Review On Counter-Irritant Activity of Lemongrass in Dysmenorrhea Pain

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Abstract— Dysmenorrhea is a common gynecologic condition that impairs many women's quality of life and is characterized by painful menstruation. This article examines dysmenorrhea diagnosis and treatment, highlighting the importance of the interprofessional team. The word refers to two kinds: primary, which have nothing to do with underlying pathology, and secondary, which are connected to a specific disorder. Age, smoking, attempts to control weight, anxiety, depression, and a family history of dysmenorrhea are risk factors. There are psychological, biochemical, and physical components to the etiology, and prostaglandins are essential to uterine contractions. The symptoms of primary dysmenorrhea, which can be both physical and psychological, have a detrimental effect on quality of life. Numerous diseases, including endometriosis, fibroids, and pelvic inflammatory disease, can result in secondary dysmenorrhea. A complete medical history, a physical examination, and, if required, imaging is all part of the diagnosis process imaging methods. The goal of primary dysmenorrhea treatment is to enhance the patient's quality of life; non-pharmacological treatments such as heat application and exercise, as well as hormonal contraceptives and NSAIDs, may be used. While non-pharmacological treatments like heating pads and exercise can help, there is little proof to support acupuncture, herbal remedies, and some supplements. TENS, or transcutaneous electrical nerve stimulation, is a potentially useful non-invasive treatment. Surgical procedures like as hysterectomy or laparoscopic uterosacral nerve ablation (LUNA) may be explored in extreme situations. The page also covers Ayurvedic natural herbal remedies like Shatavari, Lodhra, Ashoka, and Udumbar. Traditionally, these herbs have been used to relieve menstruation discomfort and symptoms associated with it. Understanding the different kinds, risk factors, etiology, pathophysiology, diagnosis, and treatment options of dysmenorrhea is essential to a complete approach to the condition. The interprofessional team is essential to the management of dysmenorrhea and the enhancement of the general health of those who experience it.

***Index Terms*— Dysmenorrhea, Counter Irritant, Shatavari, Lodhra, Ashoka, Udumbar.**

1. Introduction

Pain experienced throughout the menstrual period is known as dysmenorrhea. Usually originating in the lower abdomen, the pain can also spread to the back and inner thighs. It can have a severe effect on a patient's life and is a relatively prevalent gynecologic issue. Offering dysmenorrhea patients therapeutic alternatives can greatly lower the morbidity that comes with it[1]. There are several choices for treatment, some of which a patient may find more or less beneficial. This exercise goes over how to diagnose and treat dysmenorrhea, or unpleasant menstruation. It emphasizes the part that the interprofessional team plays in diagnosing, treating, and, when necessary, sending individuals in need of specialized care for dysmenorrhea [2].

The Greek word dysmenorrhea means "painful monthly bleeding." There are two types of dysmenorrhea: primary and secondary. Recurrent lower abdomen pain that occurs during the menstrual cycle and is unrelated to underlying pathology or other disorders is known as primary dysmenorrhea[3]. It is an exclusionary diagnosis. Secondary dysmenorrhea, on the other hand, is linked to a possible or well-defined disorder. During their reproductive years, patients who are menstruation frequently complain of dysmenorrhea. Significantly detrimental effects on emotional, psychological, and functional health may be linked to dysmenorrhea [4].

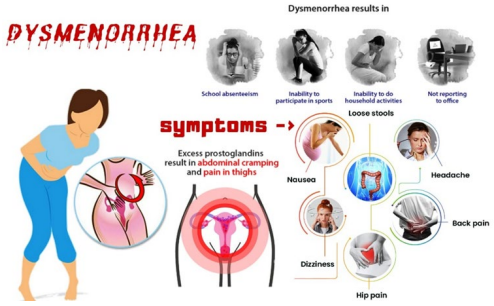

Fig:1 Dysmenorrhea

2. Etiology

Numerous theories have been put out to explain the genesis of dysmenorrhea since the 1960s. These hypotheses include etiologies that are psychological, biological, and anatomical. The anatomical theory highlights anomalies in the length or form of the cervix as well as improper uterine position [5].

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In their research, Zebitay et al. suggested a favorable relationship between the volume and severity of dysmenorrhea and cervical length. Several other investigations have found that the biochemical explanation provides the strongest supporting data [6].

The following are risk factors linked to dysmenorrhea:

- Age (typically) up to thirty years
- The act of smoking
- Attempts to reduce body weight
- BMI that is higher or lower than average
- Anxiety and depression
- Extended menstrual cycles
- Lower menarche age
- Complete parity
- Past incidents of sexual assault
- Unfinished uterine scar healing from a previous cesarean section (uterine niche)
- More extended and intense menstrual flow
- History of dysmenorrhea in the family [7].

A. Causes Of Dysmenorrhea

- Endometriosis: It is condition in which the tissues lined the uterus starts growing outside the uterus and other parts of female reproductive areas such as a fallopian tube, bladder, and ovaries.
- Fibroids: These are the uterine fibromas, tumor which is developed in the uterus. This is also one of the major causes of dysmenorrhea. Almost 20-25% women of reproductive age have this problem.
- Pelvic inflammatory disease (PDI): It is an infection in female reproductive organ due to sexually transmitted bacteria's.
- Ovarian cyst: Sometimes the cyst develops in your ovaries which may cause painful periods.
- Being overweight.
- High level of prostaglandin, which causes uterus contraction.
- Narrow cervix
- Sexually transmitted infection [8].

3. Pathophysiology

Even so, the etiology of dysmenorrhea remains incompletely understood. Moreover, recent data indicates that elevated prostaglandin F2α (PGF2α) and prostaglandin E2 (PGE2) secretion in the uterus during endome is responsible for the etiology of dysmenorrhea trial sloughing. These prostaglandins contribute to the uterine ischemia and anaerobic metabolite synthesis by enhancing myometrial contractions and vasoconstriction. Pelvic discomfort eventually comes from the hypersensitization of pain fibers caused by this [9].

Prostaglandin synthesis occurs via the cyclooxygenase (COX) route, which mediates the arachidonic acid cascade. Progesterone levels control arachidonic acid production by acting on the activity of phospholipase A2, a lysosomal enzyme. The middle of the luteal phase, which is the latter part of the menstrual cycle that follows ovulation, is when the progesterone level peaks. The corpus luteum degenerates and the level of progesterone in the blood drops in the event that conception is unsuccessful [10]. Progesterone levels are rapidly declining, and this is linked to endometrial sloughing, menstrual bleeding, and the release of lysosomal enzymes, which produce arachidonic acid and prostaglandins [11].

In the late luteal phase, endometrial prostaglandin levels are higher in women who have regular menstrual cycles. Nevertheless, a number of investigations that assessed prostaglandin levels in the luteal phase, using menstrual samples and endometrial biopsies, showed that dysmenorrheic females had more prostaglandin levels than eumenorrheic females. As a result, there is a clear correlation between increased endometrial concentrations of (PGF2α) and (PGE2) and period cramps, pain intensity, and related symptoms [12].

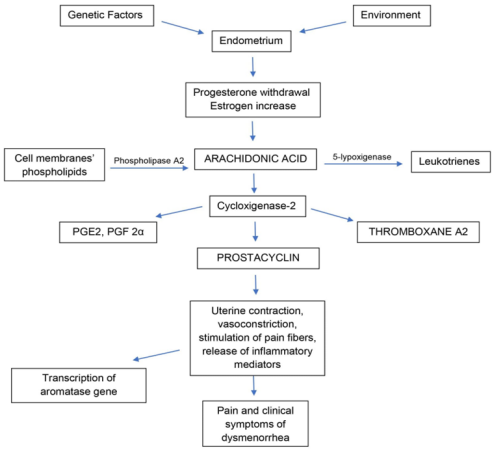

Fig.2. Pathophysiology of Dysmenorrhea

4. Types Of Dysmenorrhea

1. Primary Dysmenorrhea
2. Secondary Dysmenorrhea

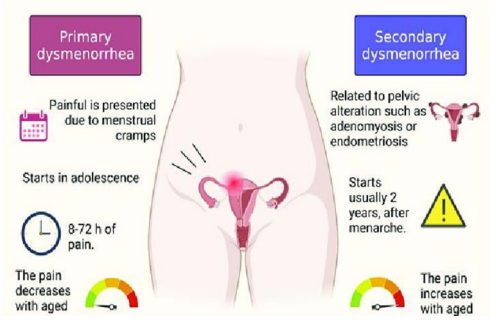

Fig.3. Primary & Secondary Dysmenorrhea

A. Primary Dysmenorrhea

Primary dysmenorrhea (PD) is a common, disregarded, underdiagnosed, and inadequately treated complaint of both young and adult females [13]. It is characterized by painful cramps in the lower abdomen, which start shortly before or at

the onset of menses and which could last for 3 days. In particular, primary dysmenorrhea negatively impacts the quality of life (QOL) of young females and is the main reason behind their absenteeism from school or work [14]. It is suggested that increased intrauterine secretion of prostaglandins F2α and E2 are responsible for the pelvic pain associated with this disorder. Its associated symptoms are physical and/or psychological. Its physical symptoms include headache, lethargy, sleep disturbances, tender breasts, various body pains, disturbed appetite, nausea, vomiting, constipation or diarrhea, and increased urination, whereas its psychological symptoms include mood disturbances, such as anxiety, depression, and irritability [15]. While its diagnosis is based on patients' history, symptoms, and physical examination, its treatment aims to improve the QOL through the administration of nonsteroidal anti-inflammatory drugs, hormonal contraceptives, and/or the use of non-pharmacological aids (e.g., topical heat application and exercise). Patients must be monitored to measure their response to treatment, assess their adherence, observe potential side effects, and perform further investigations, if needed [16].

B. Secondary Dysmenorrhea

Menstrual pain brought on by an underlying illness, condition, or structural anomaly inside or outside the uterus is known as secondary dysmenorrhea. Women may experience it at any point following menarche. For women in their 30s or 40s, it may be their first-time symptom. Different pain levels and occasionally additional symptoms like dyspareunia, menorrhagia, intermenstrual bleeding, and postcoital hemorrhage might be linked to secondary dysmenorrhea[17]. Secondary dysmenorrhea can be caused by a variety of common conditions, such as endometriosis, adenomyosis, big cesarean scar niche, fibroids, endometrial polyps, pelvic inflammatory disease, and possibly the use of an intrauterine contraceptive method. The prevalence of endometriosis in women with dysmenorrhea may reach 29%. Up to 35% of patients with NSAID-resistant dysmenorrhea may also have endometriosis. Another prevalent underlying condition is adenomyosis [18].

C. Diagnosis Of Primary Dysmenorrhea

Obtaining a thorough medical history and doing a physical examination to rule out pelvic pathology are the primary methods used to diagnose Parkinson's disease (PD) [19]. The first assessment diagnosis of primary dysmenorrhea entails gathering pertinent sexual, gynecological, menstrual, and medical history. The following details are among the details that should be gathered from the focused medical history: the location of discomfort, the menstrual cycle, the regularity and length of menstrual bleeding, irregular vaginal discharge, the onset and persistence of symptoms related to the age of menarche, and accompanying systemic symptoms. Inquiries males with classic Parkinson's disease symptoms can be identified based only on their medical records, empirical treatment, such as NSAIDs (nonsteroidal anti-inflammatory medicines) and/or oral contraceptives, should be started without a pelvic exam or physical examination [20]. Nonetheless, sexually active women who exhibit signs of STDs, pelvic inflammatory disorders, or severe dysmenorrhea should have a pelvic examination.

If the patient experiences irregularities and worsening symptoms, severe symptoms linked to abnormal menstrual bleeding, or an abrupt or delayed onset of dysmenorrhea following menarche, secondary dysmenorrhea should be investigating of symptoms; dyspareunia; an endometriosis family history; or a failure to respond to conventional therapy [21]. If any of these symptoms appear, a pelvic exam is required. In some cases, transvaginal ultrasound or magnetic resonance imaging may also be performed. Findings from a normal pelvic exam may further support the PD diagnosis [22].

D. Treatment Of Primary Dysmenorrhea

The primary goal of primary dysmenorrhea treatment is to give dysmenorrheic ladies enough pain relief so they can carry out their regular activities, enhance their quality of life, and reduce their absenteeism from work or school [23]. Potential methods for managing Parkinson's disease (PD) include complementary and alternative therapies that do not include medication. NSAIDs and hormonal contraceptives are the first-line treatments advised for Parkinson's disease (PD) because they prevent prostaglandins from being produced, which is directly linked to menstruation pain and the systemic symptoms that accompany it [24]. The American Academy of Family Physicians recommends starting empiric therapy with hormonal contraceptives or NSAIDs for females with a normal medical history and primary dysmenorrhea presentation. The Society of Obstetricians and Gynecologists of Canada as well as the American College of Obstetricians and Gynecologists endorse this. Nevertheless, there isn't any data supporting the superior effectiveness of hormonal contraceptives or NSAIDs [25]. Before transferring to a different modality of treatment, the patient's adherence to the first modality needs to be evaluated whether it is ineffective or fails after three to six months. It makes sense to combine NSAIDs and hormonal contraceptives if the patient's symptoms don't improve with just one medication class [26].

Shared decision-making between clinicians and patients is also essential to the best management of Parkinson's disease (PD) in order to maximize therapy efficacy and guarantee patient satisfaction and adherence. Hence, in order to deliver patient-centered care, women with dysmenorrhea should be informed about the condition, available treatments, and any possible side effects so they can make an informed decision. Healthcare professionals must to take into account the patient's preferences, choice, and need for contraception as well as any possible side effects and hormone therapy contraindications [27].

5. Pharmacological Therapies

A. Non-steroidal anti-inflammatory drugs

NSAIDs are reasonably priced anti-inflammatory and

analgesics that are most frequently used to treat Parkinson's disease (PD).13, 32–35) Because they prevent cyclo-oxygenase from acting, which prevents prostaglandin synthesis, they are regarded as the cornerstone in the treatment of dysmenorrhea. Consequently, in cases where contraception is contraindicated or in females who want to use analgesics, NSAIDs are advised as the first line of treatment [28].

There isn't a better NSAID formulation than another, according to the data that is currently available, but different NSAIDs are about the same safe and effective in treating Parkinson's disease.5) To ascertain the safety and effectiveness of NSAIDs in Parkinson's disease, a comprehensive analysis of 80 randomized controlled trials involving 5,820 female participants was carried out [29]. It was determined that NSAIDs were not superior for pain relief, but were 4.5 times more effective than a placebo (odds ratio [OR], 4.37; 95% confidence interval [CI], 3.76–5.09), and more than twice as effective as paracetamol (OR, 1.89; 95% CI, 1.05–3.43).33) However, NSAIDs were also linked to negative side effects (OR, 1.29; 95% CI, 1.11–1.51), such as negative neurological and gastrointestinal consequences (OR, 1.58; 95% CI, 1.12–2.23) [30].

The effectiveness of an NSAID is predicted by when it is administered. NSAIDs should be started one to two days prior to the anticipated start of menstruation, taken with meals to minimize any negative gastrointestinal effects, taken on a regular dosage schedule, and continued for the first two to three days of bleeding in order to provide the best possible treatment efficacy and safety. It has been demonstrated that starting NSAIDs prior to the onset of the COX-2 cascade leads to total inhibition of prostaglandin synthesis [31]. As a result, delaying the consumption of NSAIDs results in partial or progressive suppression. Swapping out a particular NSAID with one from a different class is another therapeutic option if the patient does not get better with it.

Despite the fact that the majority of females respond well to NSAID medication, 18% were found to not respond sufficiently to them. If NSAIDs don't work for a female patient, non-pharmacological therapy or hormone-based treatments may be used instead [32].

B. Harmonal contraceptievs

Unless they are contraindicated, hormonal contraceptives are also regarded as first-line treatment for the treatment of dysmenorrhea. NSAID-resistant or non-responsive dysmenorrheic females who require contraception, for whom the use of contraceptives is permitted, or both are typically advised to take them [33].

It has been demonstrated that hormonal contraceptives inhibit ovulation and endometrial growth, which prevents prostaglandin synthesis. Proven hormonal therapies for Parkinson's disease (PD) include subcutaneous depot medroxyprogesterone acetate, levonorgestrel intrauterine system, combination oral contraceptive (COC), and contraceptive transdermal patches or vaginal rings [34]. The choice of a method is contingent upon several factors, including patient preferences, cost, cycle control, convenience of administration, side effect profile, availability, and ease of administration. In order to avoid breast cancer and venous thromboembolism, clinicians should also assist women in selecting hormonal contraceptives and make sure they are medically qualified to use them. [35]

It was revealed that the most often used hormonal contraception among women with dysmenorrhea was the COC of estrogen-progestin. A long-term epidemiological study revealed that COC dramatically reduced the severity of Parkinson's disease [36]

The rate of COC use in dysmenorrheic females has not yet been determined, although a study has revealed that most women use them to prevent pregnancy, with only 14% using them for non-contraceptive purposes such as, primary and secondary dysmenorrhea. [37]

C. Acetaminophen (paracetamol)

For dysmenorrheic individuals who do not want hormonal contraceptives and cannot take NSAIDs due to gastrointestinal distress, acetaminophen is a tolerable analgesic. It lowers prostaglandin synthesis due to its mild COX inhibitory effect45) and is regarded as a safe analgesic with manageable gastrointestinal side effects. However, acetaminophen is less effective than NSAIDs and hormonal contraceptives in treating Parkinson's disease (PD), according to various research examining the effectiveness of various medications. Therefore, it should only be used for mild to severe dysmenorrheic discomfort [38].

D. Non-pharmacological innterventions

For dysmenorrheic individuals who do not want hormonal contraceptives and cannot take NSAIDs due to gastrointestinal distress, acetaminophen is a tolerable pharmacological analgesic. It lowers prostaglandin synthesis due to its mild COX inhibitory effect and is regarded as a safe analgesic with manageable gastrointestinal side effects. However, acetaminophen is less effective than NSAIDs and hormonal contraceptives in treating Parkinson's disease (PD), according to various research examining the effectiveness of various medications. Therefore, it should only be used for mild to severe dysmenorrheic discomfort [39].

Nevertheless, there is disagreement over the data recommending non-pharmacological therapies. Menstrual pain has been shown to be greatly reduced by topical heat application and exercise, with efficacy comparable to that of NSAIDs. Because they are low-cost, proved effective, and rarely cause harm, heating pads and regular exercise should be promoted as complementary or alternative therapies. However, there is not enough data to support the use of herbal medicines, acupuncture, yoga, massage, or nutritional supplements (such omega-3 fatty acids or vitamins B, D, and E) in the treatment of Parkinson's disease.

An excellent non-invasive therapy option for lowering menstruation pain is transcutaneous electrical nerve stimulation (TENS). It is a tiny, battery-powered portable gadget that is put

to the surface of the pelvis using adhesive electrodes to produce electrical current [40].

Two distinct pathways mediate its analgesic action. In the first mechanism, uterine hypercontractility during menstruation reduces pain perception by raising the sensory uterine pain threshold through a series of afferent electrical impulses transmitted via large diameter sensory fibers. In the second mechanism, peripheral nerves induce endorphin release, which attenuates pain. The two primary types of TENS are low-frequency (2–5 Hz) and high-frequency (<50 Hz), with high-frequency TENS being more often utilized due to its proven ability to reduce menstruation discomfort [41].

E. Surgical interventions

Surgical interventions include laparoscopic uterosacral nerve ablation (LUNA), presacral neurectomy (PSN), and hysterectomy; in rare cases, these treatments have been suggested for patients with severe dysmenorrhea who do not respond to conventional treatment modalities. LUNA and PSN both involve interrupting cervical sensory pain fibers by transection of afferent nerve fibers in the uterosacral ligaments or pelvis; however, there is not enough data to support the effectiveness and safety of these procedures, so they are unlikely to be advised for the treatment of Parkinson's disease (PD). Additionally, hysterectomy is thought to be a last resort in refractory severe cases, and should be avoided by young girls and women who intend to become pregnant [42].

6. Natural Herbal for Dysmenorrhea Treatment

Ayurveda is the natural healing process in which people get benefits from herbs without and side effects. There are number of herbs which are helpful during painful periods. These are:

A. Shatavari (Asparagus Racemosus)

Shatavari is one of best herb which is helpful during menstrual pain. It also helps the mother to lactate more. The herb shows effective results in females who are suffering from PCOS and irregular periods.

Fig.4. Shatavari

B. Lodhra (Symplocus Racemosa)

Lodhra is very effective during bleeding disorder, menstrual pain and diarrhoea. It belongs to styraceae family. The herb containd chemical constituents such as loturine, loturidine, symposide, and stem bark contains proanthocynidin, 3-monoglucifuranosides and whole plant contain glycosides. All these natural constituents help to get relief from menstrual pain. The paste of symplocus racemosa bark is used over the vaginal area this will helps to provide protection from vaginal infection.

Fig.5. Lodhra

C. Ashoka (Saraca Indica)

Ashoka is an Ayurvedic herb which has been used for centuries due to its great medicinal properties towards the gynecological condition. It is used for the treatment of menstrual symptoms such as abdominal cramps and pain.

Fig.6. Ashoka

D. Udumbar (Ficus Glomerata)

Udumbar is an ayurvedic herb which is used for the treatment of dysmenorrhea and heavy periods. The mixture of leaves powder with honey helps to reduce infection and decoction of leaves is used for getting relief from dysmenorrhea. It shows great anti-inflammatory, analgesic properties which reduce the inflammation and pain during Menstruation [43].

Fig.7. Udumbar

7. Conclusion

In females of reproductive age, Parkinson's disease (PD) is a prevalent ailment that may not be effectively recognized or treated because of cultural and/or secondary factors. It has a detrimental impact on QOL, lead owing to its extensive range

of physical and psychological symptoms, resulting in lower attendance at work and school. The primary goal of treating this illness is to reduce pain, either through medication means or alternative methods.

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