

A PARADIGM OF HERBAL MEDICINE IN TREATMENT OF DYSMENORRHEA

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ABSTRACT

Dysmenorrhea refers to occurrence of painful menstrual cramps of uterine origin. It usual onset occurs around the time that menstruation begins. The pain is usually in the pelvis/lower abdomen. In young women it occurs without underlying issues like uterine fibroids, adenomyosis/endometriosis. It is more usual among those with heavy period irregular periods, whose periods started before 12 years of age. It can be diagnosed by pelvic exam and ultrasound. Treatment may include the use of heating pad and allopathic medications like NSAIDS, hormonal birth control pills and IUD with progesterone oral contraceptive pills are used but side effects may occur. Dietary supplements including herbals, food, vitamins is highly effective and

beneficial. it B, E, zinc sulphates, magnesium and fish oil rich in omega-3 fatty acids, fennel, melatonin, cinnamon, damask rose, guava and uzara thiamine and vit-E are effective. Ginger powder may be effective for primary dysmenorrhea. Bryopteris selaginella is also effective for irregular mensus. Cimicifugarace mosa used as uterine tonic, viburnum used to calm nerves. Many of these herbal drugs are effective in treatment of dysmenorrhea without any adverse effects.

KEYWORDS: Prevalence rate of dysmenorrheal, dietary supplements, viburnum prunifolium, Cimicifogracemosa, uterosacral nerve ablation, presacral, presacral neurectomy.

INTRODUCTION

The term dysmenorrhea is derived from the Greek words dys meaning difficult/painful/abnormal, Meno means month and rrhea means to flow. Dysmenorrhea can

occur a few days prior to menstruation/during menstruation but normally subsides is menstruation finisher.

Dysmenorrhea (painful menstruation) refers to occurrence of painful menstrual cramps of uterine origin and is common gynecological complaint.^[1] Despite its common occurrence, however, it is under-diagnosed and under-treated.^[2,3] Its symptoms vary, but typically include dull throbbing, cramping pain in lower abdomen. Pain can be localized to lower abdomen, but it can also be in lower back, in vulva as well as radiating down the thighs and also experience nausea, vomiting, diarrhea, fatigue, fever, headache, backaches. It may of 2 types and it is important to diagnose whether it is primary or secondary.

Primary Dysmenorrhea (PD)

- It starts from onset of ovulatory cycles without any obvious underlining disease.
- It begins before typically and is relieved soon after onset of menstruation.

Incidence of PD

- 45-75% of all menstrual women.
- 93% among adolescents.

Secondary Dysmenorrhea (SD)

- These are usually substantial pathologies in pelvic structure.
- It may be caused by endometriosis, ovarian cysts and uterine fibroids.

Incidence of SD

- Observed in young women, with estimates ranging from 67-90% for those aged 17-24 years.

Etiology of Dysmenorrhoea

Excess production and release of endometrial prostaglandins during menstruation may induce hyper contractility, reduce uterine blood flow and trigger hypersensitive pain fibres.

Some says menstrual cramps worse as when PGF-2 ALPHA INCREASES which causes contraction and PGE2 DECREASES which relax uterine smooth muscle.

The most common cause of secondary dysmenorrhea is endometriosis, described as the presence of endometrial tissue on extra-uterine locations, with an overall prevalence of 62% in adolescents.^[4]

Generalised Classification of Causes of Dysmenorrhea

Primary Dysmenorrhea (PD)

Increase level of prostaglandins (hormones responsible for uterine contraction).

Lack of exercises, psychological and social stress, smoking, drinking alcohol, overweight.

The onset of primary dysmenorrhea usually occurs in adolescence, at or shortly after (6 –24 months) menarche. The onset of primary dysmenorrheic pain usually has a clear and predictable temporal pattern, beginning just before or at the start of menstruation.^[5,6]

Secondary Dysmenorrhea (SD)

Fibroids

Adenomyosis

Sexually transmitted infections

Endometriosis

Pelvic inflammatory disease (PID)

Ovarian cysts or tumor.

Prevalence Rate of Dysmenorrhea

- Due to high prevalence rate, dysmenorrhoea is poorly treated and even disgraced by health care professionals, pain researchers and women themselves treating it as a normal part of menstrual cycle.
- Due to the different definitions of the condition, and the lack of standard methods for assessing severity of dysmenorrhea, prevalence estimates vary between 45 and 95% of menstruating women.^[7]

Pathophysiology

Primary Dysmenorrhea: This appears to be multifactorial. Towards the end of the menstrual cycle, progesterone withdrawal up regulates various inflammatory cytokines, prostaglandins, vascular endothelium growth factors and several matrix metalloproteinase's (MMPs). These MMPs act to degrade, leading to loss of integrity of blood vessels, destruction of endometrial interstitial matrix and resultant bleeding characteristic of

menstruation and finally causes pain. These can be split into three main categories: uterine contraction and vasoconstriction, modulation and stimulation of pain fibers and behavioral and psychological factors.

Uterine contraction and vasoconstriction

Disintegrating endometrial cells release prostaglandins F2 alpha, a myometrial stimulant and vasoconstrictor. This mediates prolonged uterine contraction and reduces blood flow, which is postulated to cause pain.^[8] Women experiencing primary dysmenorrhea have an abnormal pattern of contraction with a higher basal resting tone. Peak uterine works with a great amount of pain.^[9] Elevated prostaglandins levels are found in the endometrial fluid of women with dysmenorrhea and correlate with the degree of pain.^[10] Women who fails to respond to prostaglandins inhibitors have been show to have elevated levels of leucotrienes.^[11] Vasopressin appears either to have direct influence ob myometrial hypersensitivity, or to exert action via prostaglandin release.^[12] Prostacyclin is a potent vasodilator and myometrial muscle relaxant in vivo, thus reduced levels may lead to hypoxia, ischaemia and pain.^[13]

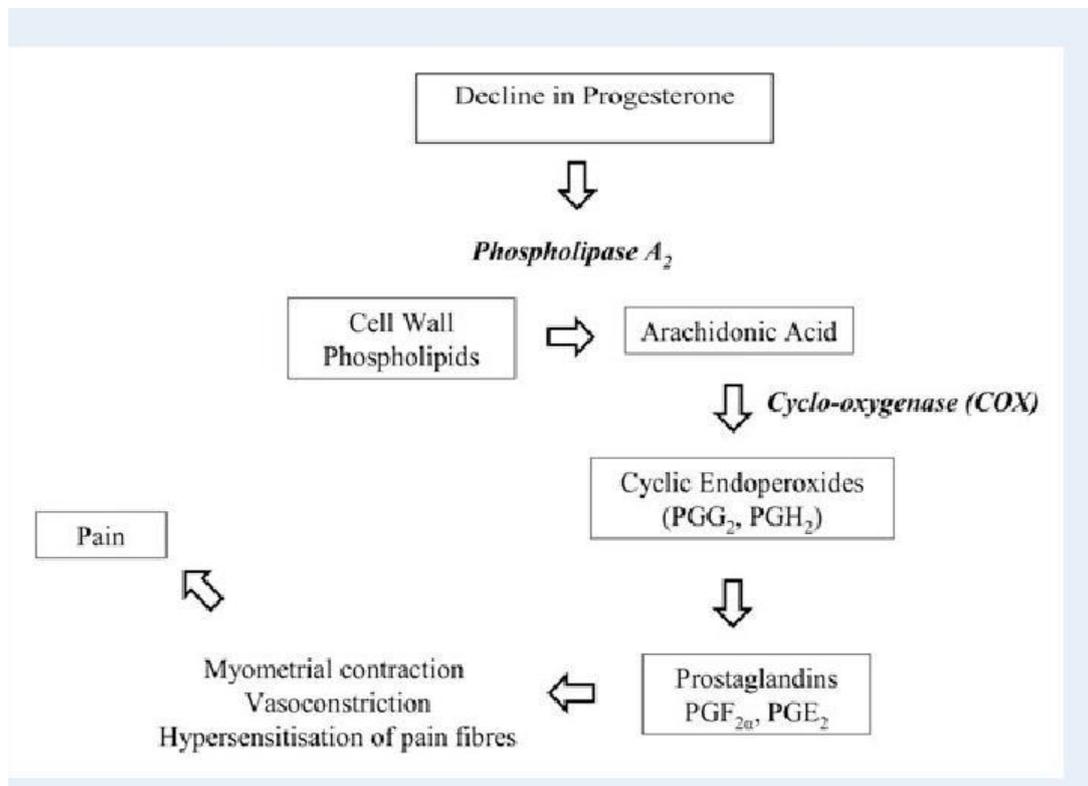
Modulation and stimulation of pain

The stimulation of pain fibres in the uterus causes activation of the afferent pain pathways transmitted up to the central nervous system. In addition, there is some evidence of a direct effect on the pain fibres themselves in cases of dysmenorrhoea. This theory is based on the potential effect of ischemia on pain fibres. Vasoconstriction leads to ischemia and it is thought that type C pain neurons are stimulated by the anaerobic metabolites generated by an ischemic endometrium.^[14] It has also been suggested that leukotrienes can increase the sensitivity of pain fibres.^[15]

The multimodal response to pain

Pain is defined by the International Association for the Study of Pain as ‘an unpleasant sensory and emotional experience associated with actual or potential tissue damage.’^[16] Understanding the impact of pain must, therefore, acknowledge both the stimulation of sensory receptors by a harmful stimulus and other factors acting centrally and contributing to pain perception. There is a general consensus that primary dysmenorrhoea often coexists with other pain conditions, such as dyspareunia, irritable bowel syndrome and fibromyalgia. Research is being undertaken to examine the degree of this overlap. It may be partly due to the difficulty in objective assessment of the symptoms and the challenge in diagnosing some of the chronic pain conditions, as many of these conditions are diagnoses of exclusion.^[17]

Primary dysmenorrhoea, as with chronic pelvic pain, seems to be more prevalent in those with a history of sexual abuse.^[18,19] However, compared with other pelvic pain syndromes, there is limited research into the impact of psychosocial factors on dysmenorrhoea.



Primary dysmenorrhoeal pathophysiology flow chart:^[21]

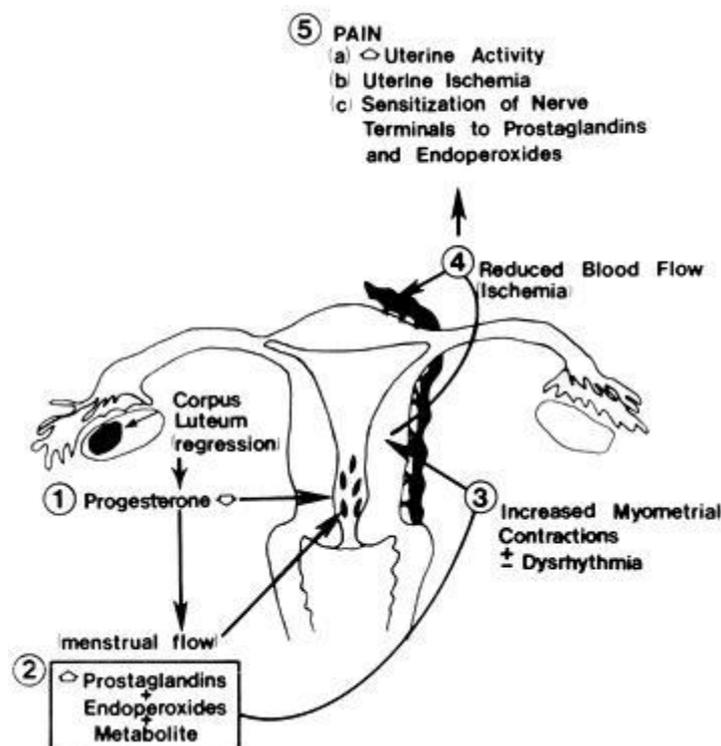
Secondary Desmenorrhea

There are many numbers of clinical conditions with underlying pelvic pathology which can lead to secondary dysmenorrhoea. Many of the ways in which each specific pathology causes pain overlap with the mechanisms found in primary dysmenorrhoea. This may explain why they respond, in part, to treatment strategies used in primary dysmenorrhoea. The most common cause of secondary dysmenorrhoea is endometriosis. Many trials have failed to show a correlation between disease severity and the severity of pain; the exact mechanism as to how ectopic endometrial tissue causes pain has not been established. However, some studies have suggested increased levels of prostaglandin (including prostaglandin F₂) in women with endometriosis.^[20]

Another common cause of secondary dysmenorrhoea is chronic pelvic inflammatory disease. Pain may be caused by the release of inflammatory mediators, prostaglandins, scar tissue

formation and abnormal uterine contraction. Adenomyosis is thought to cause secondary dysmenorrhoea by causing tonic uterine contractions through endometrial gland destruction.

Intrauterine polyps, sub mucosal fibroids and intrauterine contraceptive devices can also cause dysmenorrhoea by abnormal uterine contraction in the attempt to expel them. Less common causes of secondary dysmenorrhoea include Allen-Masters syndrome (scarring secondary to laceration of the broad ligaments, usually during childbirth), congenital uterine abnormalities, cervical stenosis, Asherman syndrome, uterine retroversion and pelvic congestion syndrome. Theories of pain causation in all of these conditions relate to the production of atypical uterine contractions. Ovarian cysts and tumors are associated with dysmenorrhoea but the mechanism by which this occurs is not clear.



Significance of Herbal Medicines in Dysmenorrhea

Impact of PD on female health and life quality are very considerable. women with PD always suffer from physiological and psychological symptoms which greatly influence their quality of life and routine study. This makes women absent to work and from various activities. Hence drugs should be effective in treating or relieving pain, SO used NSAIDS(PG syntheses inhibitors), OCP(oral contraceptive pills), and COX2 inhibitors etc, shows higher effect but failure rate is 20to 25% besides occurrence of drug associated ADR's. Hence only 6% of adolescents seek medical advice, 70% of women practice self management. ADR's like GI

DISTURBANCE, NEPHROTOXICITY, HEPATOTOXICITY and FLUID RETENTION. Hence preferring alternative treatment i.e. Dietary supplements including herbals, food, vitamins... Food diet contains fish oil, melatonin, vit B, E, zinc sulphates, magnesium.

Herbals Include Following Actions

Antispasmodic (suppresses muscle spasms): VIBURNUM PRUNIFOLIUM, DIOSCOREA VILLOSA, and CIMCIFUGA RACEMOSA.

Nervine (used to calm nerves): VIBURNUM PRUNIFOLIUM, CIMCIFUGA RACEMOSA and CHAMOMILE.

Uterine tonic (toning muscle of uterus) CIMCIFUGA RACEMOSA.

Analgesic (pain-relievers): JAMAICAN DOGWOOD, GINGER: By suppressing Cox enzymes, lipoxygenase enzymes thus inhibit synthesis of prostaglandins, leukotrienes.

Aroma therapy (essential oil massage or hot compress for pain relief for menstrual cramps): German chamomile, sweet marjoram, sweet fennel.

Anti-inflammatory: GINGER.

Common Name	Botanic AI Name	Family	Parts Used	
Cramp bark and black haw	Viburnum opulus, viburnum prunifolium	Caprifoliaceae	Bark, root bark	PAIN RELIEF AND CRAMP RELAXING HERBS
Dong quai	Angelica sinensis	Apiaceae	Root	
Wild yam	Dioscorea villosa	Dioscoreaceae	Dried rhizome, roots	
Black cohosh	Cimicifuga racemosa	Ranunculaceae	Roots	
Ginger	Zingiber officinale	Zingiberaceae	Rhizome, dried root	DIGESTIVE UPSET WITH INFLAMMATION
Chamomile	Matricaria chamomilla	Compositae	Flowers, w	ANXIETY, NERVOUS TENSION, IRRITABILITY WITH MENSTRUAL CRAMPS
Motherwort	Leonurus cardiac	Lamiaceae	Seeds, flowering tops	
Jamaican dogwood	Piscidia piscipula	Leguminosae	Root bark and stem bark	SEVERE CRAMPING AND PAIN
Sweet fennel	Foeniculum vulgare	Apiaceae	Ripe fruit Seeds	AROMATHERAPY FOR PAINFUL CRAMPS
Sweet marjoram	Origanum majorana	Lamiaceae	Flowering tops, seeds	

The active constituents that are present in the drugs and their actions, uses and preparations are described clearly in the following table:

Common Name	Active Constituents	Actions	Uses	Preparations
Cramp bark and black haw	Coumadin(scopolamine, scopolin, aesculetin), Salicin, resin, saponins, tannins, valerianic acid, viburnin, minerals (calcium, chromium, cobalt, iron magnesium, silicon)	Antiinflammatory, nervine, Uterine relaxant antispasmodic, astringent, diuretic, muscle relaxant, cardiac tonic, nervine	Uterine cramps, congestion and irritation in uterus and ovaries and radiating pains, muscle spasms, preterm labor	Tinctures Creams or lotions Decoctions
Dong quai	Phytosterols, ferulic acid, coumarins (bergapten, imperatorin, oxypeucedanin, osthole, psoralen)	Uterine tonic, antispasmodic, female reprotoxic, blood tonic, antianaemic, antiinflammatory, anticoagulant, antiarrhythmic, mild laxative	Irregular menstruation, amenorrhea, dysmenorrhea, infertility, anaemia, constipation	Tinctures (10-40 drops) 1 or 3 times a day Capsules(1500mg) 3 times a day Tea
Wild yam	Saponins (diogenin, dioscin) alkaloid (dioscorin), phytosterols (beta sitosterol), tannins, starch, mucins, amino acids (arginine, glutamine, tyrosine) calcium, chlorine, iron, vit c	Antiinflammatory, antispasmodic, blood purifier, uterine tonic, estrogenic activity, analgesic, diuretic, progesterone activity.	Cramps, muscular pains, arthritis, digestive disorders), UTI, lower BP & cholesterol levels	Tincture (2-3 drops) 3 times a day Liquid extract(10-40 drops 3 times a day) powder extract, tablet or capsule (one or two) 3 times a day
Black choosy	Triterpene glycosides – actein, cimicifugoside. Is flavones – formononetin, isoferulic acid, tannins, fatty acids, phenols, quinoid metabolites of caffeic acid	Promotes menstrual flow, expectorant, antirheumatic, sedative, anticoagulant, antiinflammatory, antineoplastic, antioxidant	Relieve cramps, painful periods, hot flashes, anxiety, depression, vaginal dryness	Capsules, tablets(1 mg of deoxy actein), liquid tincture, (2-4ml) 3 times a day, extracts as drinks (1 cup) 3 times a day
Ginger	Terpenes – Sesquiterpenes Hydrocarbon – gingerol, gingerdiol, gingerdione, Oleoresin, volatile oils (beta bisabolol, zingerone) beta carotene, starch minerals, vitamins	Antiinflammatory, analgesic, antioxidative, antineoplastic, antiemetic, cardioprotective, antiulcer, hypolipidaemic, antimicrobial	Headache, painful menstruation, migraine, upper RTI, stomach pain, osteoarthritis Rheumatoid arthritis Pain reliever	Capsules, lozenges, tinctures, oils, ginger extracts, drinks, ginger tea Recommended dose: upto 4 gms a day
Chamomile	Tannic acid, essential oils (terpene bisabolol), farnesene, chamazulene, flavonoids (apigenin, patuletin) coumarin, ascorbic acid, choline, glycosides	Antiinflammatory, antispasmodic, sedative, anti anxiety, analgesic, laxative, antiseptic, neuralgia, diuretic	Cramps, menstrual disorders, cessation of menstrual flow, soothes anxiety and stress, stomach aches, stomach disorders, digestive relaxant	TEA, topical cream, oral doses (9-15g per day), oils
Mother wort	Tannins, alkaloids, flavonoids, terpenoid, choline, carbohydrates, oleic acid, mallic	Sedative, astringent, diuretic, lowers bp, vitamin A & C supplement, antioxidant	Menstrual cramps, stress, anxiety, menopausal complaints, amenorrhea	TEA, topical cream, oral doses (9-15g per day), oils

	acid, fenolglykosid.	dant, immune boosting, dysmenn orrhea, antianxiety		
Jamaican dogwood	Isoflavanoids (jamaicine, ihtyn one, Piscidine), rotenoids (rotenone, milletone, isomilletone) tannins., beta sit sterol	Pain reliever, sedative, Nervine, anti-pasmodic, cardio tonic, diuretic.	Neuralgia, headache, period pains, insomnia, migraine, anxiety, cough, muscular cramps and spasms	Tinctures (1-2 ml) 3 times a day, Decoction

CONCLUSION

Dysmenorrhoea is a common condition affecting young women. As with other pain conditions, the etiology appears to be multifactorial and involves inflammatory mediators, pain pathways and a centralized response. Most of the women get relief by the use certain herbal drugs and also from a combined individualized approach to treatment. Since herbal drugs are obtained from the natural sources these are best and efficient to treat dysmenorrheal.

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Conflicts of Interest Statement

None of the authors have conflicts of interest with respect to this work.

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