

Dysmenorrhoea: an overview

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Abstract

Dysmenorrhoea, commonly referred to as painful menstrual cramps, is a common gynaecological problem reported by women in their reproductive years. This article provides an overview of primary and secondary dysmenorrhoea, including the differential diagnosis and management. Treatment of dysmenorrhoea is aimed at providing symptomatic relief and to inhibit the underlying processes causing the symptoms. The role of the pharmacist in offering care and advice to patients, especially with the use of over-the-counter medicines, is described.

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Introduction

Dysmenorrhoea is a common condition and refers to painful menses (menstruation) with severe cramping affecting the lower part of the abdomen.¹ It can be either primary or secondary and is a common complaint among adolescents and women of reproductive age.² Dysmenorrhoea is known to be the most common cause of pelvic pain.²

The pain is described as a sharp, intermittent and spasmodic pain and can be classified as mild (does not affect daily activities), moderate (slightly interferes with daily activities) or severe (prevents daily activities).³ Pain starts several hours before or with the onset of menses and lasts for 1-3 days.^{4,5} The pain and frequency thereof might decrease with age or after childbirth.⁶ When the pain is severe enough, it often affects daily functioning, which leads to school and work absenteeism.^{3,4} Even social and recreational activities might be affected.⁴

Dysmenorrhoea should however not be confused with premenstrual syndrome which presents with similar symptoms. Premenstrual syndrome symptoms resolve shortly after menstrual flow has begun, unlike dysmenorrhoea which continues for up to 72 hours.⁶

Epidemiology

Globally, 50–90% of women of reproductive age experience painful menses, of which the majority present with primary dysmenorrhoea.¹ The prevalence of primary dysmenorrhoea is reported to be the highest during the teenage years, with 40–50% of this population reporting symptoms.⁷ Secondary dysmenorrhoea rates are lower in adolescents, as onset of causative conditions occurs only later in life. Only 10% of young

adults and adolescents have secondary dysmenorrhoea.⁸ Family history of endometriosis in first-degree relatives is reported to increase the risk of developing secondary dysmenorrhoea.⁹

According to the literature there is a wide variation (20–90%) in the dysmenorrhoea prevalence rates between different countries. This may be due to different methods of data collection, different definitions of dysmenorrhoea, diverse study populations and various factors associated with severity of pain.¹⁰

Classification of dysmenorrhoea

Dysmenorrhoea can be classified as either primary or secondary dysmenorrhoea.^{1,2}

Primary dysmenorrhoea

Primary dysmenorrhoea is defined as spasmodic cramping in the lower abdomen occurring just before or during menstruation.^{1,2} Menstrual pain is not a symptom of any underlying disorder but part of the normal menstruation process.⁴ Primary dysmenorrhoea usually peaks between 20–24 years of age.^{4,7} Symptoms include stomach cramps, backache, diarrhoea, fatigue, headache, oedema, nausea, vomiting and mood changes. These symptoms last for more or less three days.¹¹

Pathophysiology

The pain of primary dysmenorrhoea is caused by excessive E2 and F2a prostaglandin production within secretory endometrial cells.¹² This prostaglandin release, in turn, causes uterine contractions, uterine muscle ischaemia and increased peripheral nerve sensitivity.¹² Coupled with their elevated prostaglandin levels, dysmenorrhoeic women have higher levels of uterine activity during menstruation compared to asymptomatic women.⁴

Menstrual bleeding is triggered by progesterone withdrawal following the demise of the corpus luteum.¹³ As progesterone levels drop prior to menstruation, prostaglandin levels increase together with stimulation of the type-C pain fibres¹⁴ and play a big role in pain, inflammation and other physiological processes regulating body temperature and sleep.⁴

Risk factors

Dysmenorrhoea does not usually occur within the first six months, after the first menstruation. There are a number of risk factors significantly associated with dysmenorrhoea, including the following^{11,14}:

- Low body mass index
- Early menarche
- Prolonged menstrual flow for seven days or longer
- Pelvic infections
- Genetic or family history
- Premenstrual somatic complaints
- A history of sexual assault

Secondary dysmenorrhoea

Secondary dysmenorrhoea is menstrual pain associated with an identifiable disease such as endometriosis, adenomyosis, uterine fibroids, or infection.^{7,15} In contrast to primary dysmenorrhoea it usually affects older women in their thirties and forties.^{7,16}

Elevated prostaglandin production may also play a role in secondary dysmenorrhoea, but pelvic pathology must be present.¹⁶ Women with secondary dysmenorrhoea may be more susceptible to developing other chronic pain conditions later in life.¹⁷

Diagnosis of dysmenorrhoea

First-line procedures in the diagnosis of primary dysmenorrhoea include a clinical history and physical examination.¹⁵ It is important to rule out any other possible pathological causes for the menstrual pain, as well as to determine the best approach for the management of pain.¹² If the aetiology remains unknown after an appropriate non-invasive evaluation, a laparoscopy is indicated. Primary and secondary dysmenorrhoea can be differentiated by using the patient's family history as a record.^{2,12,17}

The clinical history of dysmenorrhoea should include the following⁷:

- Menstrual history including age at menarche, duration of menstrual bleeding, menstrual flow, interval between menstrual periods
- Specific therapies attempted and their success or failure
- Family history of dysmenorrhoea
- Sexual history (including possible sexual trauma)
- Review of systems focusing on systemic, gastrointestinal, genitourinary, musculoskeletal and psychosocial areas

For diagnostic purposes it is important to differentiate between primary and secondary dysmenorrhoea.^{2,18} Table I shows a summary of the main differences between primary and secondary dysmenorrhoea in terms of the diagnosis.^{2,7,15}

Management of dysmenorrhoea

Pharmacological management

The treatment of dysmenorrhoea is aimed at providing pain relief as well as inhibiting the underlying processes that cause the symptoms.² Treatment should be guided by individual needs, as the severity of pain and degree of limitation of activity vary among women with dysmenorrhoea.⁷ First-line therapy for primary dysmenorrhoea generally involves nonsteroidal anti-inflammatory drugs (NSAIDs) and opioid analgesics, as well as oral contraceptives (OCs).¹⁰

A summary of the recommended management pathway for dysmenorrhoea is illustrated in Figure 1.^{7,8,20-22}

Non-hormonal treatment

Paracetamol can be used to commence the treatment of dysmenorrhoea.³ When high concentrations of peroxide are present in inflammatory tissues, paracetamol acts as a weak inhibitor of cyclooxygenase enzymes.²² It is a centrally acting agent that works by raising the pain threshold, thus producing analgesic effects.³ Paracetamol is well tolerated by the gastrointestinal tract.²²

NSAIDs are used in the treatment of primary dysmenorrhoea primarily because of their ability to inhibit cyclooxygenase enzymes which in turn inhibit the peripheral production of prostaglandins.^{22,23} This mechanism of action is important because the pain experienced in dysmenorrhoea is said to be as a result of the presence of prostaglandin overproduction (cyclooxygenase-2 (COX-2) activity) in the endometrium.^{4,12} As such, NSAIDs are a reliable choice of treating pain in dysmenorrhoea.^{22,23} Evidence about the most effective and safest NSAID to use for the treatment of dysmenorrhoea is limited.²⁴ The most commonly used NSAIDs include ibuprofen (in a prescription dose of 400 mg every four hours as needed), naproxen (500 mg initially, then 250 mg every six to eight hours as needed), ketoprofen (25–50 mg every six to eight hours as needed), and mefenamic acid (500 mg to start, followed by 250 mg every six hours as needed). However, the greatest concern related to NSAID use pertains to the adverse effects on the gastrointestinal tract.²²

Hormonal treatment

Combined hormonal contraceptives

The use of combined oral contraceptives (COCs) is usually reserved for patients who fail to respond to NSAID treatment. COCs are effective in lowering the prevalence of dysmenorrhoea through the inhibition of ovulation and endometrial proliferation.^{12,22} The combined hormonal contraceptives work by reducing the endometrial lining, which also produces prostaglandins, and as

Table I. Primary and secondary dysmenorrhoea: Differential diagnosis ^{2,7, 15,19}

Features	Primary dysmenorrhoea	Secondary dysmenorrhoea
Onset	Shortly after menarche; usually 6–12 months after menarche; within three years	At any time after menarche; usually more than five years after menarche
Time	Present during ovulatory cycles and menses only	May not necessarily be associated with menses
Age	15–25 years of age	After 25 years of age, usually 30–45 years
Duration	8–72 hours during menses	Prior to onset of menses and throughout menstrual cycle
Symptoms	Back and thigh pain, headache, diarrhoea, nausea and vomiting may be present	Other gynaecological symptoms e.g. dyspareunia, menorrhagia may be present
Pain	Lower pelvic or abdominal pain, usually associated with onset of menstrual flow, without pathological disease, lasting 8–72 hours	May complain of change in time of pain onset during menstrual cycle or intensity of pain. Menstrual pain associated with an underlying pelvic pathology such as endometriosis, pelvic inflammatory disease, ovarian cysts and fibroids
Aging	Gradually improves over time	Becomes worse over time
Sexual activity	Improves	No change
Postpartum	Improves	No change
Findings of internal examination	No abnormal findings on examination	Pelvic abnormality e.g. endometriosis, fibroma

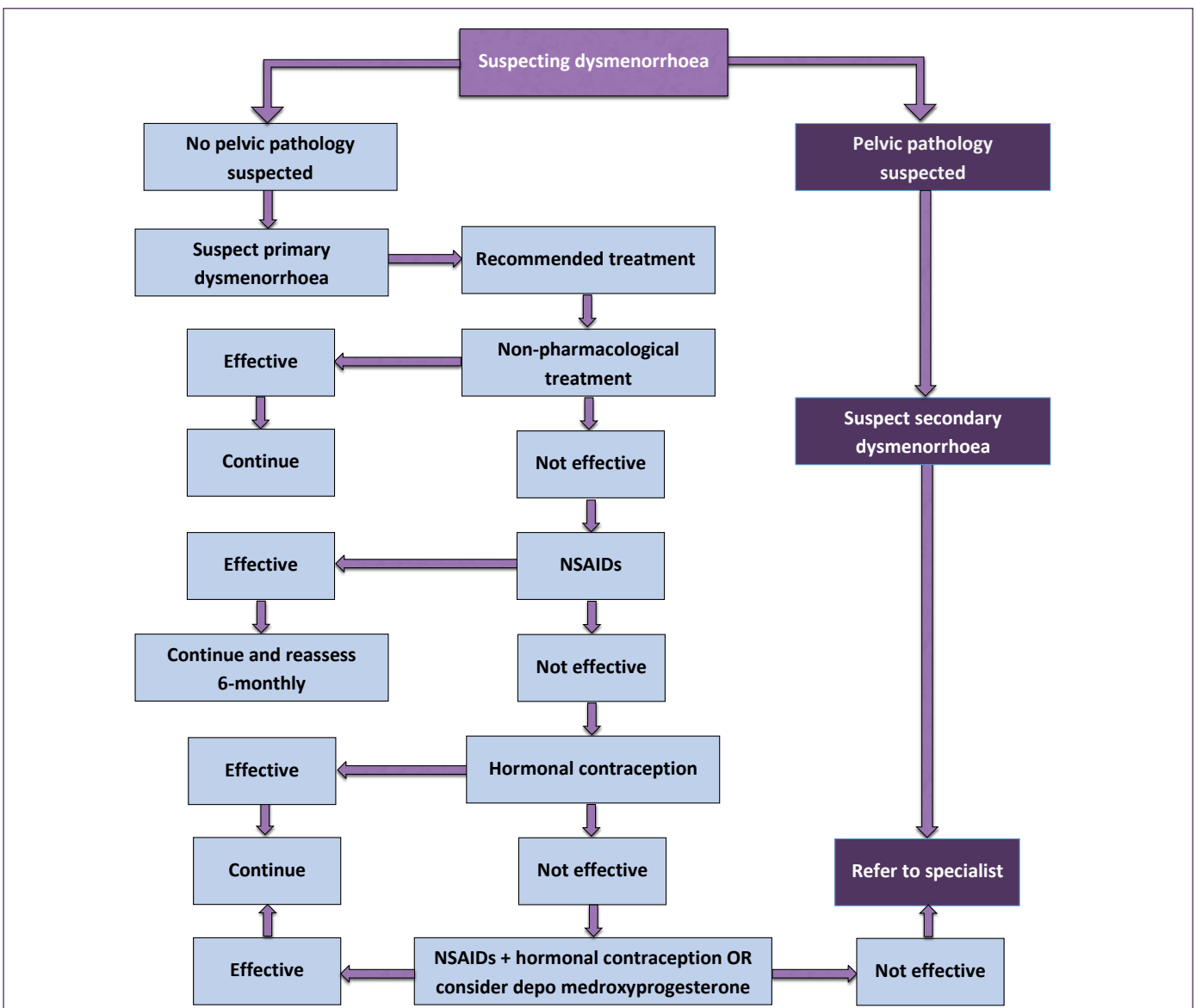


Figure 1. Management pathway for dysmenorrhoea ^{9,8,20-22}

a result decreasing menstrual blood volume and prostaglandin secretion with subsequent reduction in intrauterine pressure and uterine cramping.^{22,23} It is important to maximise medical treatment in all women complaining of dysmenorrhoea without awaiting the results of further investigations even if organic pathology is suspected, as the use of combined oral contraceptives is of importance in conditions that produce secondary dysmenorrhoea.²³

Progestins

Depot medroxyprogesterone acetate (DMPA) works by suppressing ovulation and is useful as an alternative to COCs with comparable pain relief and fewer side-effects.²² The use of DMPA in women has been associated with a lower prevalence of dysmenorrhoea.²² The progesterone-only pill reduces menstrual flow and up to 10% of users can end up developing amenorrhoea.²⁵

Non-pharmacological management

Non-pharmacological treatment and self-care methods to alleviate mild to moderate levels of discomfort or pain are common among females who suffer from primary dysmenorrhoea.¹⁴ Relief can be achieved through heat application to the lower abdomen and by drinking hot beverages.^{15,26} Sleeping or resting, minimising stress and not skipping breakfast may also contribute to pain relief.¹⁴ Other methods that have demonstrated adequate pain relief are acupuncture/acupressure, physical exercise and transcutaneous electrical nerve stimulation.²⁷⁻³⁰ In addition, other dietary or nutritional supplements can be used, including herbs, vitamins and traditional medicines. Although recent studies comparing acupuncture to NSAIDs showed benefits, there is still insufficient evidence to prove whether acupuncture is effective in treating primary dysmenorrhoea.³¹ The most effective method to control pain associated with endometriosis in secondary dysmenorrhoea is surgical, especially laparoscopic surgery.⁹

Role of the pharmacist

Primary dysmenorrhoea is a common menstrual complaint that is frequently self-treated by most patients with over-the-counter (OTC) medicines.³² Pharmacists are well positioned to offer care and advice to patients experiencing pain during their menses.³³ Furthermore, dysmenorrhoea presents with secondary ailments such as diarrhoea, fatigue, dizziness, headache, back pain, nausea and vomiting, which can be managed by pharmacists with OTC medicine.^{20,21} Proper history taking in the pharmacy would identify patients who might be experiencing pain prior to their menses, commencement of sudden pain after years of pain-free menses and those who are experiencing pain during their first six cycles, as these patients need to be referred to a medical practitioner for further evaluation.^{20,21} Referral should also be considered when NSAIDs and oral contraceptives do not alleviate dysmenorrhoea symptoms, when secondary dysmenorrhoea is suspected, or if vaginal discharge is present and the patient is experiencing a fever.²¹

As custodians of medicines, pharmacists should provide education to patients regarding proper drug selection and dosing in order to optimise patient outcomes.^{24,34} Hence, for optimal dysmenorrhoea management with NSAIDs, patients should be counselled to commence their treatment before their menses start and continue for at least two days after their menses have begun.²¹

Patients treating dysmenorrhoea with oral contraceptives should be made aware of the side-effects associated with such treatment.¹⁰ Side-effects such as nausea, headache and weight gain might discourage patients from adhering to their therapy.³³ Furthermore, these patients need to be reminded to have regular check-ups for vascular events such as venous thromboembolism and myocardial infarction.³⁵ Patients using COCs for dysmenorrhoea management should be made aware that pain reduction can take up to six months of regular treatment.³⁶ Other aspects with the potential to discourage adherence, and which patients should be informed about while using COCs, is breakthrough bleeding and spotting in the early months of treatment.³⁷

Conclusion

Dysmenorrhoea is a health problem that affects the daily activities and quality of life of many women. Establishing the accurate prevalence of dysmenorrhoea is compromised due to the variety of diagnostic criteria. Primary dysmenorrhoea is caused by excessive levels of prostaglandins, with subsequent contraction of the uterus during menstruation, while secondary dysmenorrhoea may be caused by a number of underlying pathologic conditions. Women often seek non-prescription medication as first-line treatment, therefore pharmacists should be knowledgeable and actively involved in providing counselling about the management of dysmenorrhoea.

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