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Management of Dismenorrhea in Adolescent

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ABSTRACT

The pathophysiological process due to increased myometrium activity caused by excessive production of prostaglandins that cause ischemia. Risk factors are very important in enforcing the diagnosis of dismenorrhea and also in distinguishing between primary and secondary dismenorrhea. Mainstay treatment is generally supportive by relieving symptoms in primary dismenorrhea and surgical treatment may be recommended for secondary dismenorrhea. Therefore, patients with primary dismenorrhea may only require simple non pharmacological and analgesic therapies, whereas patients with secondary menorrhea require treatment for major problems.

1. Introduction

Dysmenorrhea is classified into primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is pain during menstruation that is found without any abnormalities in the genitalia, while secondary dysmenorrhea is pain during menstruation caused by gynecological disorders such as chronic salpingitis, endometriosis, uterine adenomyosis, uterine cervical stenosis, and others. Dysmenorrhea is often classified as mild, moderate, or severe based on the relative intensity of pain. [1]

Dysmenorrhea is a common occurrence for women who are menstruating. This is because during menstruation, women experience increased levels of prostaglandins (a substance related to stimulation of pain in the human body) and an imbalance in progesterone levels. This condition causes typical pain in the lower abdomen, nausea, back cramps and headaches, causing discomfort to interfere with activities. The pain can have an impact on the ability to perform daily activities. Mild dysmenorrhea is defined as menstrual pain without any restriction of activity, no need for analgesic use and no systemic complaints. Moderate dysmenorrhea is defined as menstrual pain that affects daily activities, needs analgesics to relieve pain and there are some systemic complaints. Severe dysmenorrhea is defined as menstrual pain with severe limitations in daily

activities, analgesic response to minimal pain relief, and the presence of systemic complaints such as vomiting, and fainting. [2,3]

Types of dysmenorrhea

Dysmenorrhea is divided into two, namely primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is menstrual pain that is not based on a pathological condition, while secondary dysmenorrhea is menstrual pain that is based on pathological conditions such as the discovery of endometriosis or ovarian cysts. Primary dysmenorrhea is associated with uterine muscle contraction (myometrium) and prostaglandin secretion, while secondary dysmenorrhea is caused by pathological problems in the pelvic cavity.[4,5]

Primary dysmenorrhea is pain during menstruation that is found without any abnormalities in the genital organs. Primary dysmenorrhea generally occurs after 1-2 years of menarche or other sources say in 2-3 years from menarche. Primary dysmenorrhea is menstrual pain that is not accompanied by a history of pelvic infection or a normal pelvic state characterized by symptoms of headache, nausea, vomiting, and back pain.

Several important factors play a role as the cause of primary dysmenorrhea. Adolescents who are emotionally unstable, especially if they are not enlightened about the menstrual process will easily develop dysmenorrhea. In women with a hyperanteflexed uterus, cervical canal stenosis may occur. Myoma submucosum stemmed or endometrial polyps can cause dysmenorrhea because the uterine muscles continue to contract violently to expel the abnormality. Endometrium in the secretion phase will produce prostaglandin F2 which causes contraction of smooth muscles. Prostaglandins if released into the bloodstream in excessive amounts will cause dysmenorrhea accompanied by common effects such as diarrhea, nausea, vomiting and flushing.

Pathophysiology of primary dysmenorrhea

Primary dysmenorrhea is pain that occurs due to high levels of prostaglandins that cause the uterus to continue to contract excessively and lead to arteriolar vasopasm. After ovulation in response to progesterone production, the fatty acids in the cell membrane phospholipids increase. Arachidonic acid is released and starts the prostaglandin cascade in the uterus. Endometrial cells release prostaglandin F2α which is a cyclooxygenase (COX-2) which causes hypertonus and vasoconstriction in the myometrium resulting in ischemia and pain in the lower part of the stomach. Prostaglandin F2α (PG F2α) is a strong myometrial stimulant and vasocontrictor found in the endometrium. PG F2α causes myometrial hypertonus and vasoconstriction which will lead to ischemia and pain. PG F2α levels are higher during the first two days of menstruation in women with primary dysmenorrhea. The concentration of vasopressin and leukotriene was also found to be higher in women with heavy menstrual pain than in women with mild pain.[6]

Symptoms and effects of primary dysmenorrhea

Symptoms of primary dysmenorrhea are pain in the midline of the lower abdomen that can spread to the waist and quadriceps, the waist which starts to appear several hours before or simultaneously with the start of menstruation. The pain appears at 24 hours and after 2 days disappears. The initial onset of primary dysmenorrhea usually occurs within 6 to 12 months after menarche with the duration of pain generally 8 to 72 hours. Pain is felt the most severe on the first or second day, along with the maximum release of prostaglandins into menstrual fluid, the pain comes and goes, feels sharp, stabbing, feels squeezed or very painful can cause multiple seizures

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and is usually limited to lower abdomen, but spreads to the waist and thighs.

The form of dysmenorrhea that many teenagers experience is stiffness or spasms in the lower abdomen. It feels so uncomfortable that it causes irritability, irritability, headache, nausea, vomiting, weight gain, flatulence, back pain, headaches, acne, tension, lethargy, and depression, back leg pain, irritability, shock and decreased awareness. This symptom comes the day before menstruation and lasts 2 days until the end of the menstrual period.

Another impact of dysmenorrhea is the tendency to withdraw from daily activities when experiencing dysmenorrhea, lack of appetite, sleep disturbances, helplessness, even depression, diarrhea, headaches, nausea, emotional changes, requires adequate rest, disturbed daily activities, decreased achievement in adolescents in school and disturbed social interaction, reducing women's quality of life, hyperemesis.[1,5]

Premenstrual symptoms can be both physical and psychological. Physical symptoms found a few hours before or when menstruation begins until the second or third day of menstruation, including back pain, headache, swollen breasts, flatulence and vomiting, back pain , weakness, sweating, symptoms in the gastrointestinal and central nervous system such as drowsiness, dizziness, headaches and poor concentration, abdominal pain. Psychological disorders in the form of mood disorders can be found in adolescents with dysmenorrhea, anxiety, sleep disorders and increased pain and physical thresholds.[7]

Risk factors for primary dysmenorrhea include age less than 20 years, women who have never given birth (nulliparous), obesity (overweight), premenstrual syndrome, BMI (Mass Index Body) are low, a diet related to food or nutrition, smoking, a positive family history of dysmenorrhea, long menstrual periods or prolonged menstrual flow, lack of exercise, low socioeconomic status and psychological or social stress. Young age is associated with dysmenorrhea. The symptoms of dysmenorrhea in adolescents are more pronounced than in adult women. However, there are studies that have found that age is not a risk factor for dysmenorrhea in women.

Early menarche age (<12 years); Women with menarche under 12 years of age or early menarche have a 23% higher chance of developing dysmenorrhea than women with menarche at the age of 12-14 years because they experience prolonged exposure to prostaglandins that cause cramps and pain in the stomach. Increased production of the hormone estradiol by the body has a role in regulating the onset of puberty in women, it can be triggered by the high intake of meat and milk from cows that are injected with growth hormone to increase milk production. The next factor is smoking has a negative effect on the human body, in heavy smokers it can increase the duration of dysmenorrhea, this is related to an increase in the volume and duration of bleeding during menstruation.

The nicotine content in cigarettes can induce vasoconstriction thereby increasing the duration of Psychological factors such as anxiety and tension can also contribute to dysmenorrhea and as women age, pain tends to decrease and eventually goes away after childbearing. Women who have a family with dysmenorrhea complaints of dysmenorrhea are usually 3 times more likely to experience dysmenorrhea than women without a family history of dysmenorrhea, this is due to genetic factors that influence it.

Women with a body mass index (BMI) less than normal body weight and overweight (overweight) are more likely to suffer from dysmenorrhea, this is because women with a BMI less than normal weight are found to have a chronic lack of energy which causes a lack of resistance to taste. pain, whereas women who are overweight tend to have excess fat which can lead to hormones that can disrupt the

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reproductive system during menstruation so that it can cause pain.[8]

Research reports that women who have a bleeding duration of more than 5 to 7 days will suffer 1.9 times more dysmenorrhea, caused by psychological factors related to emotional and physiological levels due to excessive uterine muscle contraction as a result of which the endometrium produces higher prostaglandins. Women who are exposed to cigarette smoke include passive smokers and consume coffee, including dysmenorrhea due to nicotine and caffeine, which are vasoconstrictor, resulting in reduced blood flow to the endometrium and causes cramps and has anti-estrogenic properties. The condition of alexithymia, namely someone with difficulty identifying feelings and emotional stimuli contributes to suffering from primary dysmenorrhea.[3,4]

Secondary dysmenorrhea

Secondary dysmenorrhea is menstrual pain which usually lasts after 25 years for 2-3 days during the cycle and women who experience secondary dysmenorrhea generally have irregular menstrual cycles. To find out the cause, a laparoscopic examination is needed. Secondary dysmenorrhea pain is more likely to occur simultaneously or be associated with other gynecological symptoms, such as irregular cycles, heavy menstruation, dyspareunia, vaginal discharge, bleeding between menses and bleeding after intercourse.

There are a number of clinical conditions with underlying pelvic abnormalities that can cause secondary dysmenorrhoea, namely endometriosis, chronic pelvic inflammatory disease, adenomyosis, intrauterine polyps, submucosal fibroids and intrauterine contraceptives. Increased levels of prostaglandins (including prostaglandin F2) that cause secondary dysmenorrhea in women with endometriosis. Dysmenorrhea pain secondary to chronic pelvic inflammatory disease is caused by the release of inflammatory mediators, prostaglandins, scar tissue formation and abnormal uterine contractions, whereas adenomyosis due to tonic uterine contractions through destruction of the endometrial gland and in intrauterine polyps, submucosal fibroids and intrauterine contraceptives can also cause dysmenorrhea abnormal uterine contractions in an attempt to remove it.

Less common causes of secondary dysmenorrhea include Allen-Masters syndrome (secondary scarring from laceration of a wide ligament, usually during labor), congenital uterine abnormalities, cervical stenosis, Asherman's syndrome, uterine retroversion, ovarian cysts, ovarian tumors and pelvic congestion syndrome. The theory of the causes of pain in all of these conditions is related to the production of abnormal uterine contractions. A small proportion of adolescent girls will experience secondary dysmenorrhoea, which is mostly caused by endometriosis, ovarian cysts, congenital abnormalities in the urogenital tract, adnexal, rectovaginal, and uterine pain associated with cervical excitation or acute or chronic pelvic inflammatory disease.

Dysmenorhea treatment

Management for primary dysmenorrhea, treatment is based on etiologic control with cyclooxygenase inhibitors and ovulation inhibition while secondary dysmenorrhea targets the cause. The most common pharmacological treatments for dysmenorrhoea are NSAIDs such as ibuprofen or mefenamic acid, which inhibit cyclooxygenase, resulting in lower levels of prostaglandins and less intense myometrial activity (uterine contractions). Oral contraceptive pills (OCP) are also commonly prescribed for the management of dysmenorrhoea which causes low levels of prostaglandins and myometrial activity, thereby reducing menstrual pain. However, this regimen does not relieve pain in all women, because it is influenced by age, socioeconomic status, lifestyle, parity and stress.

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Currently do not recommend OCP in the treatment of primary dysmenorrhea and some women may not want to use OCPs for religious, moral, or health reasons, or if they wish to become pregnant. [4]

Treatment of dysmenorrhea is necessary to rule out secondary causes of dysmenorrhea such as pelvic infections, sexually transmitted diseases, endometriosis, subfertility, abdomino-pelvic surgery and difficulty in childbirth which can present with additional symptoms of deep, inter-menstrual dyspareunia, post-coital bleeding, and subfertility. Previously, it is necessary to determine the factors that worsen or improve symptoms, because secondary dysmenorrhoea is not effective using simple treatments such as non-steroidal anti-inflammatory drugs (NSAIDs) and combined oral contraceptives (COCP). Social and family history should be considered as they may have a direct or indirect cause and help in optimizing treatment. The underlying causes of secondary dysmenorrhea such as fibroids, intrauterine contraceptives, and ovarian cysts including endometriomy are best assessed by ultrasound.

Transvaginal ultrasound is preferred over transabdominal because it offers greater resolution and can also be used as an extension of a pelvic exam to determine uterine tenderness and mobility. Three-dimensional ultrasound offers benefits for assessing organs in the coronal plane and, therefore, proves to be useful in the diagnosis of endometrial pathologies. Four-dimensional ultrasound may play a role in assessing the frequency and intensity of myometrial activity associated with dysmenorrhoea. In certain cases, laparoscopy and hysteroscopy to confirm or clarify the diagnosis may be required. Although treatment is available, relatively few women consult a doctor about their symptoms, preferring not to use medication, or to self-medicate using nonpharmacologic interventions.

Massage therapy

The relaxing effect can be obtained with massage therapy so that it can increase oxygen circulation in the tissues so that it can reduce. In the case of dysmenorrhea, the application of massage is applied to the abdominal area by placing the abdominal muscles relaxed, then warm the hands and rub the stomach by applying oil to the area above the symphysis and above the umbilicus with a circular massage clockwise using the right palm joined with the left hand. for 15 minutes carried out from two days before the estimated menstruation and can be combined with the use of essential oils or lavender aromatherapy. Application of lavender oil during massage on the skin surface is stated to increase muscle relaxation, blood supply to the surrounding tissue and increase its elasticity.

Aromatherapy

Aromatherapy is a technique to reduce dysmenorrhea by using essential oils of lavender, cary sage, rose through topical applications or by inhalation or a mixture of cinnamon oil, rose, clove, also lavender in almond oil. The aroma of the inhaled oil will react to the olfactory nerves which will be delivered to the central nerve and affect the mind to achieve relaxation, while application to the skin allows the oil to be absorbed from the pores into the blood vessels and gives a muscle relaxing.

Another effect of aromatherapy can reduce both psychological and physical stress, namely reducing anxiety and reducing pain sensations and increasing parasympathetic nerve work and increasing calmness within at least 10 minutes. Aromatherapy oil can be given topically or inhaled and can be absorbed by the blood vessels and the oil content can last for 90 minutes. The use of inhaled aromatherapy oils when a woman experiences premenstrual period syndrome (PMS) can affect the nervous system and improve emotions that tend to be unstable during menstruation The lavender scent that is inhaled and

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then captured by the olfactory nerve will be transmitted to the central nervous system and limbic system, the center of the autonomic function of emotions by modulating the activation of cyclic adenosine monophosphate (cAMP) which gives a sedative. Aromatherapy of ginger and peppermint reduces moderate to severe dysmenorrhea by giving a topical spread of ginger or peppermint aromatherapy oil for 15 minutes can reduce pain sensation and its location, relieve anorexia or digestive problems such as diarrhea or constipation, affect mood, reduce gas production and flatulence by relaxing the esophageal sphincter reduces nausea, dizziness, and headaches.

Music therapy

Listening to music for 30 minutes either during menstruation or since seven days before menstruation can suppress physical and psychological symptoms that arise. Music as a medium to improve, maintain, develop mental, physical, and emotional well-being by inhibiting the process of delivering pain stimuli through the spinal cord so that the brain no longer continues the perception of pain so that it has a psychobiological effect on stress conditions in the body, and affects the autonomic nervous system and hormones. body. Listening to music 30-60 minutes a day can help increase relaxation hormones and reduce oxytocin.

Warm therapy

Alternatives reduce dysmenorrhea by means of a warm pillow and warm compresses on the abdominal area so as to increase learning which aims to relax the muscles in the abdomen so that oxygen flow can be better including the uterus.

Sports therapy

Yoga corrects the imbalance of the autonomic nervous system and controls excess sympathetic nerve activity so that it can control hyperactivity and dysrhythmic contractions of the uterus that trigger dysmenorrhea in the menstrual period, the effect of Yoga provides more control over the parasympathetic nerves so that the uterus can be more stable. Yoga can also help balance the flexibility of the muscles of the body, respiration, and mind so that the body and mind are harmonized in dealing with pain because it suppresses prostaglandins and inflammatory mediators besides that the implementation of the yoga movement can also be applied while being effective in dealing with stress, producing endorphins can also reduce pain because it causes vasodilation, and reduces ischemia, suppresses prostaglandin work and closes its flow in the blood to the pelvic organ tissue and it is advisable to wear clothes that are not tight, keep breathing, and the stomach is not full of food. The application of yoga for 20 minutes every morning or evening since the lutheal phase or about 14 days before menstruation can help reduce pain.

Apart from yoga, there are other forms of exercise that have been shown to reduce primary dysmenorrhea, including stretching exercises proves that stretching exercises by lying face up with legs and knees bent, doing abdominal exercises about 10 times, standing holding the back of a chair; lift one heel off the floor, then the other, repeat 20 times, stand holding the back of the chair then do 5 deep knee bends, the last movement is done while lying on your back lift and bring your knees to touch your chin, 10 times, this series of exercises is done twice a day for 20 minutes proven effective in reducing dysmenorrhea. [8]

Nutrition and herbs

Leaving breakfast and nutritional deficiency status can affect the hypothalamic-pituitary-ovarian and increase the incidence of dysmenorrhea. In addition, consuming lots of sweet foods can interfere with the absorption of vitamins and minerals, fatty foods and fast food with servings of three times a

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week or more, causing excessive coffee. Diet regulation in cases of dysmenorrhea can be done by reducing the consumption of foods with excessive arachidonic acid content such as butter, oil, coconut, chicken, because it triggers prostaglandin production. Menstrual pain solutions are foods that contain omega 3 and omega 6 contained in fish, eggs, soy or in the form of dietary supplements, other ingredients sourced from seeds, nuts, vegetables and fruit are also important because they contain magnesium, calcium, potassium, fiber, vitamin E and B complex, zinc and magnesium, it is important to consume calcium in the form of milk or cheese or supplements, fibrous foods from vegetables and fruits and water at least eight glasses per day when menstruating because it can have a relaxing effect on muscles.

2. Conclusion

Dysmenorrhea has significant physical, behavioral, psychological and social impacts, affecting 40-70% of women of childbearing age. This is the main cause of the quality of life of adolescents generally. The exact pathophysiological process is not fully understood but may reflect increased myometrial activity caused by an overproduction of prostaglandins leading to ischemia. The main treatment is generally supportive in relieving symptoms with pharmacological and non-pharmacological treatment.

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