Malignant tumours of the ovary:

Aetiology:

- Incessant ovulation theory:
- Subfertility treatment:
- Genetic factors:

Familial ovarian cancer:

5-10 % of women with epithelial ovarian cancer.

relatively early age at which they occur. Most of these families also have cases of breast or colorectal cancer in the family. The defective gene is most commonly the tumour-suppressor gene BRCA1 (80% of cases), BRCA2 (14% of cases).

Management of women with a family history of ovarian cancer

- Annual ovarian ultrasonography with a color-flow Doppler studies & serum CA 125 estimation every 6-12 months are recommended

- Prophylactic bilateral oophorectomy, combined with hysterectomy is recommended for clearly defined high-risk women after completion of their family after 45 years of age.

- **Classification of malignant ovarian tumours:**

- Epithelial tumours:
  - Serous cystadenocarcinoma
  - Mucinous cystadenocarcinoma
  - Endometrioid cystadenocarcinoma
  - Clear cell (mesonephroid) tumour
  - Brenner tumour
  - Undifferentiated carcinoma

2. sex cord tumours:

- Granulosa cell tumour
- Androblastoma (Sertoli-Leydig cell tumour)
- Gynandroblastoma

3. Germ cell tumour

- Dysgerminoma
- Endodermal sinus tumour (yolk sac tumour)
- Embryonal cell tumour
- Choriocarcinoma
- Immature Teratoma
- Mixed tumours

4. Metastatic tumours

Borderline epithelial tumours:

- have some features of malignancy but they lack stromal invasion.
- constitute 10% of epithelial ovarian tumours.
- show varying degrees of nuclear atypia & increased mitotic activity, multilayring of neoplastic cells& formation of cellular buds but no stromal invasion.
- Most of them confined to the ovaries & therefore have much better prognosis. Most borderline tumours are serous or mucinous in type.

- **Metastatic spread:**
- The pelvic peritoneum & other pelvic organs are involved by direct spread. malignant cells on all intra-abdominal structure surfaces.
- Lymphatic spread involve pelvic & para-aortic lymph nodes, nodes in the neck & inguinal region.
- Haematogenous spread occurs late in the course of disease involving liver & lung, sometimes bone & brain.

Clinical staging:

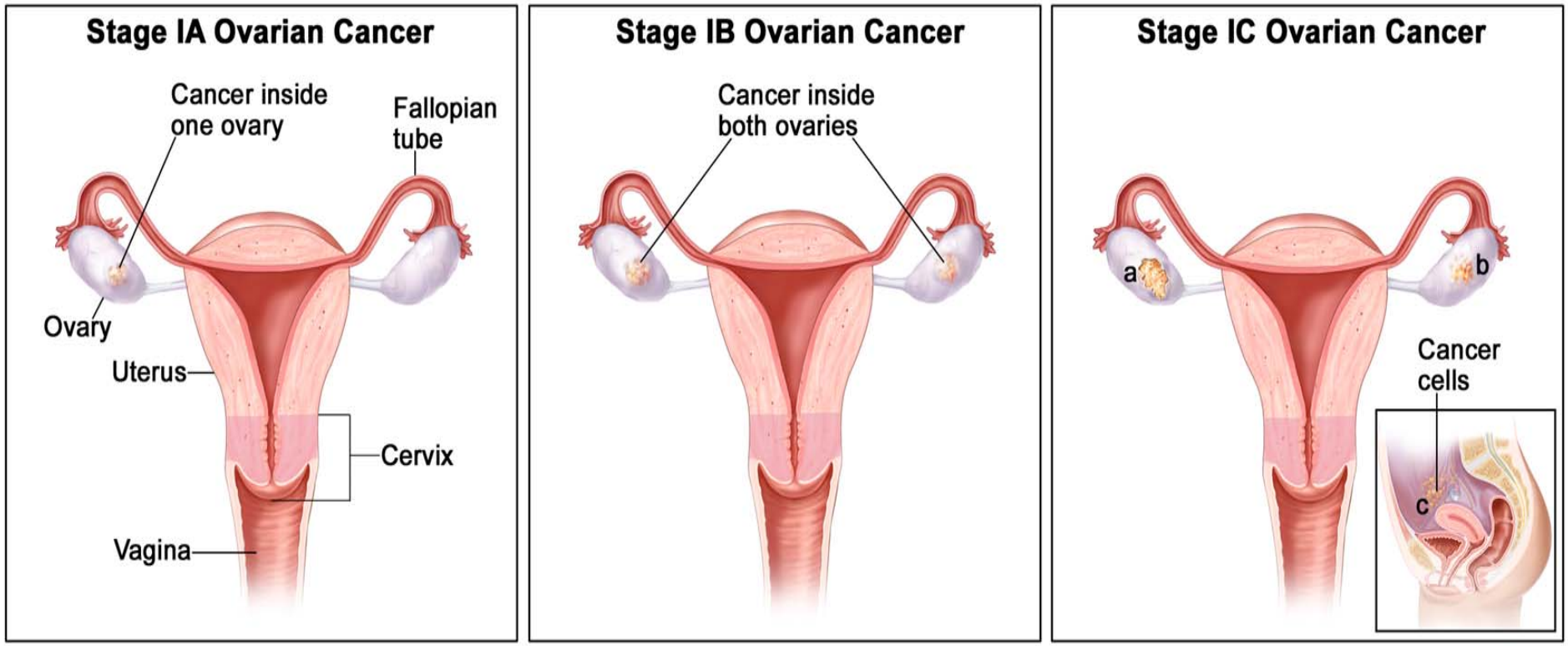
Stage Figo definition

I growth limited to ovaries

Ia growth limited to one ovary, no ascites, no tumour on external surface, capsule intact

Ib growth limited to both ovaries, no ascites, no tumour on external surfaces, capsule intact

Ic tumour either stage Ia or Ib but tumour on surface of one or both ovaries or with capsule rupture or with ascites present containing malignant cells or with positive peritoneal washing


Stage IA Ovarian Cancer
Cancer inside one ovary
Fallopian tube
Ovary
Uterus
Cervix
Vagina
Stage IB Ovarian Cancer
Cancer inside both ovaries
Stage IC Ovarian Cancer
a
b
Cancer cells
c
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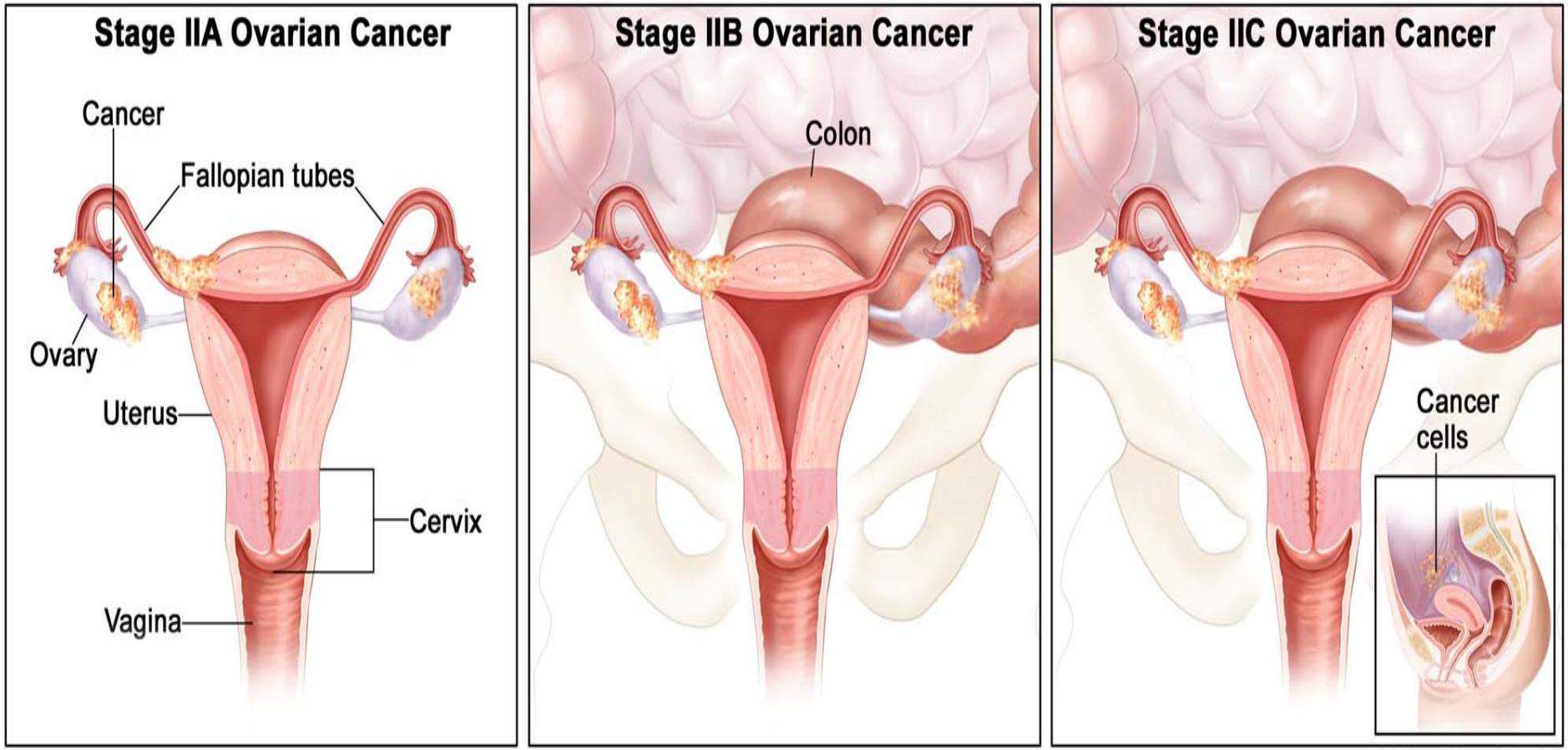
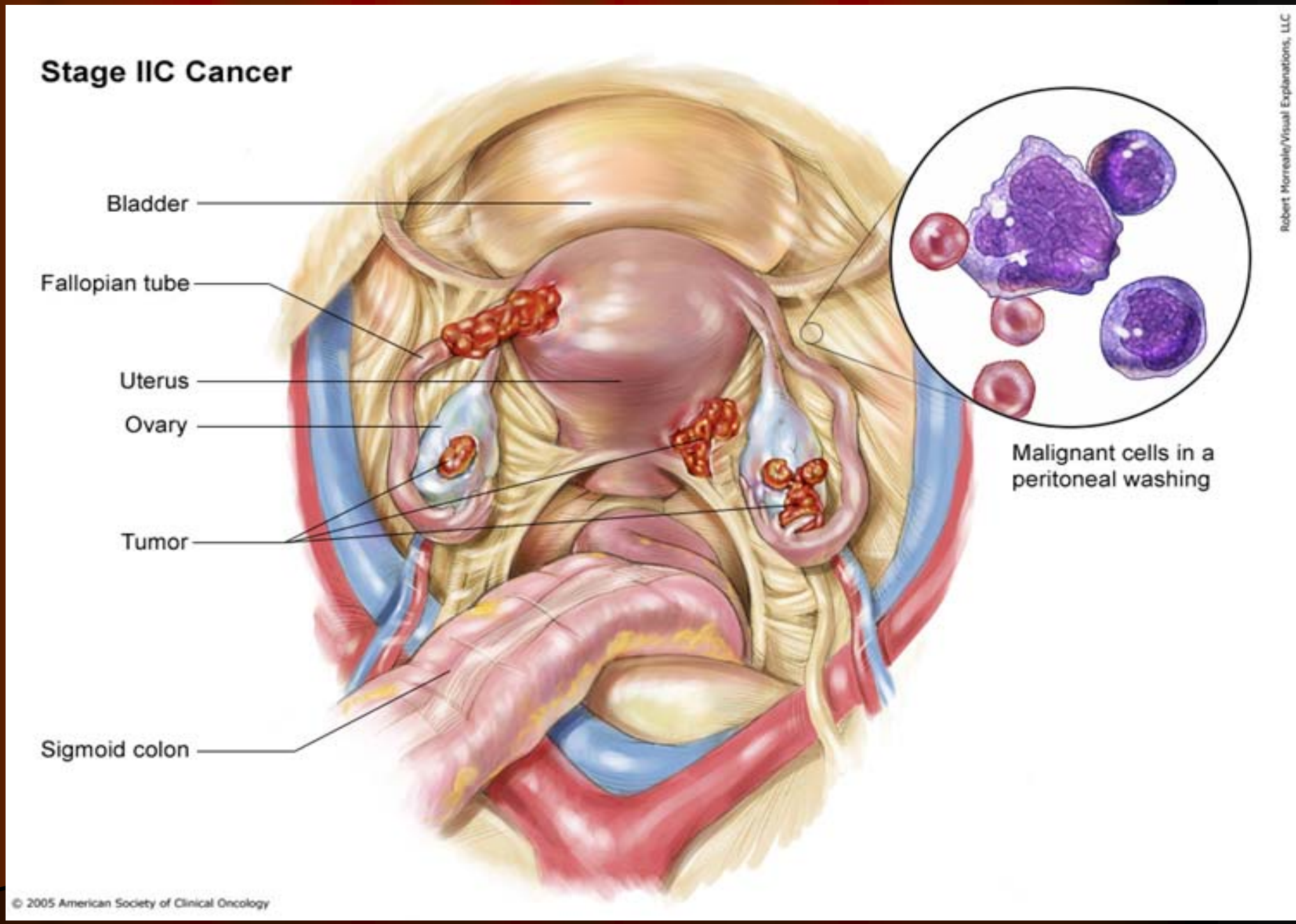
II growth involving one or both ovaries with pelvic extension

IIa extension &/or metastasis to the uterus or tubes

IIb extension to other pelvic tissues

IIc tumour either stage IIa or IIb but tumour on surface of one or both ovaries or with capsule rupture or with ascites containing malignant cells or with positive peritoneal washing




Stage IIC Cancer
Bladder
Fallopian tube
Uterus
Ovary
Tumor
Sigmoid colon
Malignant cells in a peritoneal washing
Robert Morreale/Visual Explanations, LLC
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III one or both ovaries,peritoneal implants outside the pelvis or positive retroperitoneal or inguinal nodes

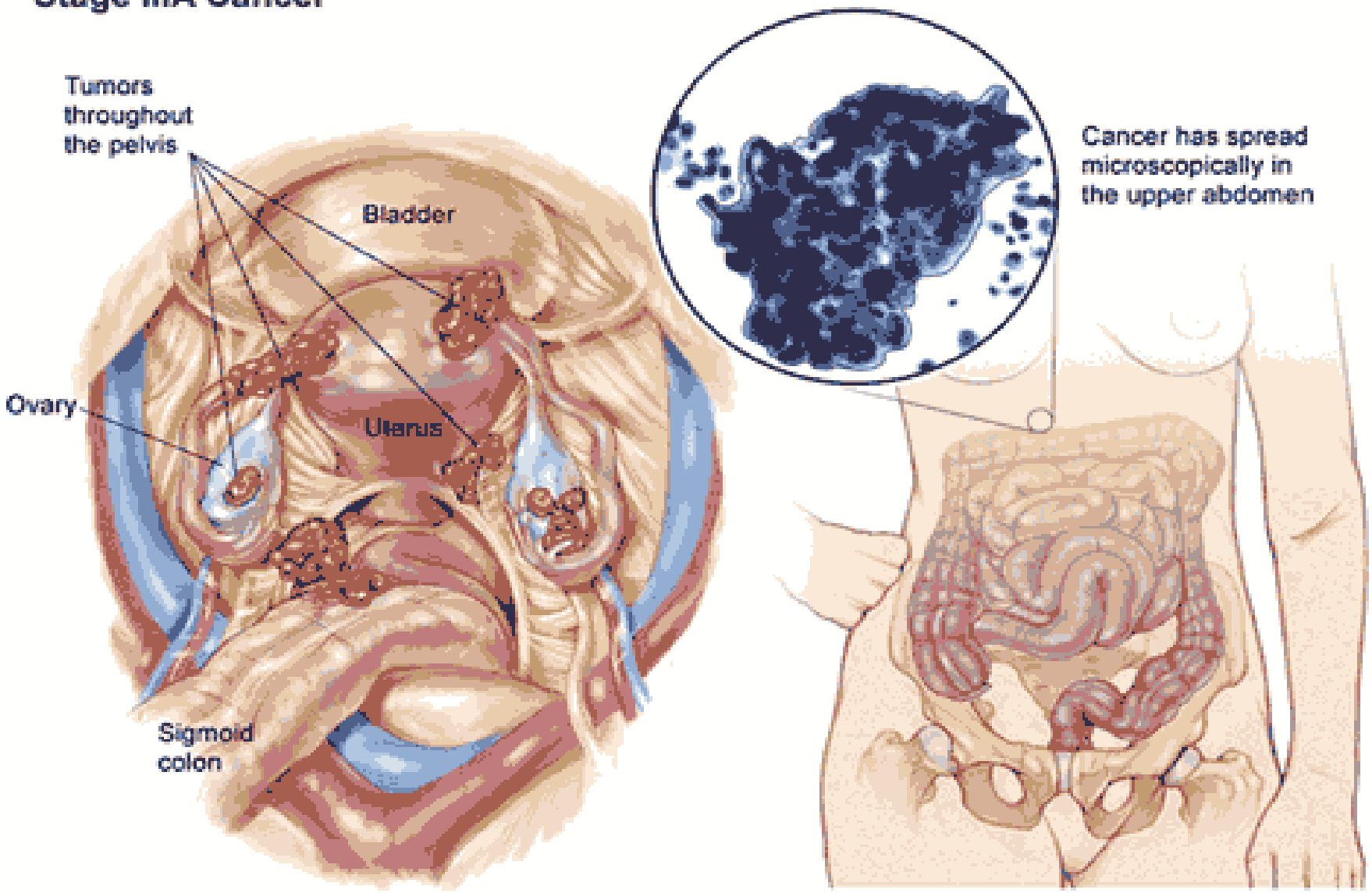
IIIa tumour grossly limited to the true pelvis with negative nodes but with histologically confirmed microscopic seeding of abdominal peritoneal surfaces

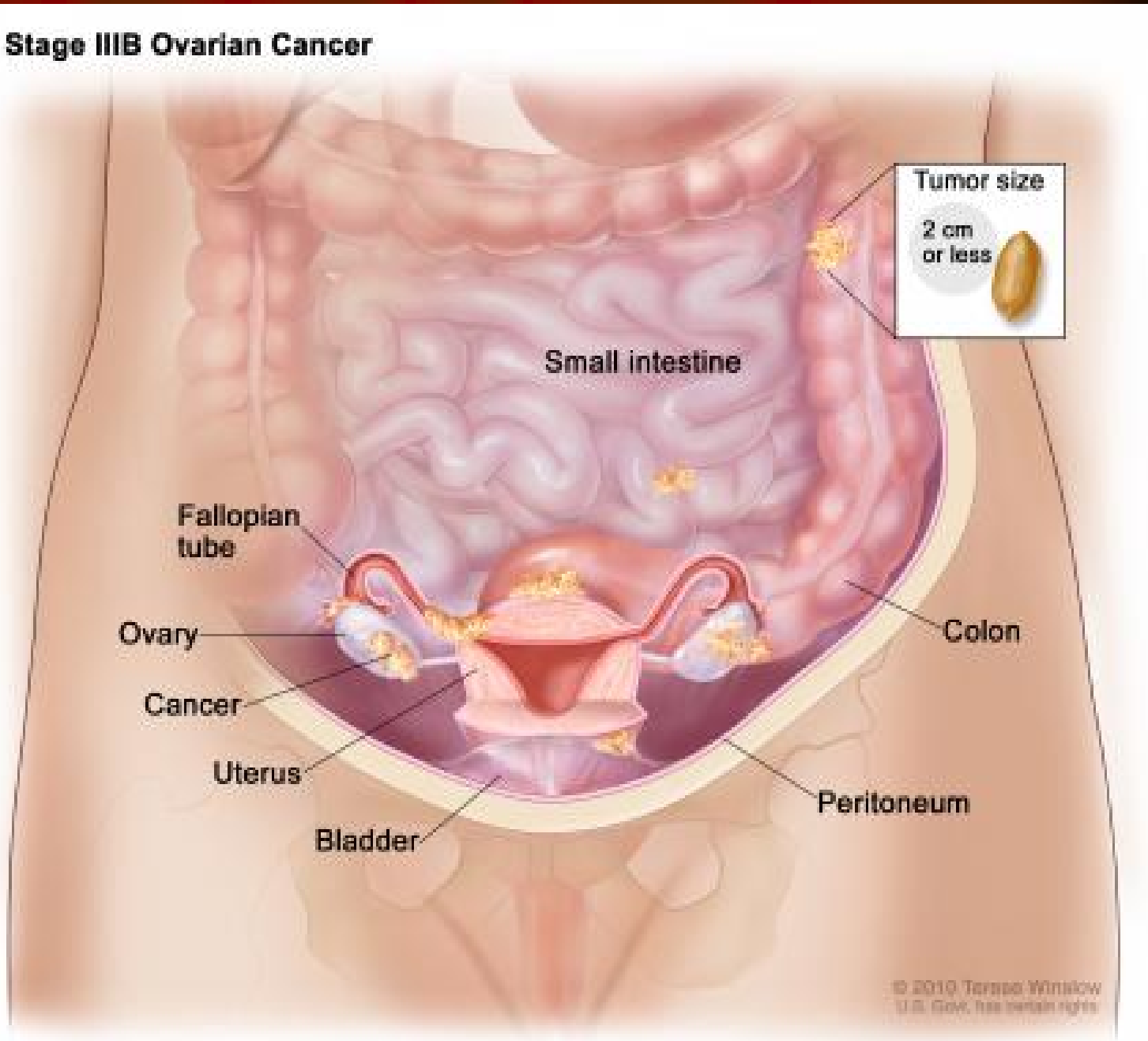
IIIb tumour with histologically confirmed implants on abdominal peritoneal surfaces, non-exceeding 2 cm in diameter, nodes are negative

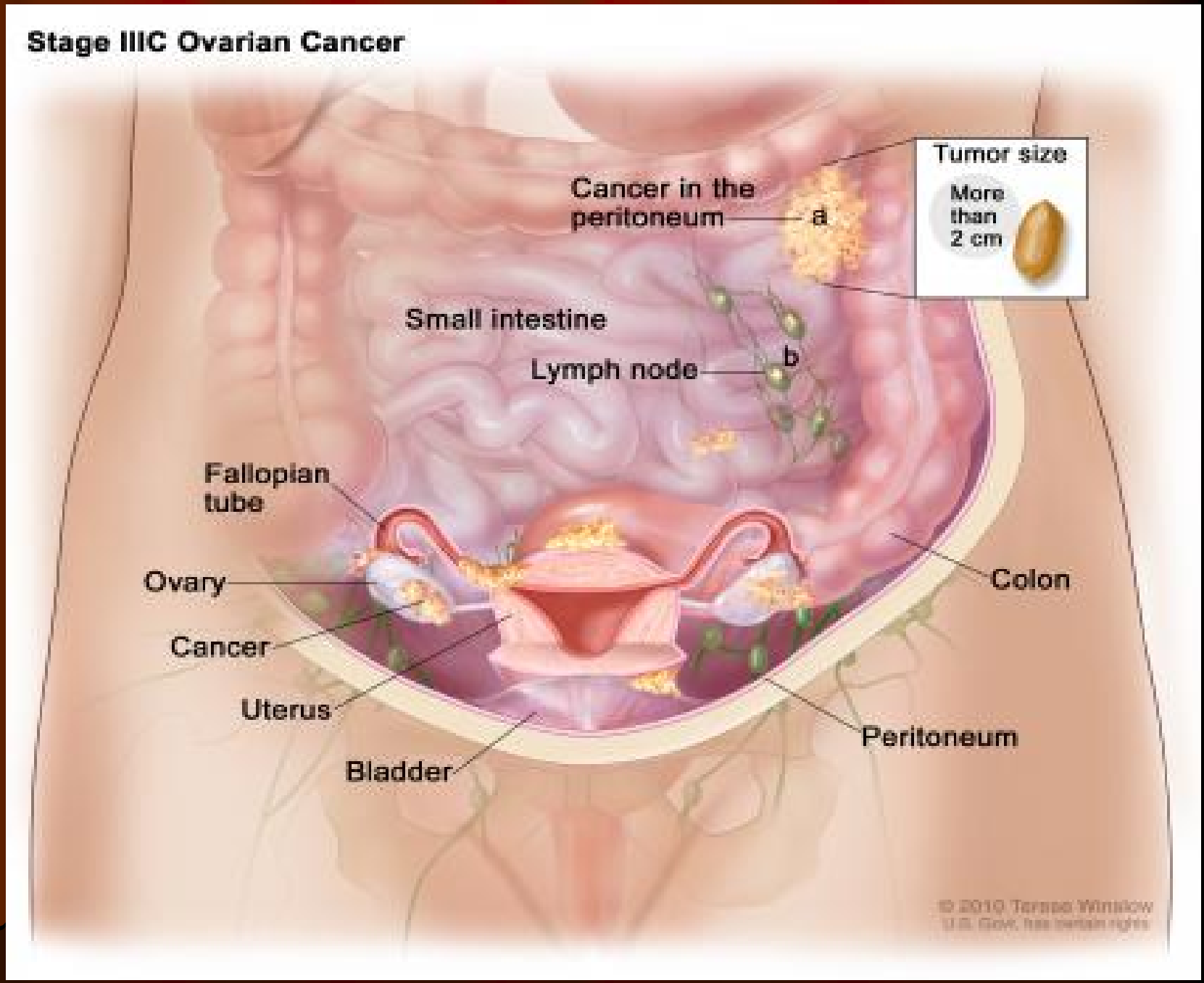
IIIc abdominal implants > 2cm in diameter or positive retroperitoneal or inguinal nodes

IV distant metastasis, if pleural effusion is present, there must be positive cytology to allot a case to stage IV

Stage IIIA Cancer




Stage IIIB Ovarian Cancer
Tumor size
2 cm
or less
Small intestine
Fallopian
tube
Ovary
Cancer
Uterus
Bladder
Colon
Peritoneum


Stage IIIC Ovarian Cancer
Tumor size
More than 2 cm
Cancer in the peritoneum
a
Small intestine
Lymph node
b
Fallopian tube
Ovary
Cancer
Uterus
Bladder
Colon
Peritoneum
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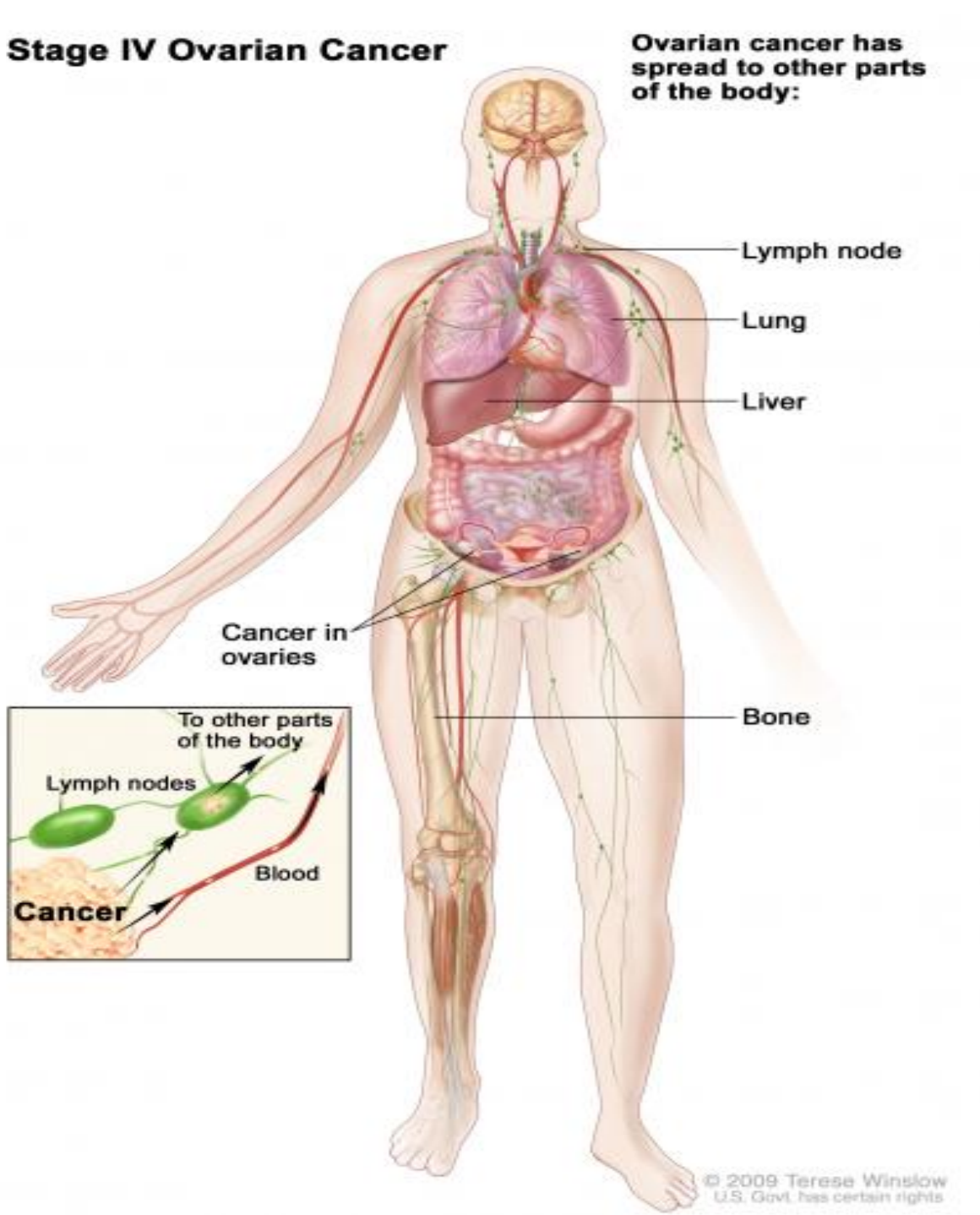
Stage IV Ovarian Cancer
Ovarian cancer has spread to other parts of the body:
Lymph node
Lung
Liver
Cancer in ovaries
Bone
To other parts of the body
Lymph nodes
Blood
Cancer
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Surgery:

- Surgery includes total hysterectomy, bilateral salpingo-oophorectomy & infracolic omentectomy.
- In young nulliparous woman with unilateral tumour & no ascites, unilateral salpigo-oophorectomy may be justified after exploration to exclude metastatic disease & curettage of the uterine cavity to exclude synchronous endometrial tumour.
- If the tumour is subsequently found to be poorly differentiated or the washing is positive, a second operation to clear the pelvis will be necessary.

- When bulky disease remains after initial surgery, chemotherapy should be given in two to four courses then a second laparotomy is performed after which chemotherapy is resumed as soon as possible. This is called interval debulking surgery.
- In borderline tumours ovarian cystectomy or oophorectomy are adequate in young women while hysterectomy & bilateral salpingo-oophorectomy is advisable for older women.

Chemotherapy:

- stage II-IV & possibly stage Ic.
- Chemotherapy is given to prolong clinical remission & survival, & for palliation in advanced & recurrent disease.
- given for 5 or 6 cycles at 3-4 weeks intervals.
- The platinum drugs, cisplatin & its analogue carboplatin are heavy metal compounds which cause cross-linkage of DNA strands.

- Cisplatin is very toxic, side effects include persistant nausea & vomiting, permenant renal damage, peripheral neuropathy & hearing loss & electrolyte disturbance, marrow toxicity is unlikely.
- Carboplatin is as effective as cisplatin but with lesser side effects.
- Paclitaxel. Side effects include sensory neuropathy & neutropenia, myalgia & arthralgia, hair loss is usually total.

- Sex cord stromal tumours:

Granulosa & theca cell tumours:

staging system is the same as for epithelial tumours. Most present as stage I.

- Treatment: surgical treatment is the same as for epithelial tumours. Unilateral oophorectomy is indicated in young women with stage Ia disease. The 5-year survival is 80% overall but recurrence is associated with high mortality.

- **Sertoli-leydig cell tumours:** half of these tumours produce male hormones causing virilization. Prognosis is good for early stage disease, treatment is the same as for granulosa cell tumours.

- **Dysgerminoma:** usually occur in women < 30 years old. Serum alpha-fetoprotein & beta-hCG must be assayed to exclude the ominous presence of elements of choriocarcinoma, endodermal sinus tumour or teratoma. Pure dysgerminoma have good prognosis as they are usually stage Ia.
- Elements of immature teratoma, yolk sac tumour or choriocarcinoma can be found in 10% of cases which are more malignant.

- **Yolk sac (endodermal sinus) tumors:** It may present as an acute abdomen due to rupture of the tumour following necrosis & haemorrhage. The tumour is well encapsulated & solid. It often secretes AFP, which can be used to monitor treatment

- **Immature Teratoma:** composed of wide variety of tissues. They are solid with smooth surface.

- Treatment: Early disease is treated by surgery. In young women with stage Ia, unilateral oophorectomy may suffice, but in older patients hysterectomy & bilateral salpingo-oophorectomy is recommended. Stage I malignant teratoma & dysgerminoma may be followed up closely without further treatment. For the remainder, chemotherapy is required with good prognosis.