human chorionic gonadotropin test to rule out pregnancy, a CBC, a TSH level, and a prolactin level to assess for non-structural reasons in the differential should all be part of the first examination (see below).

For women older than 35, do an endometrial biopsy.

4. Radiologic Studies

The gold standard for visualizing uterine fibroids is transvaginal ultrasonography. It can identify uterine fibroids with a sensitivity of about 90 to 99%. Saline-infused sonography, which helps boost the sensitivity for the identification of subserosal and intramural fibromas, can aid improve ultrasound. A fibrous mass has a hard, well-defined, hypoechoic appearance. Tend to have varying degrees of shadowing on ultrasonography, and calcifications or necrosis may cause the echogenicity to be distorted.

4.1. Management / Treatment

The patient's age, current symptoms, and desire to preserve fertility should all be taken into account while determining the best course of therapy for uterine fibroids. The types of treatments that are available will depend on the sizes and locations of the fibroids. Three kinds of care options can be distinguished, starting with observation and moving up to medicinal management or surgical therapy as symptom severity increases.[7]

4.2. Medical management: Primarily revolves around decreasing the severity of bleeding and pain symptoms

Hormonal contraceptives: This class of medications comprises levonorgestrel intrauterine devices (IUDs) and oral contraceptive pills (OCPs). OCPs are frequently used to treat abnormal uterine bleeding brought on by symptomatic fibroids. There isn't much evidence to support their efficacy in treating uterine fibroids; hence bigger randomized controlled trials are required. Due to its minimal side effects and absence of systemic effects, the levonorgestrel IUD is presently the hormonal treatment of choice for symptomatic fibroids. Treatment for fibroids that deform the intrauterine cavity should be cautious since they might increase the risk of ejection.

4.3. Gonadotropin-releasing hormone (GnRH) agonists

Agonists of GnRH (Lupron), by inhibiting estrogen synthesis, GnRH agonists are a family of drugs that temporarily reduce fibroids and cease excessive bleeding. The most well-known of these medications is lupron. Lupron can reduce fibroid symptoms, but it also brings on uncomfortable menopausal symptoms like hot flashes.[8]

4.4. Nonsteroidal anti-inflammatory drugs (NSAIDs)

Prostaglandin levels, which are high in women with excessive menstrual flow and cause the excruciating cramping associated with menstruation, have been proven to be decreased by anti-inflammatories. There is no evidence that they reduce the size of the fibroids.

Vitamin D Lifestyle, food, nutrition, and residence are the least researched aspects that influence the chance for UF incidence. This might be the starting point for efficient UF prevention. The category of fat-soluble steroid compounds that have a complete effect on the human body includes vitamin D. The major source of vitamin D for humans is sunlight exposure. This vitamin can also be obtained through dietary supplements or food products. However, relatively few naturally occurring foods provide enough vitamin D. Among the finest sources of vitamin D include marine fish, fish oils, and fortified foods.

Vitamin D is thought to have a powerful immunomodulatory effect and lower the chance of developing chronic diseases and cancer. Nearly all immune system cells contain the vitamin D receptor (VDR), which controls how they operate. Vitamin D controls angiogenesis; controls cell proliferation and differentiation, and promotes apoptosis. Lack of vitamin D is thought to be a significant risk factor for the development of UFs. According to recent literature findings, women with UFs have considerably lower mean 25-hydroxyvitamin D (25(OH) D) levels than

controls.[9]

African-Americans, who are more prone to have UFs and vitamin D insufficiency, had the same confirmed in them. The methodology in this sector has been revolutionized by three major studies on lower blood vitamin D levels in UF-affected women, which have unmistakably focused future research in this area.

*Aromatase inhibitors and selective estrogen receptor modulators (SERM), such as raloxifene or tamoxifen, are further viable medicinal treatments. There is not much proof to back up the use of these drugs to treat symptomatic uterine fibroids. Tranexamic acid has been licensed for the treatment of abnormal and severe uterine bleeding, but it hasn't been demonstrated to lessen the disease burden in uterine fibroids or approved for that purpose.

5. Surgical Therapy

5.1. Myomectomy

A procedure called a myomectomy is used to remove fibroids while leaving the uterus intact. The best course of treatment for fibroid symptoms in women who intend to have children in the future is myomectomy.[10]

Although myomectomy is extremely successful, fibroids can recur. The likelihood of developing fibroids again in the future increases with age and the number of fibroids present at the time of myomectomy. After a myomectomy, women who are close to menopause are least likely to experience recurrent fibroids-related issues.

There are several techniques to do a myomectomy. You could be a candidate for an abdominal myomectomy, a laparoscopic myomectomy, or a hysteroscopic myomectomy depending on the size, number, and location of your fibroids.

5.2. Hysterectomy

The uterus is removed during a major surgical surgery called a hysterectomy. To permanently relieve their fibroid problems, many women choose for hysterectomy. Menstrual bleeding ceases after hysterectomy, pelvic pressure is reduced, frequent urination is better, and new fibroids cannot develop. After having a hysterectomy, a woman is no longer able to get pregnant. Vaginal, abdominal, and laparoscopic hysterectomy procedures are among the hysterectomy surgical techniques. The size of the uterus and a number of other criteria will determine which technique is best.[11]

6. Uterine Fibroids Treatment with Ayurveda

Modern gynecological practices only provide surgery as a definitive medical treatment for uterine fibroids, which forces patients to seek alternative forms of healing. With the exception of morbid surgical situations, patients' typical mindset is to avoid surgery as much as possible by seeking out Ayurveda or any other alternative treatment of their choosing. This typical behavior also applies to uterine fibroid patients when cancer has been ruled out. Surgery may be avoided for a variety of reasons, such as maintaining the body's anatomical and functional integrity, a simple dread of the procedure, the patient's age, a financial hardship, a social cause, and so on.

Ayurveda seeks to bring the body, mind, and spirit back into equilibrium when treating uterine fibroids. It's vital to keep in mind nevertheless that while Ayurveda may provide some alleviation and management techniques. Uterine fibroids are commonly treated in Ayurveda using dietary and lifestyle modifications, herbal medicines, cleansing, and stress management approaches.[12–16]

1. Panchakarma treatment, may aid in dosha balance, which in turn aids in the treatment of fibroids.
2. Virechana: Toxin elimination is the goal of detoxification with Virechana.
3. Basti: This treatment entails injecting medicinal oils or decoctions into the rectum. It can be helpful for controlling the pain and discomfort brought on by fibroids and is said to balance the Vata dosha.
4. Through the nose, medicinal oils or herbal powders are administered during nasya.
5. Shirodhara: In this form of treatment, heated herbal oil is applied to the forehead. It could aid in lowering tension.
6. Swedana: This treatment uses herbal steam to encourage perspiration and cleansing.

6.1. Diet and behavior for uterine fibroids

Avoid foods that cause a dosha imbalance, such as extremely sour, acrid, dry, and difficult to digest foods. Thus, a dosha imbalance makes the symptoms worse.

1. Maintain a Healthy Weight: Obesity and excess body weight have both been associated with an increased risk of uterine fibroids and the progression of these lesions. It could be advantageous to maintain a healthy weight by a balanced diet and frequent exercise.[17]
2. Consume a Balanced Diet: Pay special attention to a diet full of fresh produce, whole grains, lean meats, and healthy fats. Include fiber-rich foods in your diet since they can help balance hormones and prevent inflammation.
3. Think about phytoestrogens: Plant substances called phytoestrogens have the ability to act like estrogen in the body. According to some study, they may help control estrogen levels, which may be helpful for treating fibroids. Phytoestrogens are found in foods including soy products, flaxseeds, and whole grains.

*Keep in mind that while following these suggestions may be advantageous for some people, it's possible that not everyone may benefit in the same way. Because uterine fibroids vary in size and severity, it's critical to collaborate with a healthcare practitioner to create a thorough management strategy that is specific to your needs.

7. Uterine Fibroids and Yoga

7.1. Nadi shuddi pranayam soothes the mind and relieves the discomfort brought on by uterine fibroids

The patient must be sitting in a calm, contemplative position with the head and spine upright. The patient must use his thumb to cover one nostril (the left nostril if using the right hand, and the other nostril if using the left hand) and fully exhale through the other nostril. He will once again need to take several deep breaths while closing the other nostril with his thumb.[18]

7.2. Savasana: calms the body and the psyche.

However, it is uncertain what cause or factors contributed to their early evolution. Uterine fibroids in young women do not display normal uterine fibroid biology.

8. Conclusion

This review article offers a thorough overview of uterine fibroids, including their prevalence, clinical signs and symptoms, methods of diagnosis, and available treatments. The relevance of uterine fibroids as a typical gynecological illness affecting women of reproductive age is highlighted in the article. The review emphasizes the significance of proper diagnosis, taking into account both symptomatic and asymptomatic patients, in order to guide suitable therapeutic options through an analysis of numerous research and clinical trials

A variety of diagnostic techniques, including ultrasound and magnetic resonance imaging (MRI), as well as more advanced imaging techniques, are discussed in terms of their effectiveness and limitations. The article discusses the changing field of medical and surgical treatments and lists the benefits and drawbacks of each method. It talks about the development of less invasive techniques like targeted ultrasound surgery and uterine artery embolization, which provide intriguing alternatives to conventional surgical techniques.

In addition, the study explores the psychological and quality-of-life effects that uterine fibroids may have on those who are affected, highlighting the need for a comprehensive approach to patient care. The article promotes a greater comprehension of the fundamental mechanisms of uterine fibroids by providing insights into the possible causes, such as hereditary predisposition and hormone imbalances.[19]

9. Conflicts of Interests

None declared.

10. Source of Funding

None.

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