جامعة الملك سعود
King Saud University

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Summary file

Made by Sara Alaidarous ,
Sara Alobaid, Hessah Alalyan

Pathology

Polycystic Ovarian Disease and Endometriosis

439

Revised & Approved

Bassam Alasmari
Rania Almutiri

اللهم لا سهل الا ماجعلته سهلا و انت
تجعل الحزن إذا شئت سهلا

Color index

- Important
- Doctor's note
- Extra info
- Main text

Objective

01 Know the clinicopathologic features of endometriosis with special emphasis on: definition, typical sites and theories behind its pathogenesis

02 Understand the clinical manifestations and pathologic features of polycystic ovarian disease

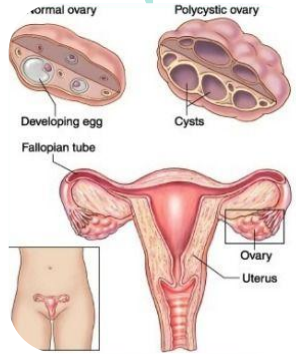
Overview

Lecture Content

- Polycystic ovarian disease
  - Introduction
  - Pathophysiology
  - Clinical presentation
  - Morphology
  - Risk Associated with PCOS
  - Treatment
- Endometriosis
  - Introduction
  - Locations
  - Clinical presentation
  - Possible Causes
  - Morphology
  - Complication
- Adenomyosis
  - Introduction
  - Clinical presentation
  - Prognosis
  - Morphology

Polycystic ovarian disease متلازمة تكيس المبايض

Introduction pcos is a very important topic, you have to understand it and memorize it.



- **PCOD is characterized by:**
  - Radiological feature : **Bilateral** enlargement of ovaries by multiple small cysts
  - Clinical feature : Chronic anovulation , irregular period, infertility
  - Clinical manifestations secondary to excessive production of **estrogens** and mainly **Androgens** (biochemical test)
- Other names for this disease include polycystic ovarian syndrome and **Stein-Leventhal syndrome**

Pathophysiology

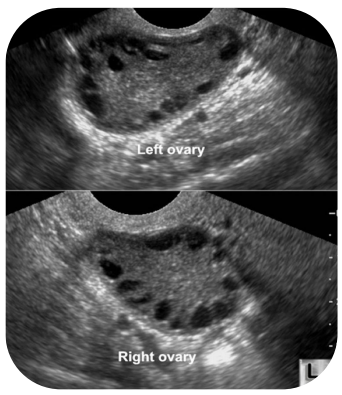
Unknown but related to **Hypothalamus-pituitary dysfunction** → Over secretion of **luteinizing hormone (LH)** → LH stimulates the ovary to produce **excess androgens** → Secretion of **(FSH) is inhibited** → Suppression of ovulation and formation of cystic follicles in the ovary

So, Patients have:

- High levels of LH - Low FSH - High testosterone (mainly) - High estrogen[1].

Clinical presentation

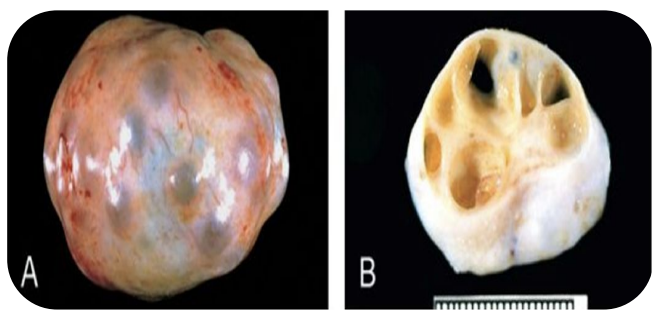
It usually affects young women (between 15 and 30 years) and they present with:



- Secondary **amenorrhea** with anovulation.
- **Oligomenorrhea** or irregular menses.
- **Virilism**[2] (due to increased androgenic masculinizing hormones).
- **Infertility** due to failure of the ovulation
- **Hirsutism** due to increase level of androgen
- **Obesity**
- **Acne** (due to excess androgens)
- Hyperlipidemia & Dyslipidemia
- Diabetes

Morphology

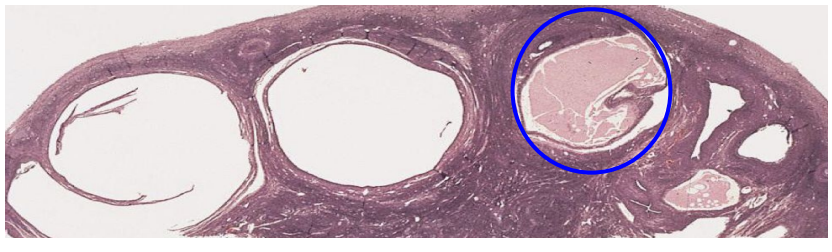
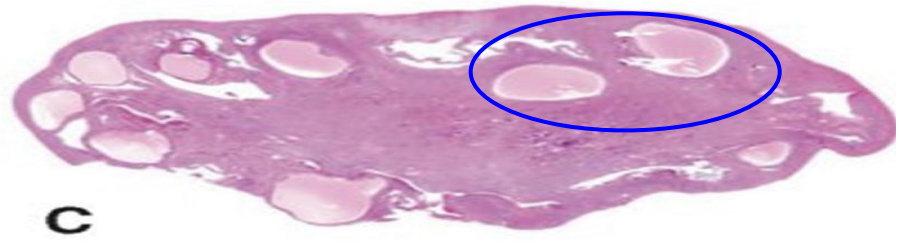
- **Gross**
  - **A**: Enlarged ovary and numerous nodular elevations of clear cysts.
  - **B**: Cut surface: **Subcortical cystic** follicles in the ovary.



1- follicles that underwent cystic dilation and degeneration secrete estrogen
2- only in severe cases along with hirsutism and voice hoarseness .

Polycystic ovarian disease

Microscopic

Ovaries	Endometrium
❖ 2 times the normal size with many **subcortical cysts** measuring 0.5 to 1.5 cm in diameter. ❖ The outer stromal portion of the **cortex is thickened** and **fibrotic** with multiple cysts underneath. ❖ The follicular cysts usually have a **prominent theca interna** layer. ❖ Absent Corpora lutea[1].	❖ Chronic anovulation → unopposed estrogen → hyperestrogenic state → endometrium may develop **estrogen associated hyperplasia** (pre-neoplastic) and show any of the following: ➢ Simple with or without atypia. ➢ Complex hyperplasia, with or without atypia. ➢ Endometrial adenocarcinoma.
	

Risks associated with PCOD

- ❖ Endometrial hyperplasia & cancer.
- ❖ Insulin resistance → Type II diabetes.
- ❖ Depression, Anxiety.
- ❖ **Metabolic syndrome:** Dyslipidemia, weight gain, hypertension, CVD, strokes.
- ❖ Autoimmune thyroiditis.
- ❖ Miscarriage.
- ❖ **Acanthosis nigricans:** patches of darkened skin under the arms, in the groin area and on the back of the neck.
- ❖ Infertility

Treatment

- ❖ The goal of treatment is to **initiate ovulation** and regulate the menstrual cycle to restore fertility by:
  - ➢ Medically: diabetic drugs (metformin) and treatment with drugs such as: clomiphene or hCG (human chorionic gonadotropin)
  - ➢ Surgically: Reduction[2] of ovarian volume by wedge resection of the ovaries
- ❖ The endometrial changes (endometrial hyperplasia) usually regress once ovulation is achieved , if the endometrial changes associated with endometrial Adenocarcinoma it will not regres (irreversible)

1. No ovulation occurs, women with PCOD have anovulatory cycles. Corpus luteum: collection of fibrous tissue (scar).
2. In severe or resistant cases

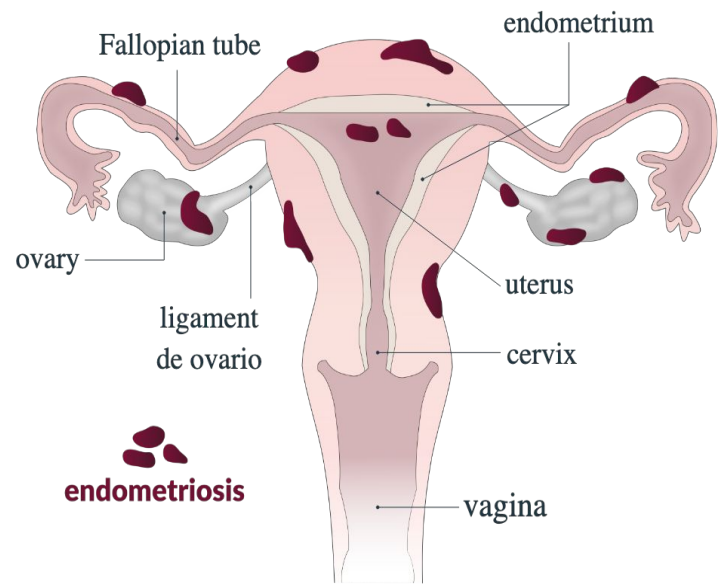
Endometriosis بطانة الرحم الهاجرة

Introduction

- Normally endometrial glands and endometrial stroma are found in the endometrium of the uterus.
- Endometriosis is the presence of **ectopic** endometrial glands and stroma outside the uterus.
- Benign with no malignant potential. May recur after surgical excision but the risk is low. (**non-neoplastic** condition), not premalignant however it can cause a lots of dysfunction in women life
- Like the uterine endometrium:
  - it is **responsive to the hormonal variations** of the menstrual cycle, and **bleeds during menstruation (in small amount) .**
  - Therefore, there is menstrual type **bleeding** at the site of the ectopic endometrium, resulting in blood filled areas **(e.g. chocolate cysts).**

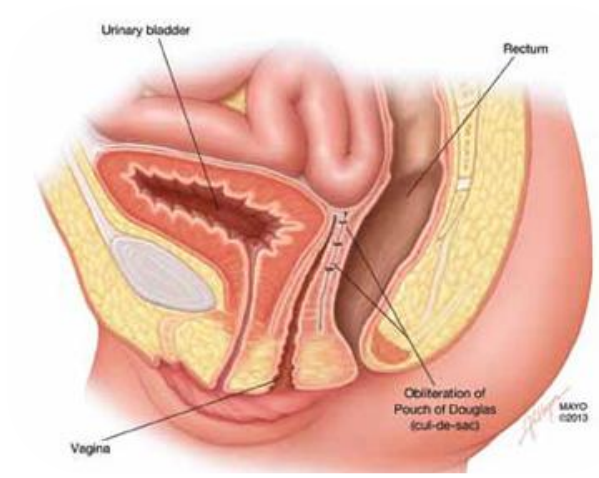
Locations

- Found on the **peritoneal surfaces** of the reproductive organs and adjacent pelvic organs.
- The most frequent locations are:
  - **Ovary** (the most common site, around 50%)
  - **Pouch of Douglas**[1] (rectouterine pouch) between uterus and rectum, **cul-de-sac** and **uterine ligaments**, second most common.
  - **Occasionally**: cervix, vagina, perineum, bladder, large bowel and umbilicus.
  - **Rarely**: small bowel, kidneys, lungs, nose and brain.
- It has been reported in men. The sites involved have been the bladder, scrotum and prostate.



Clinical presentations

- **Women in active reproductive age**
- **Depends on the site of endometriosis:**
  - **Dysmenorrhea**: pain during menstruation
  - **Dyspareunia**: painful sexual intercourse
  - **Cyclic** abdominal pain (severe menstrual related pain)
  - **Infertility**.
  - **Fibrous adhesions**[2]
- It may **recur** after surgical excision but the risk is low.



Possible Causes: (Proposed theories)

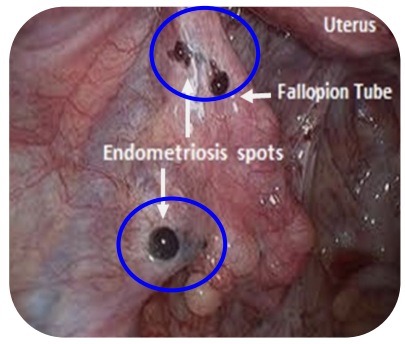
- **Metastatic: retrograde menstruation and implantation of endometrial cells.**
- **Metaplastic: due to metaplasia of pelvic peritoneal cells.**

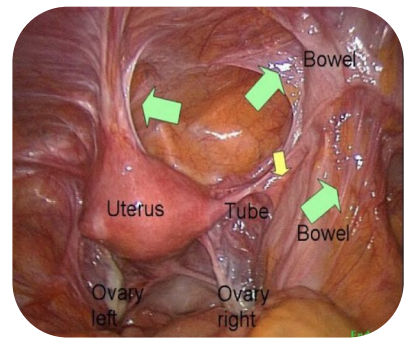
1. Rectouterine pouch: extension of the peritoneal cavity between the rectum and the uterus.
2. Cause disruption of anatomy, pain and improper fertilization leading to infertility.

Endometriosis

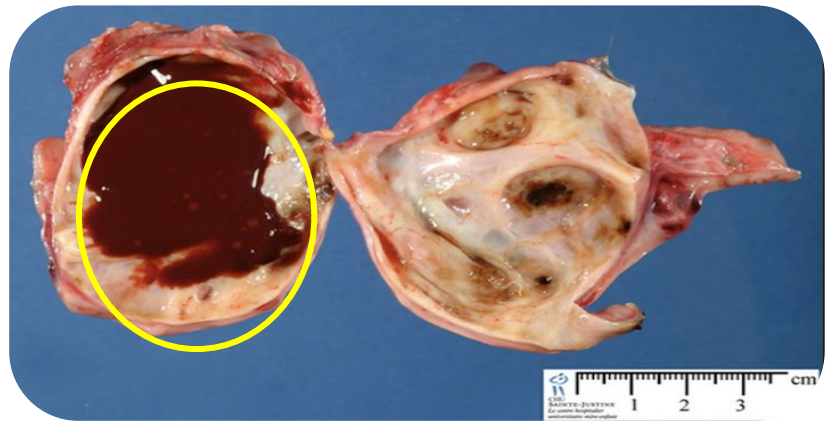
Morphology

Gross

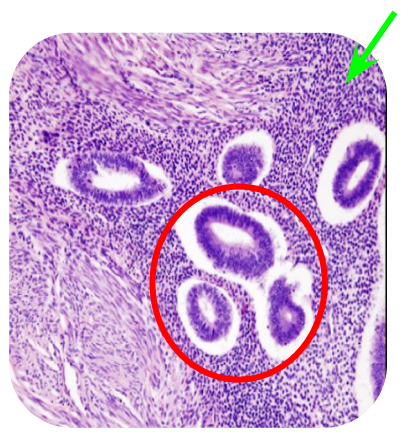


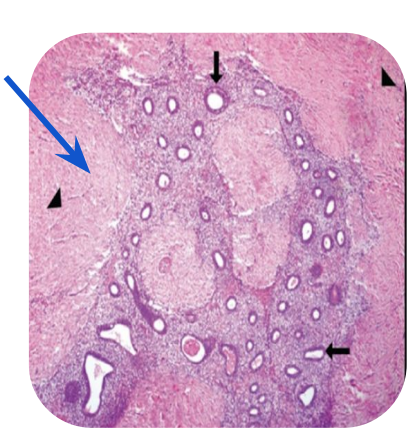


- **Red or brown nodules:**
  - Multiple.
  - Due to **hemosiderin**.
  - 1 mm to 5 mm, or may form larger mass or cysts.
- **Fibrous adhesions:** **(healing after haemorrhage) , repeated fibrosis in the ovaries can lead to infertility**
  - Dense and may surround the foci
- **Chocolate cyst:**
  - Cysts filled with chocolate brown material.
  - Produced by repeated **hemorrhage** into the **ovary** with each menstrual cycle.
- With time the ovaries become totally cystic and turn into large cystic masses filled with chocolate brown fluid.



Microscopic

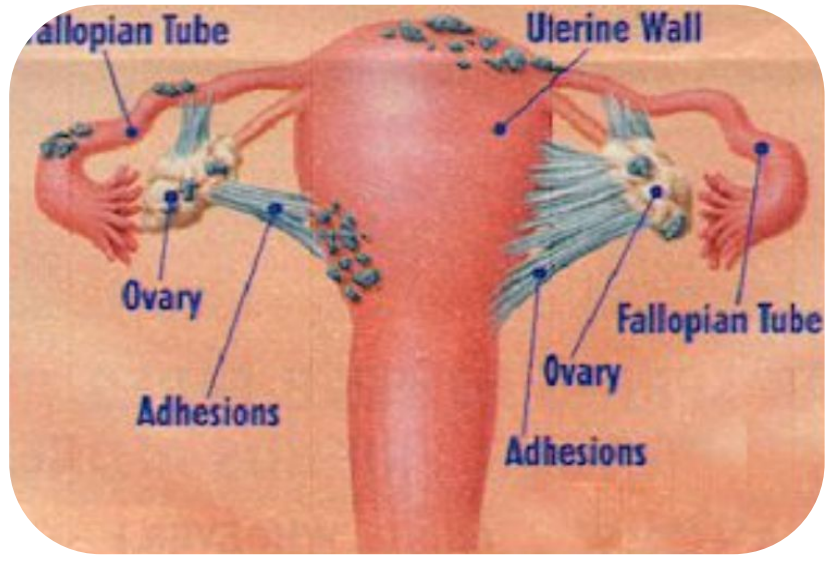




- Ectopic (outside uterus) **endometrial glands** and **endometrial stroma** are present.
- **Denatured blood** from previous bleeding is present.
- **Macrophages** containing hemosiderin (siderophages) are present.
- When endometriosis develops in a **muscular organ** (e.g bowel), the smooth muscle around it becomes **hyperplastic**, and hypertrophied.

Complications:

- Infertility
- Adhesion



Adenomyosis العضال الغدي الرحمي

Introduction

- Presence of **endometrial glands** and **endometrial stroma** deep in the **myometrium** of the uterus.
- It is more common in the **posterior wall** than the anterior wall, but it may affect both walls of the same uterus.
- The disease is primarily a disorder of **parous women (having produced offspring)** and is uncommon in the nullipara.

Clinical presentation

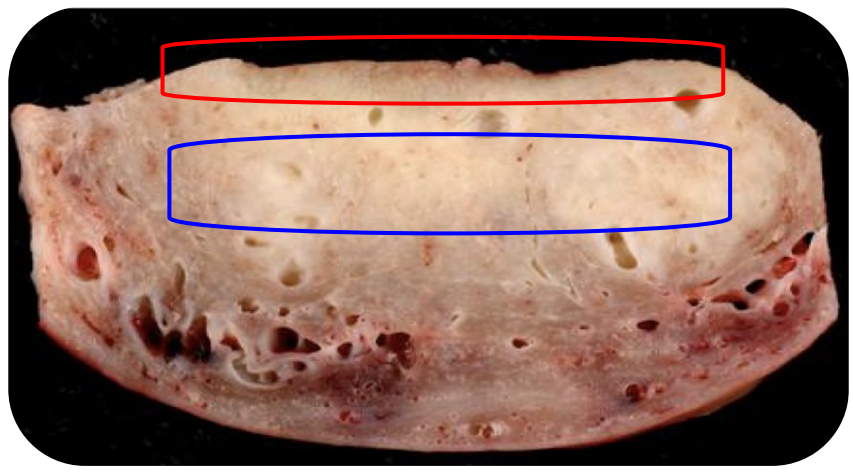
- **Asymptomatic** in ⅓ of the patients.
- Associated with **menorrhagia**[1] , **severe dysmenorrhea, and Abdominal pain**
- When extensive the lesions causes:
  - Myometrial thickening.
  - Small yellow or brown cystic spaces containing fluid or blood.

Prognosis

- **Benign** with no known malignant potential
- Usually **regresses after menopause**

Morphology

- **Cross section** through the wall of a hysterectomy specimen of a 30 year old woman who reported chronic pelvic pain and abnormal uterine bleeding:
  - The **endometrial surface** is at the top of the image.
  - The **serosa** is at the bottom.



- Patient present with
  - Pelvic pain
  - Abdominal pain
  - Vaginal bleeding

Note: the size of the uterus in Adenomyosis is enlarged, unlike that of Endometriosis

1. Because the myometrium contraction is what limits bleeding, so when it's affected it will not perform its job normally.

Summary

Polycystic ovarian disease	
Definition	**- Bilateral enlargement** of ovaries with **multiple small cysts**, **chronic anovulation**. - Clinical manifestations secondary to excessive production of **androgens**.
Pathology	**Patients have:** High LH, Low FSH, High testosterone, High estrogen.
Morphology	**Gross:** Numerous **nodular elevations** of clear cysts with a cut surface of **subcortical cystic** follicles in the ovaries. **Microscopic:** ❖ **Ovaries**: subcortical cysts, outer portion of the cortex is thickened and fibrotic, corpora lutea are absent. ❖ **Endometrium:** estrogen associated hyperplasia.
Clinical presentation	Amenorrhea with anovulation, Oligomenorrhea, Virilism, Infertility, Hirsutism, Obesity, Acne.
Risks	**Endometrial hyperplasia** & cancer, metabolic syndrome, autoimmune thyroiditis, miscarriage, acanthosis nigricans.
Endometriosis	
Definition	- Ectopic endometrial glands and stroma outside the uterus. **- Non-neoplastic** condition. - Most common in **ovaries**.
Morphology	**- Gross**: red or brown nodules, chocolate cyst, **fibrous adhesions.** **- Microscopic**: endometrial gland and stroma, siderophages.
Clinical presentation	Infertility, fibrous adhesions, dysmenorrhea, dyspareunia, cyclic abdominal pain.
Adenomyosis	
Definition	**- Endometrial glands** and **endometrial stroma** deep in the **myometrium**. - Disorder of **parous women**.
Morphology	Presence of Endometrial glands and endometrial stroma in the myometrium of the uterus.
Clinical presentation	- Menorrhagia and severe dysmenorrhea. - Benign and regresses after menopause.

QUIZ!

MCQs

01 | A 21-year-old woman experienced menarche at age 14 years and had regular menstrual cycles for the next 3 years. For the past year, she has had oligomenorrhea and has developed hirsutism. She has noticed a 10-kg weight gain in the past 4 months. On pelvic examination, there are no vaginal or cervical lesions, the uterus is normal in size, and the adnexa are prominent. A pelvic ultrasound scan shows that each ovary is twice normal size, whereas the uterus is normal in size. MRI shows multiple small ovarian cysts. Which of the following conditions is most likely to be present in this woman?			
A) Immature teratomas	B) Krukenberg tumors	C) Endometriosis	D) Polycystic ovarian syndrome
02 | A 36-year-old woman has had menorrhagia and pelvic pain for six months. She had a normal, uncomplicated pregnancy 10 years ago but has failed to conceive since then. She has been sexually active with one partner for the past 20 years and has had no dyspareunia. On pelvic examination she has a symmetrically enlarged uterus, with no apparent nodularity or palpable mass. A serum pregnancy test result is negative. What is the most likely diagnosis?			
A) Endometriosis	B) Adenomyosis	C) Polycystic ovarian syndrome	D) Leiomyoma
03 | The clinical presentations of PCOD are caused by which of the following ?			
A) Excessive secretion of androgens	B) Excessive secretion of FSH	C) Decreased secretion of LH	D) Decreased secretion of androgens
04 | Which of the following is the most common site of endometriosis?			
A) Fallopian tube	B) Pouch of Douglas	C) Ovary	D) Vagina
05 | A 34 year old female presenting with concerns of infertility. She has been attempting a pregnancy over the past 16 months with no success. Patient reports that several times she thought she could be pregnant due to a cessation in her menses with accompanying constipation and some abdominal pain. Patient also reports pain that is more intense during menstruation, with “sharp and stabbing” characteristics that is not relieved by use of NSAIDs or hot compresses. Patient reports her cycle can be irregular, or occasionally no period at all. She is concerned that her and her husband have not had enough intercourse for a pregnancy due to general pelvic pain and dyspareunia. What is the most likely diagnosis?			
A) Polycystic ovarian syndrome	B) Endometriosis	C) Adenomyosis	D)Dysgerminoma
06 |Gross morphology of endometriosis includes ALL but:			
A) Multiple red or brown nodules	B) Dense fibrous adhesions surrounding the foci	C) Chocolate cysts	D) Numerous nodular elevations of clear cysts.
07 |Women with PCOS are at high risk of developing:			
A) Weight loss	B) Hypotension	C) Endometrial hyperplasia.	D) Kidney failure
08 |A presence of endometrial glands and endometrial stroma in the uterine myometrium is called?			
A) Ectopic pregnancy	B) Chronic endometriosis	C) Endometriosis	D) Adenomyosis

MCQs Answer key	01	02	03	04	05	06	07	08
	D	B	A	C	B	D	C	D

Thank You!

We kept 438 pathology theme in the credits to remind you that this wonderful work was originally done by them

438 Khalid Alkhani
Team leader
439 Hamad Almousa

438 Lama Alzamil
Team Leader
439 Fatimah Alhilal

Team Subleader

Alhanouf Alhaluli

Done by the brilliant minds

Alhanouf Alhaluli & Danah AlHalees

Note taker

438 Taibah Alzaid

439 Hamad Almousa & Fatimah Alhilal

Edited by : 439 Pathology leaders