Original Article

Interventional Treatment of Symptomatic Uterine Fibroid by Uterine Artery Embolisation at the University Teaching Hospital in Lusaka, Zambia

Liu Yiqiang[1], Veronica Sunkutu- Sichizya [2] Fu Huimin[3], Mutinta Siachami Nteeni[4]

[1]Department of Interventional Radiology, Zhengzhou Central Hospital, Zhengzhou, Henan Province, China.
[2]Department of Radiology, University Teaching Hospital, Zambia, Lusaka, Zambia
[3]UTH Women and Newborn Hospital, Lusaka, Zambia
[4]Department of Radiology, Levy Mwanawasa University Teaching Hospital, Lusaka, Zambia

ABSTRACT

Objective: To investigate the clinical effect of interventional therapy for symptomatic uterine fibroid by transcatheter uterine artery embolisation.

Methods: Sixteen patients of symptomatic uterine fibroids were treated with selective uterine artery embolisation, and the relief of symptoms and reduction of fibroids were observed.

Results*:* Bilateral uterine artery embolisation was done in 16 patients. Follow-up for 5 ~ 7 months showed that the clinical symptoms of 14 patients were obviously improved, and the re-examination of 1 patient of a very large myoma showed no obvious change after 6 months. B-Ultrasound showed that the size of the tumor was reduced by 43% ~ 92%. The major complication was being is postoperative lower abdominal pain.

Conclusion*:* Uterine artery embolisation is a safe and effective method to treat uterine fibroid.

INTRODUCTION

Symptomatic uterine fibroid is one of the most common benign tumor in female patients. It is most common among patient of childbearing age ranging from 30 to 50 years old. The rate of symptomatic uterine fibroid among patient of childbearing age can reach 20% to 40%. There are reports that the minimum age of onset is 10 to 14 years old. Menstrual abnormalities, pelvic pain, bladder and rectal compression symptoms and infertility caused by tumor growth seriously affect the physical and mental health of the patients. At present, the relatively unified view is that asymptomatic uterine fibroid generally does not need treatment. Although the ideal goal of treatment is to eliminate fibroid, due to the hormone correlation, site specificity, occurrence of multiple sources and other characteristics of the fibroid, the main goal of treatment should be to eliminate various symptoms caused thereby, so that symptomatic uterine fibroid becomes asymptomatic leiomyoma, regardless of the state in which uterine fibroid exists. [7]

In the past, surgical myomectomy, subtotal hysterectomy or total hysterectomy were often used. The uterus, as the female reproductive organ, is an important part of female self-identification. Damage to or removal of the uterus will result in mental and psychological loss of the patients. Uterine fibroid embolisation is a less aggressive procedure that serves to preserve this aspect of women health. Advantages of interventional therapy for uterine fibroid include the fact that it can completely preserve the uterus, with small trauma,

Corresponding author:
Liu Yiqiang,
Department of Interventional Radiology,
Zhengzhou Central Hospital,
Zhengzhou, Henan Province, China

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quick recovery, short hospitalization time, cost saving and other advantages. In addition, even if embolism fails, surgery and drug therapy can still be applied.

The theoretical basis of uterine fibroid embolisation therapy is based on the fact that uterine leiomyoma tissue is more active in growth and division than normal uterine tissue. The uterus has a rich neovascular network with different origins of uterine artery and ovarian artery, and has poor tolerance to ischaemia and hypoxia. Uterine fibroids are mainly supplied by uterine arteries. After embolising the lesion vascular network through bilateral uterine arteries, the blood supply of the lesion is blocked, leading to ischaemic necrosis of the lesion, which is then dissolved and absorbed, and finally the lesion shrinks or even disappears. The shrinkage of the lesion reduces the size of the uterine and uterine cavity area, which can effectively reduce menstruation volume, thus achieving the purpose of relieving symptoms. The normal structure of uterus will not be damaged and normal function will be preserved. Gelfoam particles are short-term embolic agents, which are easy to obtain and prepare with low cost. Gelfoam particles measuring 2-3 mm can block the capillaries of leiomyoma.

Bilateral internal iliac arteriography is performed during interventional surgery to view the opening, course, abnormal branches and blood supply of uterine arteries. The embolic agent should be solid embolic agents such as PVA microspheres or gelfoam. The degree of embolisation should completely block the uterine artery from supplying tumor branches. Angiography should be performed immediately after embolisation to confirm that there is no blood supply in the blood supply area of the uterine artery. The contrast medium should flow back through the remaining uterine artery trunk, indicating that the degree of embolisation is moderate to avoid excessive embolisation. Generally, leiomyoma less than 10 centimetres in diameter should be selected as much as possible. If the leiomyoma is too large, embolism may also occur incompletely. This is because the collateral circulation of leiomyoma would have been established before leiomyoma necrosis, resulting in poor curative effect.

There are no patient reports of this approach to treating fibroids in our facility to our knowledge and so from September 2019 to June 2020, 16 patients of uterine fibroids were treated by uterine artery embolisation at the University Teaching Hospital of Zambia. Ethical clearance was obtained from the Ministry of Health and Hospital research ethics committees.

MATERIALS AND METHODS

General data: 16 patients, aged from 21 to 55, with an average of 38 years old, were confirmed to have uterine fibroid(s) by clinical, gynaecological examination, B ultrasound and MRI. The course of disease varied from 1 to 15 years, and no obvious effect was found after conservative treatment. Among them, 5 patients had solitary fibroids while 11 had multiple fibroids. Of all the patients seen, 10 had intramuscular leiomyoma, 2 had subserosal leiomyoma and 4 had submucosal leiomyoma. All patients had increased menstrual volume and prolonged menstrual period to varying degrees, 12 had anaemia to varying degrees, 15 presented with an abdominal mass, and 11 presented with compression symptoms. The maximum diameter of fibroids was between 5~15 cm in 12 patients and 24 cm in 1 patient.

Procedure: Under aseptic technique, each patient was placed in supine position and draped. Puncture site was identified and after successful femoral artery puncture with modified Seldinger's puncture method, 5F vascular sheath was inserted. Left and right internal iliac arteriography were selectively performed with 5F cobra catheter respectively to observe the blood supply of uterine artery branches and fibroids. The cervical-vaginal branch, ureter branch and bladder branch were avoided as much as possible. The degree of embolism was so as to completely block the supply of uterine artery to

tumor branches. 2-3mm gelfoam particles were injected through the catheter to embolise uterine artery. The re-examination of angiography immediately after embolisation confirmed that there was no blood supply in the area of uterine artery, and the contrast agent remained in the remaining uterine artery trunk, indicating that the degree of embolisation was moderate. Hemostasis was achieved by about 15 minutes of compression after removal of catheter.

Follow-up observations: the sizes of fibroids were reexamined by B-Ultrasound within 5~7 months after operation, and the clinical symptoms, signs and menstrual recovery of the patients were recorded for comparison with those before operation.

RESULTS

Angiographic manifestations of uterine artery blood supply:

All 16 patients in this group were supplied by uterine artery, which was supplied by bilateral uterine artery. Uterine artery was thickened, tortuous and had myoma branches. Distal uterine artery occlusion after embolisation was considered successful embolisation.

Improvement of clinical symptoms:

Compared with the preoperative period, the menstruation amount was reduced and the menstrual period shortened; twelve patients with anaemia recovered within 2 months. The frequency and urgency of urination were relieved in 3 patients after 2 weeks.

Changes in the size of fibroid: after 5 to 7 months of treatment, B-Ultrasound showed that the size of the tumor was reduced by 43% ~ 90%, of which 10 patients were reduced by 43% ~ 59%; 4 patients reduced by 60% ~ 79%; 2 patients were reduced by 80% ~ 90%.

Complications: Postoperative pain was the main complication in all 16 patients. After symptomatic treatment, 12 patients gradually recovered within 2 ~ 4 days, and 2 patients recovered after 1 week.

DISCUSSION

To our knowledge, this is the first time case reports have been documented in treating uterine fibroids by catheter embolisation at the University Teaching Hospital in Lusaka, Zambia. Our brief experience is comparable to other studies in a number of ways. Mutai *et al.* in a study at a teaching hospital in Kenya found that found that reduction in dominant fibroid size, uterine volumes, and reduction of symptom severity were 43.7%, 40.1%, and 37.8%.[3] Smeets *et al* in a study of 71 premenopausal women compared well with our findings when they found that the presenting symptoms were bleeding (85%), pain (58%) and bulk-related symptoms (90%) with no serious complications. They also showed a mean volume reduction of the fibroids by 44%.[4] They also showed a general reduction of symptoms in most of the patients as in our experience. Czuczwar *et al* showed a slightly higher (50.1%) median percentage reduction of fibroid volume three months after embolisation.[5]

As can be noted, the above studies compared relatively well with our findings which showed the reduction in fibroid volume to be about 43% to 59% in the majority of our patients. Our brief experience also showed pain to be the only complication which, on average, resolved within 24 to 48hrs. Owing to a reduced number of patients, this aspect needs a larger sample to conclusively explore.

Previous studies have also shown good short term as well as long term results in the South African population."

Uterine catheter embolisation, despite it being a well-established treatment option remains under-utilised in Zambia. This could be due to many factors the main ones being lack of expertise and readily available equipment. It has been clearly shown to improve patient outcomes and therefore needs to encouraged. Multidisciplinary teams are invaluable

to achieve this which ought to work together to plan for the best outcome possible for patients on a case by case basis. A large scale study should therefore be encouraged to comprehensively evaluate this mode of treatment in our locality.

CONCLUSION

Transcatheter uterine artery embolisation is an effective method for the treatment of uterine fibroids, which provides another important choice for clinical treatment of uterine fibroids.

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