Premenstrual Syndrome and Dysmenorrhea

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Dysmenorrhea

Dysmenorrhea is defined as pain associated with menstruation.

The term dysmenorrhea is derived from a Greek word: Dys- difficult, Menorrhea- monthly flow.

INCIDENCE

Pain is a subjective symptom .

It is now estimated that almost, 50%-70% of all women experience some degree of dysmenorrhea while 10% are incapacitated by it .

Classification or types

A. primary or spasmodic dysmenorrhea:
Synonyms – Essential/Intrinsic/Functional. It is defined as painful menstruation in the absence of pelvic pathology.

B. Secondary dysmenorrhea:
Synonyms-Extrinsic. congestive or organic.
Painful menses secondary to underlying organic disease of the pelvic organs.

Risk factors for primary dysmenorrhea

Menstrual Factors

1. Early Menarche.
2. Long and heavy menstrual flow .

Parity

The incidence of dysmenorrhea is lower in multiparous women.

Diet

Lower consumption of fish, eggs and fruits are believed to increase the incidence of dysmenorrhea .

Exercise

Various types of exercises were advocated to reduce dysmenorrhea. It was also seen that among athletes the incidence of dysmenorrhea was lower, probably due to anovulatory cycles.

Cigarette Smoking

Heavy smoking was found to be associated with increased duration of dysmenorrhea.

Psychological

Emotionally dependent and overprotected girls are more likely to develop dysmenorrhea.

It is also more commonly seen in girls whose mothers suffered from dysmenorrhea, which thereby makes the young girl more conscious, aware and paranoid of her forthcoming menses. Rather than being the cause of the pain, it is more likely that the psychological factors modify the pain causing depression and anxiety.

There are various theories for the etiology of primary dysmenorrhea :

1. The prostaglandin theory: This is the most widely accepted theory .

The three main prostaglandins concerned with menstruation are:

PGF2∝

PGE2

PGI2

The main effects of the prostaglandins on dysmenorrhea are as follows:

PGF2∝ is a potent vasoconstrictor and causes increased myometrial contractility.

PGE2 increases the sensitivity of the nerve endings.

PGI2 causes vasodilatation, decreases prior to menstruation leading to ischemia .

- Both PGE2 and PGF2∝ are present in high quantities in menstrual fluid .

- The evidence to support this theory is :Prostaglandin synthetase inhibitors are found to relieve dysmenorrhea, decrease menstrual fluid prostaglandin concentration and decrease uterine contractility.

2.Hormonal or endocrine theory :

Dysmenorrhea is characteristically seen in ovulatory cycles where progesterone plays a key role.

The evidence to support this theory is seen in the following facts:

- Anovulatory cycles are usually painless and that is why primary dysmenorrhea starts 1 to 2 years after menarche.
- OCP which abolish ovulation,improves dysmenorrhea dramatically.
- PG concentration is higher in secretory phase.

3. Myometrial contractility:

There is uterine hyperactivity at the time of menses.
The myometrial contraction thus puts a stretch on the uterine nerve fibres thus causing pain.

4. Myometrial ischemia:

In a normal menstrual cycle there is vasodilatation during the secretory phase which increases the tortuosity of the spiral arterys.

Just prior to the menses the spiral arteries undergo vasoconstriction. The decrease in uterine blood flow causes ischemia. Ischemia is a known cause of pain and thus this theory compares dysmenorrhea to the pain of angina.

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5. Uterine abnormalities:

Cervical obstruction:

In the earlier years ,cervical stenosis was believed to be the single most important cause of dysmenorrhea, (this is unlikely to be in anatomically normal uterus).

Other **Uterine abnormalities**

1. Redundant uterine horn
2. Imperforate hymen

6. Psychological:

Though dysmenorrhea is proven to be a physiological disorder, psychological factors modify pain or its intensity rather than causing it.

7 .Combination of the above:

This is the actual theory of dysmenorrhea where the pain is a result of the concerted occurrence of two or more factors, Progesterone withdrwal will alter prostaglandins which alter myometrial contractility and thus pain will occur. The psychological factors may play part in all of the above.

Pathogenesis

The pain pathway for dysmenorrhea is as follows:
Sympathetic fibres pass from the uterus through the posterior roots of T10, T11, Tl2 and L1 and from the cervix through S2, S3 and S4.

Thus uterine pain is referred to the cutaneous distribution of lower abdominal wall in front, groins, upper and medial aspects of the thighs nearly to the knees and posteriorly to the sacral area and buttocks while that from the cervix to the lower sacral area and buttocks.

Primary Dysmenorrhea

Clinical Feature

History

Age: usually seen among younger women .
Time of onset: 2-3 years after menarche
Duration of pain: It starts just prior to the menses lasting for 2 days.
Type of pain: Cramping pain in the above described areas.

Examination

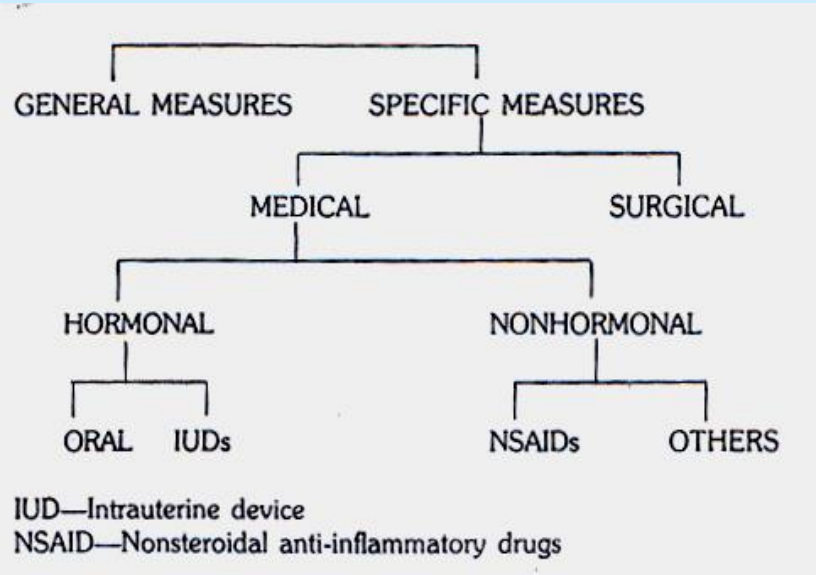
General and abdominal examination: usually normal
Local examination: essentially normal pelvic organs

- Associated symptoms
  - Nausea and vomiting
  - Fatigue
  - Diarrhea
  - Lower backache
  - Headache

Primary Dysmenorrhea

Management of dysmenorrhea

It is selected based on the severity of dysmenorrhea.



IUD—Intrauterine device
NSAID—Nonsteroidal anti-inflammatory drugs

General Measures

These include:

• Improvement in the nutritional state and dietary , The inclusion of fruits, eggs and fish.

•The use of phytoestrogens i.e. estrogens derived from plant and vegetable sources like soyabeans ,chick peas, etc. to reduce dysmenorrhea

- **Regular exercise:** 15 minutes daily between and during the periods.

- **Explanation regarding the condition and reassurance**: She must be told that it is a physiological symptom that could be relieved.

- **Palliative measures like laxatives and hot baths**: taking away the ischemic element as the cause of dysmenorrhea
- **Psychotherapy:** is a vital part and must be offered to all patients of dysmenorrhea.

Specific Measures

Medical management

1. Hormonal:

The conversion of an ovulatory cycle into an anovulatory one is the principle .

a. Oral hormonal therapy:

Combined oral contraceptive pills are the best agents

b. Hormonal intrauterine device (IUD):

The principle of action of this IUD is that the progesterone is maintained in low concentrations so the prostaglandin concentration will be reduced.

It may cause anovulation.

2. Nonhormonal

a. NSAlDs:

Nonsteroidal anti-inflammatory drugs or Prostaglandin synthetase inhibitors (PSI's) form the mainstay of the treatment of primary dysmenorrhea. Among the NSAIDs the following are important.

- Fenamates
  - Mefanamic acid.
  - Flufenamic acid.
  - Tolfenamic acid .
- Indomethacin .
- Ibuprofen.
- Naproxen sodium .

**NSAIDs can be started just prior to menses and continued for 5 days.

b. Others

i. **Calcium antagonists:** Calcium antagonists-relax the uterine muscle and reduce pain but they cause bradycardia and hypotension. The common ones used are Nifedepine,Verapamil and Diltiazem.

ii. **Beta adrenegics:** These increase the endometrial flow and thus decrease ischemic pain, they are not commonly used.

Surgical management

The surgical management could be conservative or radical, but are not commonly advocated except in severe cases.

Conservative surgeries

1. Dilatation of the cervix .
2. Injection of alcohol into the pelvic plexus , is rarely practiced.

Redical surgeries

-Cotte's operation or prelumbar sympathectomy : Resection of the hypogastric nerve.

-Laparoscopic uterine nerve ablaion.

*****Recent advances in Management**

1. Laser presacral neurectomy.
2. Lysine clonixinate for treatment of primary dysmenorrhea: this is a newer NSAID given in a dose of 125 mg tablets 4 times a day. It acts like an analegesic and antispasmodic.
3. Sublingual pirxican :in a fast in a dissolving form tablet has been used with minimum side and good efficacy.
4. Transdermal glyceryl trinitrate acts by relieveing myometrial contractions and thus acts as a uterine relaxant.
5. Rofecoxib a specific cycloxgenase 2 inhibitor in a dose of 25-50 mg every 24 hours inhibits prostaglandin synthesis.

Secondary Dysmenorrhea

Painful menses secondary to the following underlying organic diseases of the genital tract.

Etiology

1. Uterine abnormalities

1. Endometrial polyps
2. Adenomyosis

2. Infections
Pelvic inflammatory disease of any etiology.

3. Endometriosis
It is one of the commonest causes of secondary dysmenorrhea.

4. Foreign bodies Intrauterine device.

5. Iatrogenic
Cervical stenosis following surgery like cone biopsy.

6. Pelvic congestion.

7. Ovarian cysts (Endometrioma, luteal cyst, other cysts)

Clinical Features :

***Age*:** usually seen among older women in the 3rd -4th decade.
Time of onset: usually follows initial years of normal painless cycles.
***Duration of pain*:** onset few days prior to menses and continues throughout the cycle and even after cessation of menses.
Type of pain: continuous dull aching or dragging type of pain.

Associated symptoms

- Dyspareunia
- Infertility
- Abnormal uterine bleeding

On Examination :

General: look for anemia.
Abdomen: presence of a mass or doughy abdomen in cases of tuberculosis.

Per vaginum: enlarged uterus or uterine masses which altered the mobility of the uterus, fornicial tenderness due to adhesions or fornicial mass, e.g. chocolate cysts.

Management

Investigations: Routine investigations like :
Complete blood count to look for anemia or any evidence of infection seen as leucocytosis or raised erythrocyte sedimentation rate.
Urine microscopy to rule out any urinary tract infection.
Stool examination for worm infestation or amoebiasis causing colitis.

Specific investigations :

•Ultrasonography : to look for any pelvic mass, uterine anomaly or chocolate cysts.
•Hysteroscopy for small polyps which maybe missed on routine pelvic examination.
•Dilatation and curettage for endometrial pathology like uterine polyps, carcinoma of the endometrium, Tuberculosis of the endometrium or cervical stenosis.
• Laparoscopy for pelvic adhesions, uterine anomalies infections or ovarian mass.

Treatment of the cause and symptoms:

1. Medical – NSAIDs and OC pills.

2. Surgical:
    1. - Laparoscopic adhesiolysis for pelvic adhesions.
    2. - Cystectomy in cases of ovarian cysts including chocolate cysts.
    3. Myomectomy for complicated fibroids.
    4. Hysteroscopic polypectomy in case of uterine polyps.

Premenstrual Syndrome

Definition:

The cyclic appearance of one or more of a large constellation of symptoms just prior to menses, occurring to such a degree that lifestyle or work is affected followed a period of time entirely free of symptoms

Spectrum of Premenstrual Syndromes

Hacker & Moore: Hacker and Moore's Essentials of Obstetrics and Gynecology, 5th edition (2009), *Neville F Hacker, Joseph C Gambone, Calvin J Hobe*l. Chapter 36 (387).

PMS :

Is a group of physical, mood-related, and behavioral changes that occur in a regular, cyclic relationship to the luteal phase of the menstrual cycle and interfere with some aspect of the patient's life

PMDD:

Identifies women with PMS who have more severe emotional symptoms (such as anger, irritability, and depression) that may require more extensive therapy

Etiology

There is different theories for different group of symptoms like:

1. Low progesterone level in luteal phase .
2. High estrogen level in luteal phase .
3. Changing estrogen : progesterone ratio .
4. Increase aldosteron activity.
5. Increase adrenal activity .
6. Increase rennin-angiotensin activity.
7. Endogenous endorphin withdrawal .
8. Sub clinical hypoglycemia .
9. Vitamin deficiency.
10. Excessive prolactine secretion.
11. changes in catecolamines

The current evidence suggested that it is a neuroendocrine disorder caused by serotonergic dysfunction; which is triggered by hormonal factors.

?Abnormal metabolism of progesterone to it'metabolites, Allopregnenalone (anxiolytic) &pregnenalone (promote anxiety) play a role.

PMS/PMDD: Symptoms

Somatic Symptoms

- Breast tenderness
- Abdominal bloating – most common, occurs in 90%
- Headache
- Swelling of extremities
- Weight gain

PMS/PMDD: Symptoms

Affective Symptoms

- Depression
- Angry outbursts
- Irritability
- Anxiety
- Confusion
- Social withdrawal
- Decreased concentration
- Sleep disturbance
- Appetite change/food cravings

Prevalence:

Approximately 40% women report significant problems related to their cycles and about 2-10% report a degree of impact on work or lifestyle .

Diagnosis:

There are guidelines for the diagnosis of PMS as described by American Psychiatric Association that called PMS as luteal phase dysphoric disorder. It gaves the following criteria:

A: Symptoms are temporally, related to the menstrual cycle, beginning in the last week of the luteal phase and remitting after the onset of menses.

B: The diagnosis requires at least five of the following, and one of the symptoms must be either one of the first four:

1. Affective liability, e.g. sudden onset of being sad, tearful, irritable or angry.

2. Persistent and marked anger or irritability.

3. Marked anxiety or tension.

4. Markedly depressed mood, feelings of hopelessness

5.Decreased interest in usual activities.

6. Easy fatigability or marked lack of energy.

7. Subjective sense of difficulty in concentrating.

8. Marked change in appetite, over eating or food craving.

9. Hypersomnia or insomnia.

10.Physical symptoms such as breast tenderness, headache, edema, joint or muscle pain, and weight gain.

C. The symptoms had to interfere with work, usual activities, or relationships.

D. The symptoms are not an exacerbation of a psychiatric disorder.

PMS/PMDD: Differential Diagnosis

Rule out other diseases:

- Psychological disorders
  - Depression, Bipolar disorders, Personality disorders, Anxiety
- Gynecologic disorders
  - Dysmenorrhea, Endometriosis, Pelvic Inflammatory Disease, Perimenopause
- Endocrine disorders
  - Thyroid disease, Adrenal disorders, True hypoglycemia
- GI conditions
  - Inflammatory bowel disease, Irritable bowel syndrome
- Drug or substance abuse
- Chronic fatigue states

Treatment:

Most women who seek care for PMS have symptoms not related to the timings of menstruation.

Before the diagnosis is established, women must record symptom ratings daily for at least two – three full cycles, at the same time patient must be screened for other psychiatric disorders .

Women should be advised number of life style changes:

1. Elimination of caffeine from the diet.
2. Smoking cessation .
3. Regular exercise .
4. Regular meals and a nutritious diet .
5. Adequate sleep .
6. Stress reduction by reducing responsibilities and by relaxation exercises like yoga.

Complementary and alternative therapy

Dietary supplement :

Vit B6,Calcium,magnesium,Vit E and evening primrose oil, (It provides linoleic and gamma linoleic acid (precursor PGE)).

Herbal medicine:

fruit of the chaste tree.

Other alternative therapy:

Relaxation, aromatherpy….etc.

Hormaonal manipulation

1. Progesterone and progestogen: Depo-provera to suppress ovulation .

2. OCP: low dose is effective.

3.Transdermal oestradiol: 100 microgram 2/W with progestogen in the second half of the cycle. : 50% will be releaved, or ? Hormanal (Levonorgestrel releasing) loops.

Danazol: 200mg bd. 44% improved. Long term use? S/E and metabolic sequalae.

GnRH agonist :when oopherectomy is being considered , when sever symptom exist and there is resistant to other form of therapy. (Treatment can produce hypogonadotropic hpoganadism, i.e. medical oophorectomy), add tibolone.

Spironolactone: Steroid receptor antagonist with diuretic and antiandrogenic action.When somatic symptoms predominate.

Oopherectomy:sever symptoms. Some cases get better with TAH or endometrial ablasion.

Selective serotonin reuptake inhibition:

First line in moderate to sever PMS, (physical and somatic symptoms) , used in luteal phase or the whole cycle.

Can be taken throughout the cycle or during the luteal phase of the cycle.

Fluoxetine 20-60 mg qd

Sertraline 50-150 mg qd

Other centrally acting drugs :

Alprazolam (benzodiazepine), Venlafaxine (SSRIs and Noradrenaline)

Rarely response exceed 60%,In sever symptoms; multidisciplinary team is needed.

Others:

We treat specific symptoms :

- edema: give diuretics
- Dostinex: breast tenderness

Thank you