SHORT ARTICLE

Uterine Volume and Blood Flow Changes in the Uterus Induced by GnRH Analogues in Cases of Fibroids

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Abstract

This prospective study was conducted to study the effect of gonadotropin releasing hormone (GnRH) agonist on uterine and fibriod volume and the changes in blood flow in the uterine vessels. Nine patients with symptomatic fibriods, not willing for surgery, were enrolled. All patients recieved minimum 3 injections of GnRH agonist at 4 weeks interval. Uterine and fibroid volume and blood flow in the utrine vessels was measured before and three months after treatment. There was decrease in the fibriod volume and increase in resistance index in uterine arteries. There was no significant decrease in uterine volume. Out of four perimenopausal women two achieved menopause. GnRH agonist may have a role in perimenopausal women with symptomatic fibroid.

Key Words

Fibroids, GnRH agonist

Introduction

Uterine myomas are common benign tumors of women in reproductive age. It is estimated that 20-30% of women have a myoma (1) . Size and location of the myomas determine the symptomatology. Symptoms fall into the following categories: pressure symptoms (pain, urinary frequency, constipation), abnormal uterine bleeding and/or reproductive dysfunction (infertility, early pregnancy loss, preterm birth). Hysterectomy is the classical treatment and definite cure for myomas.

Hormone therapy aims at reducing symptoms and/ or size of the myomas and may be used as a long term treatment or as an adjuvant prior to surgery. Long term treatment may be indicated in patients with absolute contraindiction to surgery or untill menopause takes place. Presurgery uterine and fibriod volume reductuion facilitates both hysteractomy and myomectomy procedures (2-5). Gonadotropin releasing hormone (Gnrh) agonists are increasingly being used for this purpose.

we carried out this study to evaluate :a) changes in uterine and fibroid volume after treatment with GnRH agonists in women with symptomatic fibroids b) the blood flow pattern in uterine vessels before and after treatment with GnRH agonists, c) improvement in symptoms after treatment.

Material and Methods

In this prospective study, nine patients with symptomatic fibroids were enrolled over a period of one year, after informed consent. The patients were expected to buy the medication. Women with pregnancy or lactation, sex hormone therapy within last 2 months and with any concurrent illness that would contraindicate GnRH agonist therapy were excluded from the study.

Each patient had to undergo a general physical and pelvic examination followed by Papanicolaou smear and endometrial aspiration to rule out any other pathology. A

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detailed history was recorded for eash patient indicating the frequency and severity of vaginal bleeding, pelvic pain and pressure symptoms.

The women were examined by both transabdominal (TA) and transvaginal (TV) ultrasound. TA ultrasound is more useful in measuring uterine size in women with large uterus. TV ultrasound was performed in lithotomy position. All women underwent Doppler examination. The ultrasound machine used was Sonoline Versa (Seimemns, Germany) A 3.5 mhz probe was used for TA scanning and a 6mhz probe for TV scanning. The anteroposterior diameter (R_3) was measured from a transverse sonogram through the widest part of the uterus and uterine volume calculated using the formula $\pi R_1 R_2 R_3/6$. The number and size of each myoma was recorded and volume calculated using the same formula, in case of more than one fibroid, mean volume was calculated.

The uterine arteries were visulaised lateral to the cervix at the level of the internal os with the color doppler technique and blood flow velocity wave forms were obtained by placing the doppler gate over the coloured area and activating the pulsed doppler function. The higher achievable doppler measurements were taken. The resistance index was calculated as A-B/A, where A is peak systolic flow and B is peak diastolic flow.

Treatment was started on day 2 of menstrual cycle. Patients recieved GnRH agonist (decapeptyl 3.75 mg) subcutaneously every 4 weeks for 3 doses. Patients were followed every 2 weeks for the treatment duration. During treatment each patient underwent monthly pelvic examination by the same physician and repeat sonography to determine uterine and fibroid volume and blood flow in uterine vessels.

They were asked regarding symptomatic response and side effects.At the end of the study results were analysed as follows :

1. Improvements in symptoms
2. Change in uterine volume before and after 3 months of treatment with GnRH agonists.
3. Change in volume of fibroids after treatment.
4. Change in blood flow pattern in uterine vessels before and after using resistance indices.signals were recorded. (mean values of three consectives) .

Results

A total of 9 patients were recruited in this study over one year period. The age of the patients ranged from 24-49 years. All patients expect one were married and had completed their family. The main presenting symptoms in all patients was either menorrhagia or polymenorrhagia. One patient had additional symptom of pelvic pain. The duration of symptoms ranged from 6 months to 24 months. All these patients had failed other medical treatment and were not willing for syrgery.

Out of 9 patients one dropped out after one cycle of treatment after developing stroke. Out of remaining 8 patients 2 did not respond to GnRH treatment. One patient had increase in uterine volume despite treatment and was counselled for hysterectomy. In the second patient diagnosis of adenomyoma was revised and she was also advised hysterectomy.

Six patients who responded to GnRH were followed up for symptomatic improvement Two women had flare up effect resulting in heavy flow in first cycle after treatment. Two perimenopausal women attained menopause after 3 and 6 injections respectively. One patient expelled a fibroid polyp after 4 injections of GnRH agonist and continued to be eumenorrhoic on follow up. Other 2 patients who responded intially had heavy periods 2-3 months after stopping treatment and were planned for hysterectomy. One patient partly responded but continued to have irregular bleeding on treatment, underwent vaginal hysterectomy and was found to have a submucous fibroid.

The volume of uterus ranged from 102cm^3 to 424.7cm^3 with a mean of 228.97 cm^3 prior to treatment, After 3 months of GnRH therapy the mean uterine volume decreased from 228.90 cm^3 to 101 cm^3 (55.7%). Using Wilcoxon signed rank test for uterine volume before and after, the p value was 0.0360, not significant. The volume of fibroids ranged from 12.02 cm^3 to 89.73cm^3 with a mean of 41.37cm^3. the mean fibroid volume decreased

from 41.37 to 12.66 cm (64.7%) . Using Wilcoxon signed rank test for fibroid volume before and after treatment the p value was .059 (minimally significant). The mean resistance index increased from 0.815 to 0.97, with the p value of 0.0578 (minimally significant).

Discussion

Hysterectomy is the classical and only definite cure for fibroids. Hormone thearpy aims at reducing synptoms and/or size of the myomas and may be used either as long term treatment or as an adjuvant to surgery. Long term treatment may be indicated in patients with absolute contraindication to surgery or for emotional reasons or untill menopause takes place. Presurgery uterine and myoma volume reduction facilitate both hysterctomy and myomectomy.

GnRH agonist treatment is knowin to reduces the volume of uterus by 35-50%. The reduction in myoma size is reported as a wide range (15-90%) with reduction in blood flow through the uterine vessels after GnRHagonist therapy (6). In our study there was 55.7% reduction in uterine volume and 64.7% reduction in fibroid volume. The reduction in volumes was not satistically significant. There was increase in resistance index after treatment indicating decrease in blood flow in the uterine vessels, but the difference was minimally statistically significant. However, a small sample size could be cosidered as a draw back of our study. The problem in recuritment was because most of the patients who presented to us had already received medical treatment outside and had completed their family and wanted definite treatment. The other factor was cost of the drug. Although the sample size is small to give definite conclusions, we can say GnRH agonists have a role in treatment of fibroid in perimenopausal women who may achieve menopause thus avoiding surgery.In the present study two perimenopausal women attained menupause after GnRH agonist therapy as reported earlier (7, 8).

Although GnRH agonist therapy cannot replace surgery as treatment of fibroids, but it has a role in certain group of patients, perimenopausal women, unmarried girls and women who want to defer surgery for some reason.

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