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Case Report,

A Patient with Organic Hypermenorrhea Who Developed Massive Genital Hemorrhage during Treatment of Acute-Phase Cerebral Infarction and Responded To Microwave Endometrial Ablation

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Key words: Microwave Endometrial Ablation: MEA, hypermenorrhea, leiomyoma, dysmenorrhea, cerebral infarction,

Introduction:

In clinical gynecology, hypermenorrhea is a symptom developing at a relatively high frequency. Drug therapy using hormone drugs is first selected in many cases, and total hysterectomy has been selected when it was ineffective or fertility preservation was not requested due to problems with adverse reactions. However, for patients with a high perioperative risk, such as those with complications or those taking oral anticoagulants, low-invasive treatment is required.Microwave endometrial ablation (MEA) has been developed as a treatment method for hypermenorrhea alternative to total hysterectomy. In MEA, cauterization and coagulation are applied to the basal layer of the endometrium using a protein-clotting device employing tissue induction heating generated by tissue irradiation with microwaves, which inhibits endometrial basal layer function to reduce menstrual blood loss. As this is a low-invasive procedure compared with previous treatment methods, including total hysterectomy, it became covered by national health insurance in April 2012 and has spread. Our hospital introduced MEA in January 2016 and previously reported its efficacy 1). We report a patient who demonstrated a complete response to MEA applied to treat organic hypermenorrhea, which caused massive genital hemorrhage during anticoagulant therapy for acute-phase cerebral infarction.

Case presentation:

Patient: Forty-one years old
History of pregnancy/delivery: Gravida 3 para 1 (missed abortion: 1, vaginal delivery: 2)
Chief complaints: Aphasia and articulation disorder Past and familial medical histories: None in particular. History of menstruation: Menarche at 11 year's old, 28-day cycle, regular. Clotting by abnormally heavy menstrual bleeding was observed, representing severe dysmenorrhea. History of present illness: Aphasia and articulation disorder developed during work and the patient visited the emergency department. Cerebral infarction was noted on head MRI and anticoagulant therapy was initiated. Hypermenorrhea had been observed from 5 years prior, but she had not visited a gynecology department. Massive genital hemorrhage and progression of anemia (Hb: 4.6 g/dL) were observed during the menstrual period, and the patient was referred to our department. Internal examination findings: The uterus was the size of a neonatal head and the bilateral appendages were not palpable. Persistent genital hemorrhage from the external uterine orifice was observed. Transvaginal ultrasonography: A mass with a clear boundary was present on the posterior uterine wall and myoma of the uterus was suspected. No abnormality was noted in the appendage on either side nor was there ascites.Pelvic MRI: On T2-weighted imaging, a low-intensity area with a maximum diameter of 80 mm and clear boundary

was present on the posterior uterine wall (Fig.1).

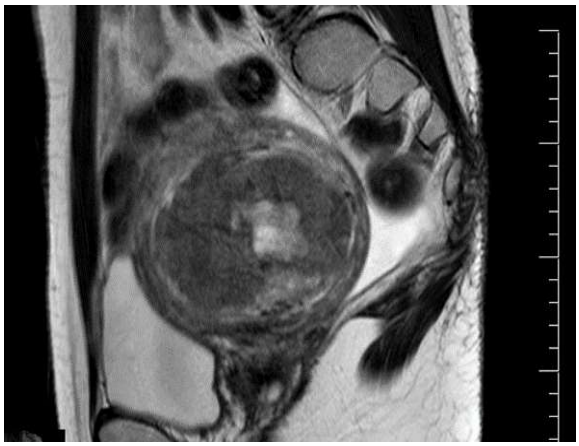

Figure 1: Pelvic MRI（T2-weighted imaging): On T2-weighted imaging, a low-intensity area with a maximum diameter of 80 mm and clear boundary was present on the posterior uterine wall.

Cervical cytology: NILM Endometrial cytology: Negative Based on the above findings, the patient was diagnosed with hypermenorrhea caused by myomas of the uterus. For treatment of hypermenorrhea, MEA was performed after obtaining sufficient informed consent because the patient had acute-phase cerebral infarction. Endometrial cauterization: Surgery was initiated under generalized anesthesia in the lithotomy position and transabdominal sonography-guided microwave endometrial cauterization was performed. MEA was performed using Microtase AFM-712 and a sounding applicator, CSA-40CBL (both purchased from Alfresa Pharma Corporation, Osaka). The energized time per cauterization at a Microtase output of 70 W was 50 seconds and MEA was carried out following the operation guidelines. The cauterization frequency was 12 and the operative time was 40 minutes. The intra- and postoperative states of endometrial cauterization were confirmed by hysteroscopy. The course was favorable and anticoagulant therapy for cerebral infarction was resumed. Postoperative course: Menstruation resumed on postoperative day 21, and subjective evaluation of clinical symptoms using the visual analogue scale (VAS) improved from 10 before surgery to 1 after surgery in both hypermenorrhea and dysmenorrhea. The HB value also improved. The course was smooth without complications and the postoperative course was also favorable.

Discussion:

Hypermenorrhea is a symptom developing at a relatively high frequency and the prevalence of hypermenorrhea in women of reproductive age is 19-24% according to global statistics 2), 3). Drug therapy is selected in many cases, but hysterectomy is inevitably selected when no effect was observed or due to problems with adverse drug reactions and recurrence. Hysterectomy reliably improves symptoms, but complications may be severe because of the high invasiveness, requiring long-term hospitalization and leave of absence, being a heavy burden both physically and economically. Moreover, in patients with complications of hypermenorrhea requiring oral anticoagulants, such as hypermenorrhea in the present patient, the perioperative risk is high and establishing a treatment strategy may be difficult. Sharp et al. reported MEA in 1995 as a low-invasive treatment method alternative to conventional total hysterectomy and it has been actively performed to treat hypermenorrhea because of its simplicity in Western countries 4). Microwaves cause heat denaturation of protein without carbonization by generating heat through direct action on mainly water molecules in biological tissue. MEA destroys the tissue, including the endometrial basal layer, by microwave irradiation and reduces the function, being a hypermenorrhea treatment method reducing the menstruation volume or leading to amenorrhea. In Japan, Kanaoka et al. developed an applicator with a curve for the uterus 5). Simplicity and reliability of its operation increased, it became covered by national health insurance in April 2012, and its treatment effects have been reported 6),7). Our facility introduced this treatment method in January 2016 and performed it on 57 patients by December 2018, improving the VAS score of menstrual pain from 10 to 1.6±2.0 1). In addition, the Hb level significantly increased after MEA, suggesting that MEA is a treatment method exhibiting reliable effects on anemia accompanying hypermenorrhea. On the other hand, the levonorgestrel-releasing intrauterine system (LNG-IUS) was developed in the mid-1990s, and became covered by national health insurance as a therapeutic drug for hypermenorrhea and menstrual pain in 2014. Regarding the treatment outcome of LNG-IUS, menstrual blood loss decreased to 50% or lower of that before surgery in 84.8% and the rate of amenorrhea was approximately 20% 8). In our study, although it cannot be simply compared because it was subjective evaluation of menstrual blood loss, MEA was suggested to exhibit effects greater than

those of LNG-IUS. From a long-term point of view, the rate of transition to another treatment due to relapse of hypermenorrhea was 42% from LNG-IUS and 21% from endometrial cauterization 9), 10), suggesting that more stable effects can be expected compared with endometrial cauterization for recurrence. Furthermore, the potent immediate hemostatic effects of MEA have been attracting attention. Nakayama et al. reported a successful case of hemostasis by MEA in a female who was in shock due to acute massive hemorrhage of submucosal myoma 11). In addition, life-saving effects by MEA in patients with acute uterine hemorrhage exhibiting leukemia-induced hemorrhagic tendency complicated by severe heart disease and acute uterine hemorrhage rejecting blood transfusion due to religion have been reported. Microwaves cause heat denaturation of protein without tissue carbonization by generating heat through direct action on mainly water molecules in biological tissue, and the hemostatic effects may be due to the much higher hemostasis in the tissue than that by an electric scalpel. MEA is less invasive and less frequently generates new hemorrhage, and it can be applied to patients with hemorrhagic shock or abnormal blood coagulation ability, with its indications possibly expanding to other conditions of acute uterine hemorrhage. In the presence of severe anemia causing complications, as observed in the present patient, low-invasive reliable hemostasis is required, suggesting MEA as an effective treatment method.

Conclusion:

We report a patient who completely responded to MEA for hypermenorrhea in acute-phase cerebral infarction. MEA is a less invasive treatment method improving hypermenorrhea within a short time compared with conventional hysterectomy. It may be an effective treatment method for hypermenorrhea in patients with a high perioperative risk due to on-going anticoagulant therapy and complications.

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