Læringsmål patologi modul 6

Subject: Pathology

Learning goals
Upon completion of this module, the student should have theoretical knowledge about the most common pathological processes within obstetrics, gynecology and pediatrics, and has acquired an understanding of the diagnostic processes of these conditions.

Learning outcomes:

Knowledge

At the end of this module, it is expected that the student would be familiar with the following:

- The most common diseases of the vulva (lichen sclerosus et atrophicus, condyloma accuminatum, vulvar intraepithelial neoplasia (VIN), and squamous cell carcinoma).
- The different types of human papillomavirus (HPV), understanding of its life cycle and the molecular mechanism by which HPV causes premalignant and malignant disease in the female genitalia
- The screening program for cervical neoplasia
- Vaccines and the vaccination program against HPV-infection.
- Premalignant and malignant lesions of the uterine cervix, and their risk factors

- The most common conditions of the myometrium, including leiomyomas, leiomyosarcoma and adenomyosis, as well as the extra-uterine form of the latter, endometriosis.
- Endometrial hyperplasia and carcinoma, including recognition of the predisposing factors and pathogenesis of the different histological types of carcinoma

- The etiology of the different ovarian cysts, including polycystic ovarian syndrome
- The classification of ovarian tumors, both according to cells/tissue of origin and grade (benign, borderline, malignant), as well as recognition of the most common types within each group.
- The theories regarding the origin of the different histotypes of adnexal carcinomas.

- The pathogenesis of pathological pregnancies, including spontaneous abortions, ectopic pregnancies with its predisposing factors, and molar pregnancies
- The pathology behind placental dysfunction, including maternal vascular pathology, placental inflammations and fetal vascular pathology
- Placental implantation disorders
- The placenta in multiple pregnancies, including twin-to-twin transfusion
- The most common placental neoplasms

- Cryptorchidism, its etiology and associated diseases
- The major types of testicular germ cell tumors and the malignancy risks according to age
- The pathology of premature lungs.
- The most common pediatric malignancies, and the major differences between them and malignancies in adults

Skills

At the end of this module, it is expected that the student should be able to:

- Recognize a pathological process from normal anatomy in the female and male genitals, and in children
- Describe and diagnose certain obstetric, gynecologic and pediatric diseases microscopically, with emphasis on the histological slides presented in the microscopy course
- Read and interpret a pathology report from any of the above mentioned organs

General competence

At the end of this module, it is expected that the student should have acquired an understanding for the diagnostic process by the pathologists and recognize the importance of correct handling and fixation of tissues and cells for the quality of the diagnosis.

Core syllabus in Pathology – 9th Semester – Female Genitalia / Testicles

FEMALE GENITALIA

Malformations

Pathology of the vulva

Pathology of the vagina

Carcinoma cervicis uteri

Adenomyosis

Endometriosis

Dysfunctional bleeding

Endometrial hyperplasia

Endometrial carcinoma

Leiomyomas

Ovarian cysts

Polycystic ovarian syndrome (PCO) (Stein-Levethal syndrome)

Ovarian tumours
Epithelial – germ cell – stromal

Malformations

Defect fusion of the müllerian (paramesonephric) ducts or lack of regression of the mesonephric ducts – fusion occurs at about the 7th week

Rudimentary horn

Uterus didelphys

Uterus bicornis (unicollis)

Pathology of the vulva

Lichen sclerosus et atrophicus

Leukoplakia

Vulvar intraepithelial neoplasia (VIN)

Squamous cell carcinoma (SCC)

Condyloma accuminatum

Pathology of vagina

Vaginal intraepithelial neoplasia (VIN)

Squamous cell carcinoma (SCC)

Embryonal rhabdomyosarcoma
(sarcoma botryoides in children)

Carcinoma cervicis uteri

Disposing factors:

- Early sexual debut
- Several partners
- Human papillomavirus (HPV) – type 16, 18, 31, 33, 35
- Herpes simplex virus (HSV) – type 2

3-5% of cervical exfoliative cytology have cytopathological changes caused by HPV.
Subtypes HPV 16, 18, 31, 33, 35 are associated with cervical dysplasia and cancer, with up
to 90% association in some studies.
HPV 16 and 18 are most strongly associated with cervical dysplasia and cancer, while HPV 6 and 11 are associated with condylomata accuminata and to a very small extent dysplasia.
Other HPV subtypes are associated with squamous cell carcinoma of other localisations.
HPV virus can give rise to malignant transformation in vitro.

Adenomyosis

Growth of stratum basalis into the myometrium, 2-3 mm deeper than normal.
Gives rise to menorrhagia, dysmenorrhoea, dyspareunia, problems occur primarily premenstrual.

Endometriosis

Growth of functional endometrium in an abnormal location, in other words outside the uterus
Gives rise to infertility and dysmenorrhoea
Affects 10% of all women
Common sites: Ovaries, uterine ligaments, rectovaginal septum, peritoneum, scar after sectio.

Dysfunctional bleeding

Abnormal bleeding without any known organic disease

1) anovulatory cycles – results in increased and longer lasting oestrogen secretion
2) deficient corpus luteum
3) “irregular shedding” (persistent corpus luteum)
Endometrial biopsy in the case of infertility is recommended.

Endometrial hyperplasia

1) Simple hyperplasia
2) Complex hyperplasia
3) Atypical hyperplasia
2 and 3 are precancerous conditions
Cause: Increased absolute/relative – oestrogen stimulation – most often at menarche or menopause

Endometrial carcinoma

Increased incidence – 10% of all cancers in women
Most common between 55-66 years of age, seldom in women under 40 years old
Associated factors:
- Obesity
- Diabetes mellitus
- Hypertension
- Infertility

Pathogenesis: Increased oestrogen stimulation of the endometrium leads to hyperplasia and carcinoma
Factors which favour carcinoma development:
- Oestrogen-producing tumours
- Hyperplasia with atypia
- Anovulatory cycles
- High doses of exogenous oestrogen

Paradox: Incidence top at menopause, when oestrogen level is decreased
Carcinomas:
- Adenocarcinomas (85%)
  - Adenoacanthoma
  - Adenosquamous carcinoma
- Clear cell carcinoma
- Serous carcinoma

Approx. 70% 5-year survival in patients with adenocarcinoma

Leiomyomas

Common – affecting 1 in every 4 women
No transformation into sarcoma

Leiomyosarcoma
Stromal sarcoma

Ovarian cysts

Lutein cyst (2-3 cm)
Parovarian cysts – originate from the mesonephros, can become as large as a small child’s head

Polycystic ovarian syndrome (PCO) (Stein-Leventhal syndrome)

Bilateral polycystic ovaries
Symptoms: Secondary amenorrhoea, obesity and hirsutism

Epithelial ovarian tumours

Arise from the coelomic epithelium, serous (40%) and mucinous (10%)

- Serous cystadenomas 25%
- Serous borderline tumours 10%
- Serous cystadenocarcinomas 65%
- Mucinous cystadenomas 75%
- Mucinous borderline tumours 10%
- Mucinous cystadenocarcinomas 15%

- Endometroid carcinoma
  Brenner tumour
  Clear cell tumour

Germ cell tumours

- Teratoma
  Benign, mature – dermoid cyst
  Malign, immature
- Dysgerminoma
- Endodermal sinus tumour (yolk sac tumour)
- Choriocarcinoma
- Embryonal carcinoma

Ovarian stromal tumours

- Granulosa-theca cell tumours
  Can produce oestrogens – granulosa cell tumours have the potential to become malignant, theca cell tumours do not
  Pubertas precox or at menopause
- Fibromas (Meigs syndrome)
- Sertoli-Leydig cell tumours (androblastomas)
  Seldom malignant (5%), virulization
- Leydig cell tumours

GESTATIONAL AND PLACENTAL DISEASE

Spontaneous abortion

Ectopic pregnancy

Placenta accreta

Twin placentas (twin-twin transfusion)

Placental inflammations and infections

Preeclampsia / eclampsia

Hydiatiform mole

Invasive mole

Choriocarcinoma

Placental infections

Ascending infection
Transplacental (hematogenous) infection

Preeclampsia /eclampsia

Pathogenesis:
- placental ischemia
- hypertension
- DIC

Hydiatiform mole (*blæremola*)

Complete (diploid)
Incomplete (triploid)
Characterized by cystic swelling of the chorionic villi and trophoblastic proliferation

Invasive mole

Locally destructive tumour, invasion of the myometrium and parametrial tissue

Choriocarcinoma

Malignant epithelial neoplasm of trophoblastic cells derived from any form of previously normal or abnormal pregnancy – 50% from a hydatiform mole
May also occur in the ovary and in the testis

TESTICLES

Congenital Anomalies

Atrophy

Cryptorchidism

Testicular tumours

Male infertility

Congenital Anomalies

Klinefelters syndrome (improper development of the testes)
47 XXY (variants)
1/850 births
- common cause of sterility
- predisposition for malignant germ cell tumours (25% of improperly developed testicles)

True hermaphrodism
Presence of both male and female gonads (ovotestis), XX/XXY

Pseudohermaphrodism
Male and female
Ovaries or testicles in combination with outer genitalia of the opposite sex
1) Adrenogenital syndrome
2) Testicular feminisation

Testicles **atrophy** in the case of:
- Cryptorchidism
- Inflammation (post inflammatory)
- Injury
- Hypopituitarism
- Irradation
- Progressive atherosclerotic narrowing in old age
- Klinefelter syndrom and other chromosomal disorders

Cryptorchidism

Unilateral in most cases , but may be bilateral in 25% of the patients
Testicles atrophy after puberty, give rise to infertility and carry an increased risk for malignant germ cell tumours, which also can develop contra laterally
Often combined with continuation break in the vas deferens

Testicular tumours

Germ cell tumours (95%)
15-35 years of age
Predisposing factors:
- Cryptorchidism
- Genetic factors / improper development of the testes

Seminoma (40%)
Embryonal carcinoma (20%)
Endodermal sinus tumor (yolk sac tumour)
Choriocarcinoma
Teratoma
- mature
- immature
- with malignant transformation

Mature teratomas most common in children – carries a good prognosis
In adults often small carcinoma foci – carries a more dubious prognosis
Mixed tumours (40%)

Stromal tumours (5%)
Leydig cell tumours – can cause masculinization or feminisation, most often benign

Sertoli cell tumours
Almost always benign, rarely hormone-producing

March 2003 Ole Petter F.Clausen

Subject: Pathology **Module 6**

Learning goals

Upon completion of this module, the student should have theoretical knowledge about the most common pathological processes within obstetrics, gynecology and pediatrics, and have acquired an understanding for the diagnostic processes of these conditions.

Learning outcomes

Knowledge

At the end of this module, it is expected that the student should be able to:

- Describe the most common malformations of the uterus and explain the embryology behind its development.
- Describe the most common skin diseases of the vulva.
- Describe the different types of human papillomavirus (HPV), understand its life cycle and the molecular mechanism by which HPV causes premalignant and malignant disease in the female genitalia
- Describe the premalignant and malignant lesions of the uterine cervix, and their risk factors
- Describe the most common conditions of the myometrium
- Describe endometriosis and the different etiologic theories
- Describe endometrial hyperplasia and carcinoma, and recognize the predisposing factors and pathogenesis of the different histological types of carcinoma
- Describe the aetiology of the different ovarian cysts, including polycystic ovarian syndrome
- Describe the classification of ovarian tumours, both according to cells/tissue of origin and grade (benign, borderline, malignant), and recognize the most common types within each group.
- Describe the pathogenesis of pathological pregnancies, including spontaneous abortions, ectopic pregnancies and molar pregnancies
- Describe the pathology behind placental dysfunction, including maternal vascular pathology, placental inflammations and foetal vascular pathology
- Describe the placental implantation disorders
- Describe the placenta in multiple pregnancies
- Describe the most common placental neoplasms
- Describe cryptorchidism, its aetiology and associated diseases
- Describe the major types of testicular germ cell tumours and the malignancy risks according to age
- Describe the pathology in lungs of premature born children.
- Describe the most common paediatric malignancies and explain their major differences compared to malignancies in adults

Skills

At the end of this module, it is expected that the student should be able to

- Recognize a pathological process from normal anatomy in the female and male genitals, and in children
- Describe and diagnose certain obstetric, gynaecologic and paediatric diseases microscopically, with emphasis on the histological slides presented in the microscopy course

- Read and interpret a pathology report from any of the above mentioned organs

General competence

At the end of this module, it is expected that the student should acknowledge the role of pathologists in the diagnostic process of benign and malignant diseases, and recognize the importance of correct handling and fixation of tissues and cells for the quality of the diagnosis.