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Painful Menstrual Period: Dysmenorrhea

Regine Unkels

INTRODUCTION

Dysmenorrhea is a very common gynecological problem. As pain is very subjective and as such difficult to assess, studies show a broad range of prevalences from 17 to 81%¹. Pain perception is also influenced by cultural background. This explains different prevalences found in different parts of the world. Most studies deal with dysmenorrhea in industrialized settings and there are no data available from resource-limited settings. This doesn't mean, however, that dysmenorrhea is not important in those settings. As the causes for dysmenorrhea are the same all over the world you can assume that as many women are affected by it in resource-poor settings as in industrialized regions. The studies mentioned above found that 15% of the participants mentioned the pain to be severe and interfering with their normal activities. In one study, 35% of female high school students reported missing school². If you consider that daily activities in low-resource settings are physically much harder than in industrialized countries, and that the circumstances for girls going to school are much more difficult in many parts of the world, you can imagine how effective treatment for this common condition can significantly influence socioeconomic performance and social well-being.

In addition, dysmenorrhea has a psychological aspect, as women and especially adolescents suffering from it are often concerned that something might be wrong with their reproductive organs, hampering their fertility in later years. This can cause a lot of fear and should also be addressed.

In adolescent girls dysmenorrhea might cause the first contact with a reproductive health service. This can be an opportunity for counseling on other

issues such as sexually transmitted infections (STIs) and contraception and help the girl to establish a life-long link to reproductive health services. A pre-condition for this is that the first visit works out well for the girl and is not, as often, traumatizing. You will find more on this very important issue in Chapter 1 on gynecological examinations and Chapter 32 on adolescent gynecology.

Definition

Dysmenorrhea describes recurrent cyclic pain during menstrual periods. The pain is usually cramp-like, colicky, located in the suprapubic region with radiation to the lower back and the legs and stays usually 24–48 h. Often women describe accompanying symptoms such as diarrhea, nausea, bloating and tiredness. There are two forms of dysmenorrhea. This differentiation is important as you will see:

Primary dysmenorrhea starts by definition around the menarche and describes pain during the menstrual period without any underlying cause. So most patients you'll see for primary dysmenorrhea will be of younger age. The onset of pain is usually a few hours before blood flow starts and will last for the first one to two days of the period. Often primary dysmenorrhea becomes less with age or after childbirth.

Secondary dysmenorrhea relates to pain during menstrual periods with an underlying pathology (see below). As a matter of fact, symptoms will only start after the underlying cause has developed. Patients with secondary dysmenorrhea will be mostly more mature women. Often, pain starts many hours or even days before the onset of blood flow and can last the whole period.

CAUSES OF DYSMENORRHEA

Primary dysmenorrhea

This is caused by an excessive production of prostaglandins in the body just before menstruation starts. This is due to the fall in progesterone which induces sloughing of the endometrial lining to prepare for menstruation and, through this, increased prostaglandin production. Prostaglandin is a hormone which you might know from obstetrics as misoprostol. The additional symptoms of dysmenorrhea such as nausea and diarrhea are the same as the side-effects of misoprostol!

Prostaglandin is a sort of by-product of menstrual changes of the endometrium and it is not known why some women produce more prostaglandin than others, but this seems to be only possible when menstrual cycles are ovulatory (with an ovulation). The fact that often the very first cycles in a girl are anovulatory explains why primary dysmenorrhea often only starts a few cycles after menarche. Excess of prostaglandins leads to hyperfrequent, dysrhythmic uterine contractions and reduced uterine blood flow, which leads to pain. Very seldom, primary dysmenorrhea is caused by congenital or acquired malformations of the female reproductive tract, such as imperforated hymen, and obstruction after female genital mutilation.

It is good to know that primary dysmenorrhea can be very painful but that it is always harmless and does not interfere with reproductive function.

Secondary dysmenorrhea

Possible causes of secondary dysmenorrhea are:

- Endometriosis (endometrial cells growing outside the uterus, leading to cysts and adhesions) (see Chapter 6).
- Adenomyosis (endometrial cells growing within the uterine wall in the muscle layer called myometrium).
- Uterine fibroids (benign tumors of the uterine wall) (see Chapter 19).
- Acute STIs and chronic pelvic inflammatory disease (PID) (see Chapter 17).
- Pelvic adhesions (postoperative or post-infectious) (see Chapter 6).
- Reproductive cancers (late sign) (see Chapters 26, 28–30).

In most of these conditions, menstrual pain is related to pressure of the impaired tissue (fibroids,

adenomyosis, cancer) and expulsion efforts of blood clots from the uterine cavity leading to dysrhythmic contractions. In some, traction (adhesions, PID), or the production of prostaglandins or prostaglandin-like factors (acute STI, endometriosis) might play a role.

These conditions are dealt with in their respective chapters and Chapter 6 on chronic pelvic pain.

HISTORY TAKING

- *Actual complaints:* type of pain, radiation, onset in relation to menstrual cycle and period. Other symptoms: watch out for the above-mentioned accompanying symptoms such as diarrhea and nausea. Endometriosis can grow in the bladder and bowel and cause hematuria and bloody stool. Ask about pain during intercourse (dyspareunia) hinting at endometriosis, adenomyosis, fibroids or PID. Also ask about dyschezia (pain during defecation) which is a sign for bowel endometriosis.
- *Duration of complaints* (primary/secondary, how many months/years). Watch out: every newly appearing dysmenorrhea can be a mistaken ectopic pregnancy!
- *Duration of periods and regularity of the cycle:* adenomyosis and fibroids often go along with menorrhagia (increased blood loss and prolonged menstruation). Spotting and irregular bleeding can be a sign for STI. Bleeding after or during intercourse can hint at STI but also at cervical cancer.
- *Parity, pelvic operations:* subfertility can be a sign for endometriosis, PID and fibroids; recurrent abortion can hint at the existence of uterine fibroids. Pelvic operations can cause adhesions or lead to infections which in turn can cause PID. D&Cs carried out under unsterile conditions are a very important risk factor in this context but are often missed during history taking.
- *Use of contraceptives* can ease pain in primary dysmenorrhea and endometriosis.
- *Desire for pregnancy* in order to determine the use of oral contraceptives for therapy.
- *Fever, discharge and abdominal pain* can be a signs of STI, but can also be a late sign of cervical cancer.
- *Stress or a family history of dysmenorrhea:* primary dysmenorrhea can be psychosomatic. The way

older female relatives deal with their menstrual period can influence the perception of girls about womanhood and menstruation and the way they deal with painful periods. Stress in school or around issues of adolescence and growing up can lead to a change in pain perception and primary dysmenorrhea as well.

Please bear in mind that a menstrual period is the inevitable sign that a pregnancy did not work out. So, for women with difficulties in conceiving or in cases where their in-law family or society puts pressure on them to conceive, every period is 'painful' in a psychological way.

PHYSICAL EXAMINATION

Most of the time you can make the diagnosis without many investigations in your facility. Primary dysmenorrhea is a diagnosis of exclusion, but your history with onset of symptoms and menarche can already help you to establish the diagnosis. In primary dysmenorrhea your examination outside menstruation will be normal as there is no underlying cause for it. Most women come when they are having pain, so it might be wise to re-examine them once their period is over to see the difference. Be aware of possible congenital malformations like a rudimentary uterine horn that can cause the pain.

Keep in mind: a woman can start with primary dysmenorrhea and with time experience additional secondary symptoms due to new underlying causes. So ask every woman if the pain changed with time, especially concerning onset and duration. You must do a full gynecological examination on all patients with dysmenorrhea to establish or rule out underlying causes. Special considerations for examination of young girls or virgins are given in Chapter 1 on gynecological examination and in Chapter 24 on adolescent gynecology. You can find a description on each examination method or investigation in Chapter 1.

Abdominal palpation

By doing an abdominal examination you can assess abdominal masses (fibroids, cancer) or points of pain-related resistance (PID, adhesions). You should look for scars and assess their healing. An ugly broad scar might be a sign of secondary healing with the likelihood of infection or adhesions.

Speculum examination

During a speculum examination you can find signs of cervical cancer (bleeding, ulcers, erosions, masses) or for STI (abnormal vaginal discharge, a reddish cervical surface, discharge from the cervical os) and for vaginal endometriosis (dark-red or purple blisters or spots). The cervix can be distorted to one side by fibroids, tubo-ovarian masses or endometriosis, or shortened by cervical or intracavitary fibroid growth.

Wet mount

The wet mount can show signs of vaginal or cervical infections including STI (pus cells, clue cells, *Trichomonas*).

Vaginal examination

During bimanual palpation you can find signs of adenomyosis (enlarged, soft, often tender uterus) or fibroids (enlarged, firm uterus, bulky uterus with humps, mobile or immobile) and ovarian masses such as benign or malignant ovarian tumors and tubo-ovarian abscesses as a sign of PID (masses right, left or behind the uterus, mobile or immobile). Cervical tenderness can be a sign of acute or chronic infection (STI, PID) but also for endometriosis and ectopic pregnancy. A painful palpation of the posterior fornix can be a sign of endometriosis of Douglas' space or infiltration of the tissue between vagina and bowel.

Rectal examination

A rectal examination can reveal blood or anal pain which can be signs of endometriosis and sometimes endometriosis in recto-vaginal septum can be palpated by recto-vaginal examination.

Further investigations

Vaginal/abdominal ultrasound

If your clinical diagnosis is secondary dysmenorrhea look for the following pathology:

Uterine fibroids Their echogenicity in ultrasound is a bit less than normal myometrium. They usually have well-defined borders to the myometrium and a capsule. Don't forget to do abdominal ultrasound as well as sometimes you will miss them in vaginal

ultrasound if they are big and outside the true pelvis.

Adenomyosis Adenomyosis is difficult to see with ultrasound and the diagnosis is often one of exclusion. The posterior wall of the uterus might be thicker than the anterior wall and you may find areas of hyperechogenicity in it. The uterus is often enlarged. Patients with adenomyosis often suffer from menstrual disorders together with dysmenorrhea.

Endometrioma Endometrioma often appear as tumors in the ovaries. If they are big enough you may see them on ultrasound. They are usually cystic with decreased or absent echogenicity and can resemble ovarian cysts or hydrosalpinx.

Tube-ovarian abscess, hydrosalpinx, pelvic abscess Pelvic infections can lead to abscesses in various sides. See Chapter 17 on STI for description of ultrasound findings.

Urine pregnancy test/urinalysis

Every patient with new pelvic pain should have a urine pregnancy test (UPT) to exclude ectopic pregnancy even if she claims she has had her period. Do urine analysis to exclude chronic urinary tract infection and schistosomiasis in endemic areas.

Erythrocyte sedimentation rate/white blood cell count

These can help confirm or exclude an infectious cause of pelvic pain such as tubo-ovarian masses or PID.

MANAGEMENT

The therapy for primary dysmenorrhea is very simple and cheap:

- For women with the desire for contraception a normal contraceptive pill (OCP) with <35mg estrogen and progesterone has shown some effect in many trials although the evidence is not firm due to the study designs³. You can also prescribe the OCP non-cyclic: the woman will not get a period and will not have dysmenorrhea.
- For all other patients with primary dysmenorrhea any non-steroidal anti-inflammatory drug (NSAID: aspirin, diclofenac, ibuprofen, indometacin) is very effective (level I evidence). There is no study showing the superiority of one

of those drugs above another NSAID, but all are more effective than placebo, paracetamol or butylscopolamine (Buscopan®). This is due to their mode of action: NSAIDs stop prostaglandin production, something which paracetamol or Buscopan cannot do.

- NSAIDs only lower production of prostaglandins. They do not reduce the effect of prostaglandin on the uterus. Once prostaglandins are in the circulation they will cause pain and NSAIDs will not work as effectively.

Usually women with primary dysmenorrhea know when pain starts and how long it usually stays and there are only few cycles where they won't experience pain. Thus, for a successful treatment and good compliance there are three important messages you have to give your patient:

- Always have your NSAIDs in stock and in reach when you are near your period.
- Always take your NSAIDs as early as you feel the pain coming. Don't wait until the pain is very strong because this is too late.
- Always take your NSAIDs as long as the pain usually stays.

It is important to prescribe drugs for 3 months and then see the patient again to assess together with her whether she saw some relief. If not, change to another NSAID or add an oral contraceptive if no pregnancy is planned.

Non-steroidal anti-inflammatory drugs for dysmenorrhea

- *Indometacin* tablets 25 mg t.d.s. for 48–72 h each menstruation.
- *Ibuprofen* tablets 400 mg t.d.s for 48–72 h each menstruation.
- *Diclofenac* tablets 50 mg t.d.s. for 48–72 h each menstruation.

The treatment of secondary dysmenorrhea differs according to the underlying causes. The pain will stop or decrease once the underlying cause is treated. You will find the respective therapies for each cause in their chapters and in Chapter 6 on chronic pelvic pain. In cases where no underlying pathology is found in a woman in later reproductive life, treat with NSAIDs as for primary dysmenorrhea. If there is no actual desire for pregnancy you can give COC continuous (see Chapter 6)

which will reduce the number of painful periods. In adult women, long-term contraception with progestins like depot injectables or implants lead to amenorrhea in 50% of women after the first year of use which also reduces the number of painful menstruations. An alternative that becomes increasingly available in resource-poor settings as well is the levonorgestrel intrauterine device called Mirena®. More than 80% of women will be amenorrheic after a year and before the prevalence of dysmenorrhea is reduced. The progestin-based long-term contraceptives can be used in primary dysmenorrhea as well, but a regular contraceptive pill is preferred in adolescents.

Don't forget that dysmenorrhea can have psychosomatic causes as well and assess the patient for this or refer to a competent provider in your facility. It is worthwhile talking to the psychiatric nurse of your hospital and sensitizing her for

psychosomatics, as a lot of gynecological problems have psychosomatic components and your service will greatly profit from a cooperation between these departments.

REFERENCES

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Further reading

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