University Of Fallujah
College Of Medicine

Puerperium

Lecture: 7
Stage: 4th
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Learning objectives

1. Review main problems occurring in puerperium and their managements.

2. Know the post-partum breast pathology and their managements.

3. The approach to puerperal pyrexia.

Puerperium

The puerperium consists of the period following delivery of the baby and placenta to approximately 6 weeks postpartum. During the puerperium, the reproductive organs and maternal physiology return to the prepregnancy state.

Physiological changes in Puerperium

1. **Uterine involution**

Involution is the process by which the postpartum uterus, weighing about 1 kg, returns to its prepregnancy state of less than 100 g. Immediately after delivery, the uterine fundus lies about 4 cm below the umbilicus or, more accurately, 12 cm above the symphysis pubis. However, within 2 weeks, the uterus can no longer be palpable above the symphysis. Involution occurs by a process of autolysis, whereby muscle cells diminish in size as a result of enzymatic digestion of cytoplasm. This has virtually no effect on the number of muscle cells, Involution appears to be accelerated by the release of oxytocin in women who are breastfeeding, as the uterus is smaller than in those who are bottle-feeding.

Causes of delayed involution

- Full bladder
- Loaded rectum
- Uterine infection
- Retained products of conception
- Fibroids
- Broad ligament hematoma

2. **Genital tract changes**

In the first few days, the cervix can readily admit two fingers, but by the end of the first week it should become increasingly difficult to pass more than one finger, and certainly by the end of the second week the internal os should be closed. However, the external os can remain open permanently, giving a characteristic appearance to the parous cervix.

3. **Lochia**

Lochia is the blood-stained uterine discharge that is comprised of blood and necrotic decidua. Only the superficial layer of decidua becomes necrotic and is sloughed off. During the first few days after delivery, the lochia is red; this gradually changes to pink as the endometrium is formed, and then ultimately becomes serous by the second week. Persistent red lochia suggests delayed involution that is usually associated with infection or a retained piece of placental tissue. Offensive lochia, which may be accompanied by pyrexia and a tender uterus, suggests infection and should be treated with a broad-spectrum antibiotic.

Perineal complications

1. **Perineal discomfort:** 80 per cent complain of pain in the first 3 days after delivery, Discomfort is greatest in women who sustain spontaneous tears or have an episiotomy, but especially following instrumental delivery. Managements include local cooling (with crushed ice) and topical anaesthetic, such as 5 per cent lignocaine gel. Effective analgesia following perineal trauma can be achieved with regular paracetamol. If necessary, diclofenac given rectally or orally may also be added.

2. **Opening of repaired perineal tears and episiotomies**: is usually the result of secondary infection. Surgical repair should never be attempted in the presence of infection. The wound should be irrigated twice daily and healing should be allowed to occur by secondary intention. If there is a large, gaping wound, secondary repair should only be performed when the infection has cleared.

3. **Bladder function:** voiding difficulty is not uncommon after childbirth, especially if regional anaesthesia has been used (bladder may take up to 8 hours to regain normal sensation). In order to minimize the risk of over-distension of the bladder in women undergoing a caesarean section under regional anaesthesia, a urinary catheter may be left in the bladder for the first 12–24 hours. Women who have undergone a traumatic delivery, such as a difficult instrumental delivery, or who have suffered lacerations or a vulvovaginal hematoma, may find it difficult to void because of pain or periurethral oedema. The distended bladder should either be palpable as a suprapubic cystic mass or it may displace the uterus laterally or upwards, thereby increasing the height of the uterine fundus.

4. **Bowel function:** constipation is a common problem in the puerperium. This may be due to an interruption in the normal diet and possible dehydration during labour. Advice on adequate fluid intake and increase in fibre intake may be all that is necessary. However, constipation may also be the result of fear of evacuation due to pain from a sutured perineum, prolapsed haemorrhoids or anal fissures.

5. **Puerperal pyrexia:** Significant puerperal pyrexia is defined as a temperature of 38ºC or higher on any two of the first 10 days postpartum, exclusive of the first 24 hours as mildly elevated temperature is not uncommon in the first 24 hours, except for women delivering by Caesarean section, when a wound infection should be considered, but any pyrexia associated with tachycardia merits investigation. Common sites associated with puerperal pyrexia include chest, throat, breasts, urinary tract, pelvic organs, Caesarean or perineal wounds and legs.

- **Chest complications:** chest complications are most likely to appear in the first 24 hours after delivery, particularly after general anaesthesia. Atalectasis may be associated with fever and can be prevented by early and regular chest physiotherapy. Aspiration pneumonia (Mendleson's syndrome) must be suspected if there is wheezing, dyspnoea, a spiking temperature and evidence of hypoxia.
- **Genital tract infection:** genital tract infection following delivery is referred to as puerperal sepsis. Genital tract sepsis accounted for 14 per cent of direct causes of maternal death. A mixed flora normally colonizes the vagina with low virulence. Puerperal infection is usually polymicrobial and involves contaminants from the bowel that colonize the perineum and lower genital tract.
  Following delivery, natural barriers to infection are temporarily removed and therefore organisms with a pathogenic potential can ascend from the lower genital tract into the uterine cavity. Placental separation exposes a large raw area equivalent to an open wound, and retained products of conception and blood clots within the uterus can provide an excellent culture medium for infection.

Risk factor of puerperal infection

- Antenatal intrauterine infection
- Caesarean section
- Cervical cerclage for cervical incompetence
- Prolonged rupture of membranes
- Prolonged labour
- Multiple vaginal examination
- Instrumental delivery
- Manual removal of the placenta
- Retained products of conception
- Non-obstetric, e.g. obesity, diabetes, human immunodeficiency virus (HIV)

Symptoms of puerperal infection

- ❖ Malaise, headache, fever, rigors.
- ❖ Abdominal discomfort, vomiting and diarrhea.
- ❖ Offensive lochia.
- ❖ Secondary PPH.

Signs of puerperal infection

- ❖ Pyrexia and tachycardia.
- ❖ Uterus – boggy, tender and larger.
- ❖ Infected wounds – Caesarean/perineal.
- ❖ Paralytic ileus.

Investigation of puerperal infection

- Full blood count: Anaemia, leukocytosis, thrombocytopenia.
- Urea and electrolytes: Fluid and electrolyte imbalance.
- High vaginal swabs: infection screen and blood culture.
- Pelvic ultrasound: retained products, pelvic abscess.
- Clotting screen: disseminated intravascular coagulation.
- Arterial blood gas: Acidosis and hypoxia (shock).

The common methods of spread of puerperal infection are as follows:

1. An ascending infection from the lower genital tract or primary infection of the placental site may spread via the fallopian tubes to the ovaries, giving rise to a salpingo-oophoritis and pelvic peritonitis. This could progress to a generalized peritonitis and the development of pelvic abscesses.
2. Infection may also spread directly into the myometrium and the parametrium, giving rise to a metritis or parametritis.
3. Infection may also spread to distant sites via lymphatics and blood vessels. This could give rise to a septic thrombophlebitis, pulmonary infections or a generalized septicaemia.

Treatments of puerperal infection

Mild to moderate infections can be treated with a broad-spectrum antibiotic, e.g. co-amoxiclav or a cephalosporin, such as cefalexin, plus metronidazole. Depending on the severity, the first few doses should be given intravenously.

The breasts

Colostrum

Colostrum is a yellowish fluid secreted by the breast that can be expressed as early as the 16th week of pregnancy, but is replaced by milk during the second postpartum day. Colostrum has a high concentration of proteins but contains less sugar and fat than breast milk. The proteins

are mainly in the form of globulins, particularly immunoglobulin (Ig) A, which plays an important role in protection against infection. Colostrum is also believed to have a laxative effect, which may help empty the baby's bowel of meconium.

Lactation

Various hormones, such as estrogen, progesterone, human chorionic gonadotropin (hCG), cortisol, insulin, prolactin, and placental lactogen, play an important role in preparing the breasts for lactation. At delivery, two events are instrumental in initiating lactation. The first is the drop in placental hormones, particularly estrogen. Before delivery, these hormones interfere with the lactogenic action of prolactin. Second, suckling stimulates the release of prolactin and oxytocin. The oxytocin causes contraction of the myoepithelial cells in the alveoli and milk ducts to release milk.

Blood-stained nipple discharge

Blood-stained nipple discharge of pregnancy is typically bilateral and believed to be due to epithelial proliferation. As the condition is self-limiting, no investigation or treatment is necessary, and the woman should be reassured.

Painful nipples

The nipple can become very painful if a fissure develops giving rise to 'cracked nipples'. The cause is usually attributed to poor positioning of the baby on the breast (The mouth should be placed over the nipple and areola), although thrush (candidiasis) may also cause soreness. Treatment involves resting the affected nipple and manually expressing milk. Breastfeeding should then be reintroduced gradually.

Galactocele

A galactocele is a retention cyst of the mammary ducts following blockage by secretions. It is identified as a fluctuant swelling with minimal pain and inflammation. It usually resolves spontaneously but may also be aspirated; with increasing discomfort, surgical excision may become necessary.

Breast engorgement

Engorgement of the breasts usually begins by the second or third postpartum day and if breastfeeding has not been effectively established, the over-distended and engorged breasts can be very uncomfortable. Breast engorgement may give rise to puerperal fever of up to 39ºC. the treatment of breast engorgement includes manual expression, firm support, applying an ice bag, but allowing the baby easy access to the breast is the most effective method of treatment and prevention.

Mastitis

Inflammation of the breast is not always due to an infective process. Mastitis can occur when a blocked duct obstructs the flow of milk and distends the alveoli. If this pressure persists, the milk extravasates into the perilobular tissue, initiating an inflammatory process. The affected segment of the breast is painful and appears red and oedematous. Flulike symptoms develop associated with a tachycardia and pyrexia.
In infective mastitis, the pyrexia develops later and persists for longer contrast to fever due to breast engorgements.
Symptoms include rigors, fever, pain and reddened, swollen breasts. The most common infecting organism is Staphylococcus aureus, which is found in 40 per cent of women with mastitis.
The most common sources of infection are, first, from the baby's nose or throat and, second, from an infected umbilical cord.

Management
Isolation of the mother and baby, ceasing breastfeeding from the affected breast, expression of milk either manually or by electric pump, and microbiological culture and sensitivity of a sample of milk. Flucloxacillin can be commenced while awaiting sensitivity results.
About 10 per cent of women with mastitis develop a breast abscess. Treatment is by a radial surgical incision and drainage under general anaesthesia.

Lactational amenorrhoea
The exact mechanism of lactational amenorrhoea is poorly understood, but the most may be due to inhibition of the normal pulsatile release of luteinizing hormone from the anterior pituitary. Breastfeeding therefore provides a contraceptive effect, in patient with postpartum amenorrhoea while fully breastfeeding her baby has a less than 2 per cent chance of conceiving in the first six months.