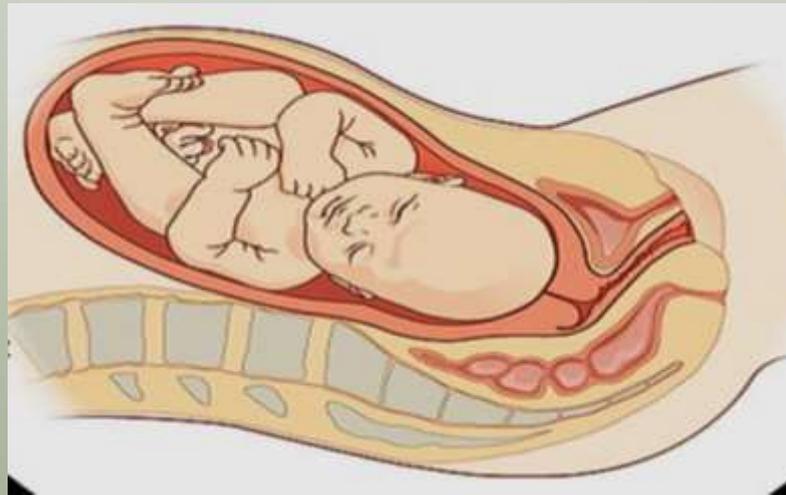




11. PARTURITION & LACTATION.



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Labour (Parturition)

Parturition (childbirth) is the process by which the fetus is delivered at full term (about 280 days after the last menstruation preceding conception) through normal birth canal .

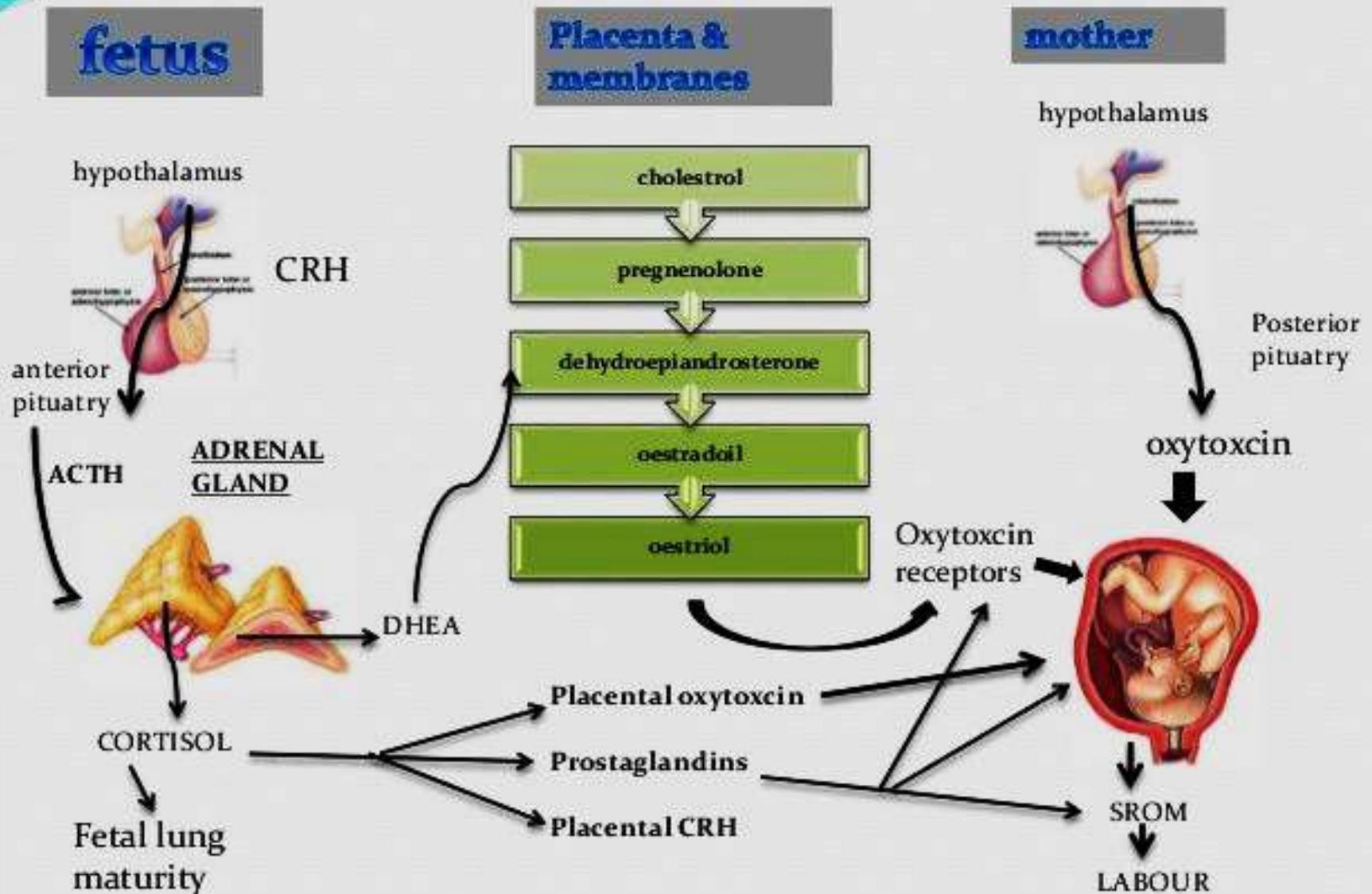
At the termination of pregnancy , the uterus becomes progressively , more excitable until finally gives rhythmic contractions . why pregnancy terminates at a certain fairly definite time is still unknown , so the **mechanism of parturition** :

1- Hormonal factors there is :

- At full term ,

- a) **Placental changes** take place with relative increase in estrogen / progesterone ratio , this partially responsible for initiation of uterine contraction by oxytocin .
- b) **Increase responsiveness of uterus** to oxytocin and increase oxytocin secretion evidenced by prolongation of labour in hypophysectomized animals .

PHYSIOLOGY OF LABOUR:



2- Mechanical Factors :

- Stretch of **smooth muscles** of wall of uterus increases their contractility .
- Stretch of **cervix** by head of fetus initiates two positive feedback mechanisms as it stimulates the stretch receptors in the wall of cervix and nerve impulses travel into the spinal cord and cause :

- a) Uterine contraction via **neural reflexes** → descend of head of fetus .
- b) Release of **oxytocin hormone** from maternal posterior pituitary that produces strong uterine contraction more descend of head of fetus more stretch of cervix → two positive feedback mechanisms and so on .

3- Contraction of abdominal muscle :

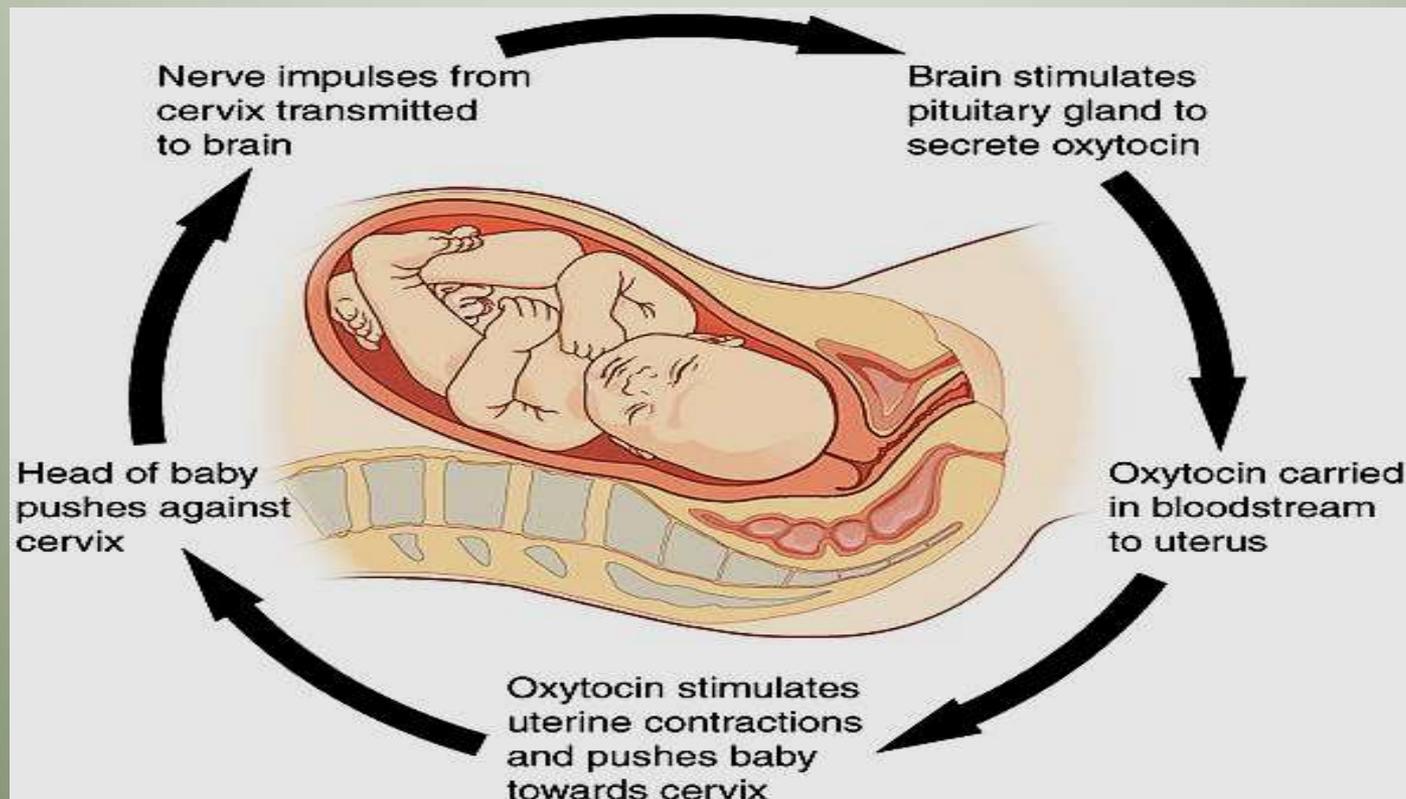
Initiated by pain signal from uterus and from birth canal → neurogenic reflex to spinal cord abdominal muscles → contraction increase intra abdominal pressure that help labour .

4- Role of the fetus : by the contraction of the uterine musculature , pressure is exerted on the fetus , the pressure on the fetus head as a stress and with other undefined stimuli stimulate the fetal hypothalamus to release CRF → ACTH from the fetal anterior pituitary gland → cortisol from fetal adrenal cortex which causes :-

- a- A **fall** in the placental **progesterone** concentration → ↑ uterine contractility .
- b- An **increase** in the secretion of **prostaglandins** → powerful uterine contraction .
- c- There is release of **fetal oxytocin** → reach maternal blood → ↑ uterine contraction .

-During **10-45** minutes after delivery of fetus , contraction of uterus → shearing movement with placenta → separation of placenta from it's implantation site → autolysis of placental site → vaginal discharge (lochia) which is firstly bloody and then serous in nature , then the endometrium is re-epithelized and become ready for normal non gravid sex life again .

N.B: lactation → marked involution as lactation suppress GnTH and ovarian hormones .



THE MAMMARY GLANDS

-The breast or mammary glands exist in both sexes but in the male they remain in a rudimentary state (formed of duct system, no alveoli) , ie before puberty the nipples and potential breast tissue appear similar in both sexes .

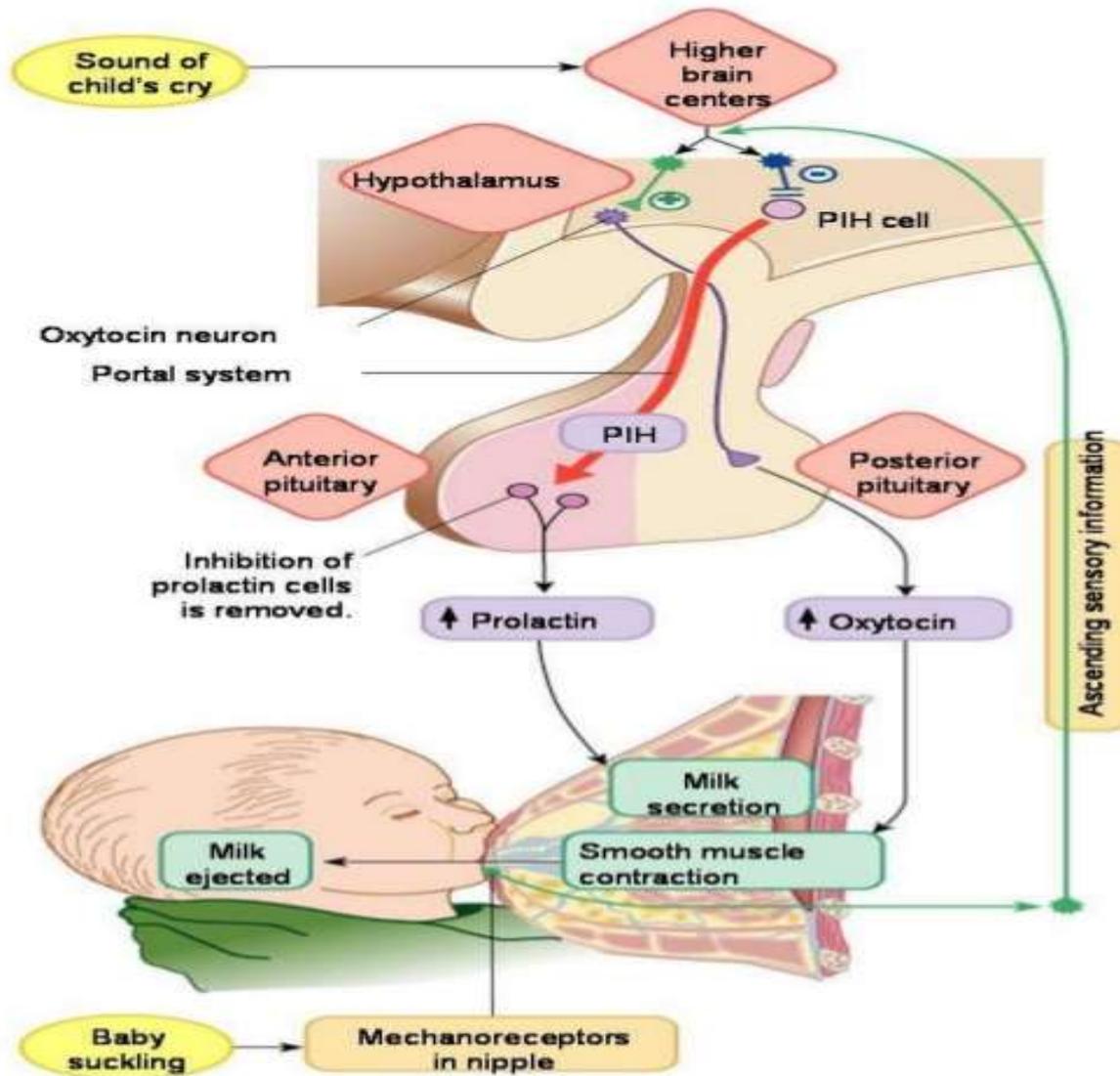
-In the female the breasts start to enlarge with the onset of puberty under the influence of the female hormones (**estrogen and progesterone**) they increase in size during pregnancy and especially during lactation.

-During pregnancy the breasts enlarge under the combined influence of placental lactogen , estrogen and progesterone .

After menopause **atrophy** of alveoli , the inter-lobular connective tissue and the ducts occurs , leading to reduction in the size of mammary gland .

• **Lactation :**

The initiation of milk production (lactogenesis) is under hormonal control of the anterior pituitary via LTH (**prolactin**) hormone . true milk production is established about two days after delivery , continued lactation is dependent on **suckling** which initiates the milk ejection reflex and maintained prolactin secretion , with continued suckling , lactation can go on for years , and during this time the raised prolactin levels to some extent depress ovulation and fertility .



Hormonal control of mammary gland :

- 1- Estrogen :** Stimulates proliferation of the duct system and nipples . It also increases blood flow to the breast . it is responsible for pigmentation of areolas .
- 2- Progesterone ;** Stimulates the formation of mammary gland acini .
- 3- Prolactin** Secreted by the anterior pituitary gland . It stimulates formation and secretion of milk by the acini .
- 4- Oxytocin :** It squeezes the milk from the acini .
- 5- Adrenal corticoids & Thyroxine & Insulin :** they are needed for the metabolic activities of the gland , no specific role in milk production .
- 6- Growth hormone :** is necessary for mamary gland development in response to other hormones .

• Gynaecomastia :

It is a condition in which some enlargement of the breast tissue occurs in **males** at puberty or adult :

At Puberty : It is a physiological condition in which the boys at puberty develop a tender sub-areolar plaque 1-2 cm in diameter which shrinks slowly and never persists for more than a few years .

Adult Type : It is a pathological condition in which the breast enlarges due to many causes of which :

- Primary testicular failure . -Liver disease . -Bronchial carcinoma . -Endocrine diseases.

- Lactation does not occur during pregnancy because estrogen and progesterone block the action of prolactin on the breast.
- After parturition, estrogen and progesterone levels decrease abruptly and lactation occurs.
- Lactation is maintained by suckling, which stimulates both oxytocin and prolactin secretion.
- **Ovulation is suppressed** as long as lactation continues because **prolactin** has the following effects:
 - a. **Inhibits** hypothalamic **GnRH** secretion.
 - b. **Inhibits the action of GnRH** on the **anterior pituitary** and consequently inhibits LH and FSH secretion.
 - c. **Antagonizes the actions** of LH and FSH on the ovaries.

Thank You