- **From the discussion of the case provided:**
  - **What are the risk factors for ovarian tumors:**
    - ✓ Parity.
    - ✓ Advanced age (Post-menopausal females).
    - ✓ Hypertension/ hyperlipidemia.
  - **Patient presented to your clinic with a suspected ovarian tumor; physical examination:**
    - ✓ No pallor, no jaundice → means that there is no internal bleeding of the mass or metastasis to the liver.
    - ✓ No lymphadenopathy → means that the disease is not in an advanced stage → no metastasis.
    - ✓ Cardiac and respiratory systems must be checked and be normal → so the patient can be considered to be in a good condition for admission to hospital and undergoing surgery.
    - ✓ When doing you physical examination, describe the size of the mass (in cm not by words!). For example, a mass at the level of the umbilicus = 20 cm.
    - ✓ Imaging is important to describe the tumor and differentiate if it is benign or malignant:
      - ❖ *Benign*: smooth, single, regular, small in size with no calcifications or septation.
      - ❖ *Malignant*: multiple, irregular, large with calcifications and usually a ruptured capsule.
    - ✓ What are the tumor markers checked for investigation of ovarian tumors?
      - ❖ *CA-125:* for ovarian cancer. Used to determine prognosis especially after treatment.
      - ❖ *α-FP and β-hCG:* checked in young patients.
      - ❖ *CA 19-9:* for upper GI and pancreatic cancer.
      - ❖ *CA-15.3:* for breast cancer.
      - ❖ *CEA*: for colon cancer.
    - ✓ Staging laparotomy:
      - ❖ Ovaries, uterus, fallopian tubes and the omentum will be removed to stage the condition.
      - ❖ Surgical staging is done in uterine and ovarian cancers.
      - ❖ Clinical staging is done with cervical cancer.
    - ✓ Patients with ovarian cancer often present late (stage-III) in contrast to uterine cancer where patients present earlier. Therefore, prognosis of ovarian cancer is usually poor!

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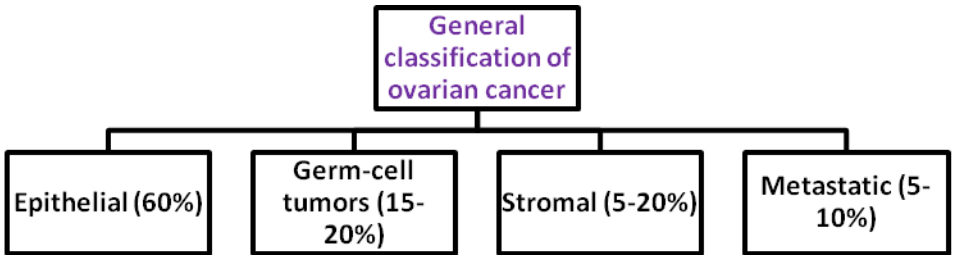
- **Epidemiology of ovarian cancer:**
  - **It is the 3rd most common malignancy in Bahraini females.**
    - ✓ 1st: breast cancer.
    - ✓ 2nd: cervical cancer.
  - **Ovarian cancer represents 1:4 of genital tract cancers and 1:2 of deaths from genital tract cancers.**
- **Pathophysiology:**
  - Induction of ovulation (such as in infertility cases) increase the risk of ovarian malignancy.
- **What are the risk factors for ovarian cancer;**
  - Family history of breast cancer (BRCA gene is related to both breast and ovarian cancers).

- Past history of breast, colon or endometrial cancers (lynch syndrome).
- Late menopause.
- White race.
- Prolonged period of uninterrupted ovulation.



- **Epithelial tumors (most common):**

Subtype	Comment
Serous (60% are benign)	Clear fluid resembling water (this is why it is called serous)
Mucinous (80% are benign)	Mutlicystic; fluid is thick and yellowish (mucin); sometimes the tumor can be huge and the patient might complain of shortness of breath
Endometrial	Endometriosis transforming to malignancy
Clear cell	Very aggressive
Undifferentiated	
Brenner (95% are benign)	-

- **Germ cell tumors:**
  - **90% of these tumors are benign but when occurring in children → 85% of them are malignant!**

Subtype	Comment
Dysgerminoma	Tumor marker is LDH; patient has male features
Teratoma (dermoid cyst)	Might include hair, teeth, mucin… etc
Embryonal carcinoma	Tumor marker is α-FP
Choriocarcinoma	Tumor marker is β-hCG

- **Sex cord stromal tumors:**

Subtype	Comment
Granulose cells	• Linked with ↑estradiol • Might rupture during pregnancy • might be bilateral • Types: adult or juvenile
Theca cells	Mostly benign
Sertoli and leydig cells	Patient has male features such as: hairsutism, hoarseness of voice and musculinization
Fibroma	Benign

- **Screening for ovarian tumors:**
  - History.
  - Abdominal and pelvic physical examination.
  - Abdominal and pelvic imaging.
  - Tumor markers.

- **Clinical presentation of a patient with ovarian cancer:**
  - Non-specific presentation.
  - Abdominal pain, shortness of breath, pressure and weight loss.
  - Menstrual irregularities.
  - 70% of the patients present with advanced stage of the disease!
  - With examination, you will find a hard pelvic mass and there might be ascites.
- **Investigations done for a patient suspected to have ovarian cancer:**
  - Full blood count.
  - Tumor markers (mentioned earlier).
  - Abdominal and pelvic ultrasound and CT-scan.
  - Explaratory laparotomy.
- **Staging ovarian cancer:**
  - **Stage-I:**
    - ✓ a: one ovary is involved.
    - ✓ b: both ovaries are involved.
    - ✓ c: ruptured capsule.
  - **Stage-II: extension to the pelvis**
    - ✓ a: extension to ureters or fallopian tubes.
    - ✓ b: extension to other bladder or rectum.
    - ✓ c: extension and finding of Ic
  - **Stage-III: tumor has reached the abdomen or there is involvement of lymph nodes**
    - ✓ a: microscopic seeding.
    - ✓ b: deposits < 2cm
    - ✓ c: deposits > 2cm or positive lymph nodes involvement.
  - **Stage-IV: distant metastasis.**
- **Surgery:**
  - Vertical incision of the abdomen is done.
  - Cytology for ascites or peritoneal washing.
  - Inspection of the whole peritoneal cavity.
  - LN palpation and biopsy.
  - Omentectomy.
  - Maximum debulking of tumor.
- **Chemotherapy:**
  - Usually multiple agents are given (carboplatinum and taxol).
- **Prognosis:**
  - **Stage-I:** 80-95%
  - **Stage-II:** 70%
  - **Stage-III**: 30%
  - **Stage-IV:** 5%