



New Day in Medicine
Новый День в Медицине

NDM



TIBBIYOTDA YANGI KUN

Ilmiy referativ, marifiy-ma'naviy jurnal



AVICENNA-MED.UZ



ISSN 2181-712X.
EiSSN 2181-2187

4 (54) 2023

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НОВЫЙ ДЕНЬ В МЕДИЦИНЕ
NEW DAY IN MEDICINE**

Илмий-рефератив, маънавий-маърифий журнал

*Научно-реферативный,
духовно-просветительский журнал*

УЧРЕДИТЕЛИ:

**БУХАРСКИЙ ГОСУДАРСТВЕННЫЙ
МЕДИЦИНСКИЙ ИНСТИТУТ
ООО «ТИББИЁТДА ЯНГИ КУН»**

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исследовательский центр хирургии имени
А.В. Вишневского является генеральным
научно-практическим
консультантом редакции

Журнал был включен в список журнальных
изданий, рецензируемых Высшей
Аттестационной Комиссией
Республики Узбекистан
(Протокол № 201/03 от 30.12.2013 г.)

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4 (54)

2023

апрель

THE ROLE OF HIRUDOTHERAPY IN TREATING ALGODYSMENORRHEA

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✓ Resume

Algodysmenorhea, also known as painful periods or menstrual cramps, is pain during menstruation. It is considered as one of the most common disorders of female reproductive system. Primary dysmenorrhea refers to recurrent pain, while secondary dysmenorrhea results from reproductive system disorders. The condition interrupts general well-being and reduces the productivity of women in daily activities. The refore this study was observed to evaluate the effectiveness of leech therapy on the improvement of dysmenorrhea. We conducted a research with 20 patients of reproductive age with a history of primary dysmenorrhea were examined. They were conducted the dopplemetric study of blood flow in the uterine arteries and endometrial thickness in the middle phase of secretion (main group) and 15 patients with the correct rhythm of menstruation (the control group). The study found a significant increase of the resistance index in the uterine arteries and endometrial thickness reduction in patients of the main group compared to the control group. The group of women received a course of hirudotherapy, after which the resistance index in the uterine arteries and endometrial thickness was not significantly different from the control group thus had noticeable symptomatic reliefs, which indicates the effectiveness of hirudotherapy.

Keywords: hirudotherapy, algo dysmenorrhea, uterine arteries, endometrial sickness.

ALGODISMEOREYANI DAVOLASHDA GIRUDOTAPIYANING O'RNI

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Algodismenoreya, shuningdek, og'riqli davrlar yoki hayz ko'rish kramplari sifatida ham tanilgan, hayz paytida og'riq bo'lib, ayollarning reproduktiv tizimining eng keng tarqalgan kasalliklaridan biri hisoblanadi. Birlamchi dismenoreya takroriy og'riqlarni anglatadi, ikkilamchi dismenoreya esa reproduktiv tizimning buzilishidan kelib chiqadi. Umumiy farovonlik va ayollarning kundalik faoliyatida unumdorligini pasaytiradi. Shuning uchun ushbu tadqiqot dismenoreyani yaxshilashda zuluk terapiyasining samaradorligini baholash uchun ko'rib chiqildi. Biz birlamchi dismenoreya bilan og'rigan reproduktiv yoshdagi 20 nafar bemor bilan tadqiqot o'tkazdik. Ularda bachadon arteriyalarida qon oqimi va sekretiyaning o'rta bosqichida (asosiy guruh) endometriyal qalinligini doplemetrik o'rganish va 15 bemorni o'rganish o'tkazildi. hayz ko'rishning to'g'ri ritmi (nazorat guruhi). Tadqiqotda bachadon arteriyalarida qarshilik indeksining sezilarli o'sishi va nazorat guruhiga nisbatan asosiy guruhdagi bemorlarda endometriyal qalinligining qisqarishi aniqlandi. Ayollar guruhi girudoterapiya kursini oldi, shundan so'ng bachadon arteriyalaridagi qarshilik indeksi va endometriyal qalinligi nazorat guruhidan sezilarli darajada farq qilmadi, shuning uchun sezilarli simptomatik yengilliklarga ega bo'ldi, bu girudoterapiya samaradorligini ko'rsatadi.

Kalit so'zlar: girudoterapiya, algodisomenoreya, bachadon arteriyalari, endometriyal kasallik

РОЛЬ ГИРУДОТЕРАПИИ В ЛЕЧЕНИИ АЛЬГОДИСМЕНОРЕИ

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✓ Резюме

Альгодисменорея, также известная как болезненные менструации или менструальные спазмы, представляет собой боль во время менструации и считается одним из наиболее распространенных нарушений женской репродуктивной системы. Первичная дисменорея относится к рецидивирующей боли, а вторичная дисменорея возникает в результате нарушений репродуктивной системы, ухудшает общее самочувствие и снижает продуктивность женщин в повседневной деятельности. Исходя из этого исследование было проведено для оценки эффективности лечения пиявками при дисменорее. Нами проведено исследование с участием 20 пациенток репродуктивного возраста с первичной дисменореей в анамнезе. Им было проведено доплерометрическое исследование кровотока в маточных артериях и толщины эндометрия в среднюю фазу секреции (основная группа) и 15 пациенток с первичной дисменореей, правильный ритм менструаций (контрольная группа). В ходе исследования выявлено достоверное повышение индекса резистентности маточных артерий и уменьшение толщины эндометрия у пациенток основной группы по сравнению с контрольной группой. Группа женщин получила курс гирудотерапии, после которого индекс резистентности маточных артерий, и толщина эндометрия достоверно не отличались от контрольной группы, при этом имелись заметные симптоматические облегчения, что свидетельствует об эффективности гирудотерапии.

Ключевые слова: гирудотерапия, альгодисменорея, маточные артерии, эндометриальная болезнь.

Introduction

Menstrual disorders are common presentation by late adolescence, 75% of girls experience some problems associated with menstruation. Dysmenorrhea is painful menstruation, either cramps with no visible cause, primary dysmenorrhea, or secondary to specific pelvic pathology.[2] Primary dysmenorrhea occurs in as many as 50% of young women, only in ovulatory cycles, and usually limited to the first 48 or 72 hours of menstruation. Secondary dysmenorrhea can be caused by any of a numerous conditions or disorders such as endometriosis, pelvic inflammatory disease, Intrauterine devices, irregular cycles or infertility problems, ovarian cysts, adenomyosis, uterine myomas or polyps, intrauterine adhesions or cervical stenosis.[3] Psychological factors are now known not to cause dysmenorrhea, only to add to the reactive component of the pain. When the cause of dysmenorrhea is not dependent on other systemic disorders (secondary to cysts, polyps and etc.), but rather on endometriosis or physio-pathological disbalances (due to stress, blood clotting problems for e.g.) traditional therapy using leeches is considered to be statistically effective and experimentally approved. Hirudotherapy has a powerful effect by reducing the load on the pelvic organs, preventing stagnation and inflammation. Hirudotherapy also has an immune-modulating effect. Pain and discomfort in the abdomen, and genital itching generally disappear after the first session. The concept of using leech therapy is based on balancing body humours (the imbalance of which causes the diseases). [4] There is a list of gynecological diseases for which hirudotherapy is helpful: chronic pelvic inflammatory disease, menstrual irregularities, adenomyosis (uterine thickening that occurs when endometrial tissue, which normally lines the uterus, moves into the outer muscular walls of the uterus), endometrial hyperplasia, functional ovarian cysts, uterine fibroids, some forms of infertility, menopausal syndrome, inflammatory diseases of the pelvic organs including viral and bacterial infections [5].

The purpose of research:

To check the effectiveness of hirudotherapy in treating algodysmenorrhea in a special category of women.

Materials and methods of research:

The research's study goal was to analyze the possible treatment of primary dysmenorrhea. Given the complex etiology and pathogenesis of the condition, the initial search for treatment and strategies was broad depending on the data available on PubMed the role of leech therapy in treating gynecological disorders was chosen to be reviewed. The population was women with primary dysmenorrhea.

Complex observation and analysis of a group of 20 women with painful period cycle was within primary concern along with the control group consisting of 15 healthy individuals. Among the case

group 3 patients (15%) experienced backpain, 9(45%) experienced abdominal cramps, 2(10%) shivering of whole body and 6(30%) overall discomfort and pain. The patients underwent full laboratory diagnosis of blood and inflammation markers checkup. Among 20 patients, 50% (10) had mild anemia and 90% (18) had increased C reactive protein levels.

The patients were divided into 2 groups depending on pain location. Because the place for leeches insertion varies from different parts of the body. First category was 11(55%) of patients who experienced radiating abdominal pain and they received 2-4 leeches in the umbilical region. The procedure ranged from 30-40minutes once a day during the period of 10 days.

The second group 45% (9) patients experienced back pain and leech therapy was successfully done in the lumbar region. Same amount of leeches(2-4) , during 30-40 minutes within 10 days. All the procedures were performed in the proper conditions.

Moreover patients underwent ultrasound diagnostic procedures , which clarified the conditions of uterus, the wideness of endometrium , sizes of ovaries and uterus. The power of ache and pain during menses was measured using C. Mac Lavery , P Shaw system of evaluating pain and dysmenorrhea in scores: 1-3 scores, mild pain; 4-6 , moderate; 7-9 severe [6].

For evaluation of effectiveness of therapy the size of the uterus was measured before and after the treatment.

The study demonstrated significantly higher improvement in menstrual cycle refinement, significant pain relief in the case group after the course of hirudotherapy. They felt increase in productivity, relatively normalized menstrual cycles, although it was statistically varying from those in control group.

Results and discussion

10 (50%) out of 20 patients from the first group initially had score 6 pain from C. Mac Lavery , P Shaw system of evaluating pain. 5 days after finishing the treatment 9(90%) of 10 patients had complete disappearance of pain during menstrual cycles. Only 1(10%) had some noticeable pain around 1-2 from C. Mac Lavery, P Shaw system of evaluating pain.

At the same time, 9 patients from the second category had the same refinements, and only 1 patient had moderate pain plus some irritation and swelling representing type 1 hypersensitivity reaction to herudotherapy. Although symptoms have gone 3 days after stopping of treatment.

Dynamics of variability of uterine arteries before and after the treatment:

- Uterine before the treatment: 0,77+- 0,03; after 3months: 0,82+-0,01
- Arcuate before the treatment: 0,70+-0,01; after 3 months:0,73+-0,01
- Radial before the treatment: 0,57+-0,02; after 3 months:0,61+-0,02

(the measurements are median numbers)

All these positive changes in both groups of patients represent the effectiveness of herudotherapy in treating dysmenorrhea.

According to Hippocrate, dysmenorrhea occurs due to stagnation of menstrual blood secondary to cervical obstruction and causes painful menstrual period. [7]Moreover, the obstruction in the menstrual blood flow can cause menstrual cramps. It is described that if the menstrual blood is balanced in quality and quantity, the cycle is regular. But if the menstruation is irregular and abnormal, it may cause many diseases like amenorrhea and oligomenorrhea. Hirudotherapy over the umbilicus relieves the dragging and colic pain of gaseous distension and relieves the menstrual pain. According to numerous researches back ache is also a common complaint and present during menstruation blood flow with severe pain . Leech therapy may exert some direct anti-inflammatory and pain-killing effects through the components of the leech saliva. Platelet-derived growth factor (PGF) is assumed to play an important role in producing the signals of neuropathic pain in spinal cord and inhibition of its release by umbilical injection of hirudin has been reported to suppress thermal hyperalgesia.[8] We may also hypothesize that the strong sensory stimulus caused by the pain and burning sensation of the leech bite can alleviate the symptoms of the patient through the “gate theory” as well. Leech therapy has also been successfully applied to treat severe lumbar pain. These local effects can be due to the anti-inflammatory

effects of substances in the leech saliva other than Hirudin, such as histamine-like vasodilators, kallikrein and trypsin inhibitors [9]. Also, the role of thrombin in pain-control mechanisms is suggested by some researchers, while Hirudin itself exerts some anti-inflammatory effects by inhibiting thrombin. Moreover, hirudin, as an anticoagulant and anti-platelet agent, works to prevent blood clots and reduce the amount of congested blood in the tissues [10]. Other chemicals in leech saliva keep the blood flowing in the damaged area, even after the leech is detached, allowing time for new veins to grow and the existing ones to widen and accommodate more blood flow. The treatment itself is painless – when the leech bites, they release a naturally occurring anesthetic that numbs the area. During our study observation, 20 women with complaints of painful menses received 2-4 leeches in the area of umbilical region once a day within 10 days. No allergies were observed, the treatment went successfully and with no further complications. The symptoms have gone in several days after hirudotherapy and the laboratory analysis of all 20 women showed a noticeable refinement.

As uterus is an organ, which consists a preponderance of nerves and other fibers. Uterus has been grouped into the category which contains more fluid in comparison to other organs and, in which the rate of metabolic activity is very high. Uterus has also been endowed with nutritive faculty. With the help of these powers, uterus serves two functions i.e. elimination of waste products in the form of menstrual blood and development, protection and delivery of fetus [11]. This accumulated uterine waste turns into infected material. This infected material may be deviated from normality in terms of color, consistency and odor. The resultant toxic material is irritative and produces spasmodic pain when eliminated in the form of menstrual blood. Hirudotherapy is the process of using a vacuum on different areas of the body in order to gather the blood in that area without incisions. Relief in pain is due to blood refinement within the uterus. As a result, leeches during their life cycle within the human body secrete chemicals which make the blood thinner and provide better blood circulation and leeches feed the "bad" blood with all the toxins and fasten the process of angiogenesis. Mentioned processes naturally lead to less painful menses among the ladies [12]. Leeches are effective at increasing blood circulation and breaking up blood clots. To date, many scientific studies have shed light on the effect mechanisms of leeches. Although more than 100 particular proteins with different molecular masses are observed in leech secretions, only a few have been identified that have a major active role. The effect mechanisms are divided into six types to make them more understandable, but these mechanisms are closely related to each other and should be evaluated as a whole. Following a leech bite, it has to establish a sucking pathway (extracellular matrix degradation); inhibit adhesion, aggregation, and coagulation (inhibition of platelet functions, and anticoagulant effect); increase blood flow; protect itself (antimicrobial activity); and avoid detection (analgesic and anti-inflammatory effects). It is believed that leeches exert analgesic and anti-inflammatory effects so as to avoid detection by the host while feeding. [13] Despite this, it has not been possible to isolate any analgesic molecule acting in this way from leech secretions until now. So, studies have focused on indirect mechanisms to achieve this goal. For example, some studies have indicated that some kininases and antistasin may inhibit the kinin–kallikrein mechanism, which is a major nociceptive route [14]. There is more information about the anti-inflammatory effects.

Antistasin was identified from *H. officinalis* (Mexican medicinal leech) and it serves as a potent factor Xa inhibitor and has an inhibitory effect on the kinin–kallikrein system. Factor Xa is a prothrombin activator, and plays a critical role in the common pathway of the coagulation cascade. The Kinin–kallikrein system is also connected to the coagulation cascade and has a major role in the inflammatory response. Researchers claim that antistasin has both anticoagulant and anti-inflammatory effects, but current studies have often focused on the anticoagulant activity, which seems to be the predominant mechanism of action. The Ghilantens were also found in secretions of *Haementeria ghilianii* (Amazonian Leech) and they show high structural homology with antistasin. [15] There are only few data about their anticoagulant effects, and other possible functions are controversial due to lack of additional studies.

Conclusion

Algodysmenorrhea is a very widespread pathology of women's reproductive system affecting more than half of the females around the world. Every lady had this condition at least once in their lifetime while around 40% of female population experience this condition 2-3 days every month. There are certain factors which lead to this unpleasant condition. Namely, this can be as a syndrome of any preexisting pathologies (cysts, polyps, hormonal dysbalance) or the condition can be primary due to

obstructed blood flow, accumulation of waste products and progressed by stressful conditions. Therapy using leeches was proved to bring symptomatic relief to patients with primary dysmenorrhea. The mechanism of action was based on chemical composition of the leeches' saliva. Along with their ability to purify blood by sucking it out. Besides the relief of pain cupping is also very effective in relieving the associated symptoms related to spasmodic dysmenorrhoea. Great thing about cupping is that it has an affordable cost and well tolerated by the patients with not known allergic reactions

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Entered 20.03.2023