NON-EPIHELIAL OVARIAN CANCER

Initial Workup

- **Clinical:**
  - Performance status

- **Pathology review**

- **Laboratory Investigations:**
  - Complete blood count (CBC)
  - Chemistry profile
  - Human chorionic gonadotropin (β-HCG)
  - Alpha-fetoprotein (AFP)
  - Lactate Dehydrogenase (LDH)

- **Imaging:**
  - Chest X-ray
  - Pelvic ultrasound
  - Abdominopelvic CT scan
  - PET scan (if clinically indicated)

- **Pathology**

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Sex Cord Stromal Tumors (SCST)

Granulosa-stromal cell tumors
Granulosa cell tumors
Adult type
Juvenile type
Tumors in the thecoma–fibroma group
Thecoma
Fibroma–fibrosarcoma
Sclerosing stromal tumor
Sertoli–Leydig cell tumors (androblastomas)
Sertoli cell tumors
Leydig cell tumor
Sertoli–Leydig cell tumors
Gynandroblastoma
Sex cord tumor with anular tubules
Unclassified

Germ Cell Tumors (GCT)

Dysgerminoma
Teratoma
Immature
Mature
Monodermal and highly specialized
Endodermal sinus tumor
Embryonal carcinoma
Polyembryoma
Choriocarcinoma
Mixed forms
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### Staging and Risk Assessment

- The staging system for non-epithelial ovarian cancers is generally adopted from that used for epithelial ovarian cancer.
- The majority of germ cell tumors (GCTs) (60–70%) are diagnosed at an early stage.
- Stage I patients have an excellent prognosis (long-term disease-free status is 90%).

### Surgical Approaches for Non-epithelial Ovarian Cancer

- Surgical Staging:
  - The staging procedure includes infra-colic omentectomy and biopsy of:
    - Diaphragmatic peritoneum,
    - Paracolic gutters,
    - Pelvic peritoneum and
    - Peritoneal washings.
  - Systematic lymphadenectomy is not required. Only in cases of evidence of nodal abnormality, lymph node dissection is required.
  - Surgical staging for endodermal sinus tumor is not indicated because all patients need chemotherapy.

### Special Considerations:

1) **Sex cord-stromal tumors (SCSTs):**
   - Conservative surgery seems like an appropriate approach in young patients with SCSTs at stage I disease.
   - Retroperitoneal evaluation is not mandatory for SCSTs because of the very low incidence of retroperitoneal metastases in the early stage.

2) **In patients with granulosa cell tumor:**
   - Endometrial curettage must be performed to rule out concomitant uterine cancers

3) **In postmenopausal women, patients with advanced stage disease or with bilateral ovarian involvement:**
   - Abdominal hysterectomy and
   - Bilateral salpingo-oophorectomy should be performed with careful surgical staging.
Treatment Algorithm

I. Germ Cell Tumors

**Stage I – IIA:**

| Stage IA immature teratoma grade 1 or Stage I pure dysgerminoma | Surgery only |
| Stage IA immature teratoma grade 2 and 3 and IB – IC | Still controversial |
| All patients with stage I endodermal sinus (yolk sac tumor) | Adjuvant chemotherapy in the form of (BEP) for 3 cycles |

BEP regimen:
- Cisplatin 20 mg/m2 D1-5
- Etoposide 100 mg/m2 D1-5
- Bleomycin 30 mg D1, 8, 15

**Stage IIb – IV Germ Cell Tumors:**

1. **Debulking surgery**

2. **Adjuvant chemotherapy:**
   - Three cycles of BEP with the completely resected disease or
   - Four cycles for patients with macroscopic residual disease.

3. **Post adjuvant chemotherapy**

   - **If a complete remission is achieved:**
     - Patients will undergo surveillance

   - **If Residual tumor with normal markers:**
     - If patients subjected to resection revealed necrotic tissue or mature teratoma; they will be opted for surveillance.
     - If the residual tumor is present and/or having elevated markers will be candidates for second-line chemotherapy.
Salvage Chemotherapy

VIP (PEI)

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<thead>
<tr>
<th>Drug</th>
<th>Dose and Schedule</th>
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<tbody>
<tr>
<td>Ifosfamide</td>
<td>1200 mg/m² IV infusion over 1 hour on days 1-5</td>
</tr>
<tr>
<td>Etoposide (VP-16)</td>
<td>75 mg/m² IV infusion over 1 hour on days 1-5</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>20 mg/m² IV infusion over 30 minutes on days 1-5</td>
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Every 3 weeks FOR 4 cycles with mesna cyto-protection

VeIP

Similar to VIP except giving Vinblastine 0.11 mg/kg iv days 1 and 2 instead of Etoposide.

TIP

<table>
<thead>
<tr>
<th>Drug</th>
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<tbody>
<tr>
<td>Paclitaxel</td>
<td>250 mg/m² IV infusion for 24 hours on day 1</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>25 mg/m² IV infusion over 30 minutes on days 2-5</td>
</tr>
<tr>
<td>Ifosfamide</td>
<td>1500 mg/m² IV infusion over 1 hour on days 2-5</td>
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</table>

Every 3 weeks for 4 cycles with mesna and growth factor support

High dose chemotherapy with stem cell support

May play a role in selected relapsed cases.

II. Sex-cord Tumors

- The most common cases are the granulosa variant:
  - There is no standard chemotherapy for these patients.
  - Optimal surgical resection is the most important factor in potentially curing these cases.
- The majority of sex-cord tumors are mostly stage I at the time of diagnosis:
  - Stage I patients have an excellent prognosis (long-term disease-free status is 90%).

Stage I

- Surgery followed by observation.
- Platinum-based chemotherapy is the treatment of choice.
- Adjuvant chemotherapy is not standard but may be used in:
  - High-risk disease profile including:
    - Tumor rupture,
    - Stage IC,
    - Poorly differentiated tumor,
    - Size more than 10-15 cm.
### Stage II-IV

- Surgery and complete surgical staging.
- Adjuvant treatment:
  - BEP regimen for 3–6 cycles is recommended.

### Relapsed Cases

- Clinical trials enrolment.
- Chemotherapy:
  - Taxanes, oxaliplatin, gemcitabine or carboplatin.
- Second cytoreduction.

### Follow-up

- The follow-up visit must include:
  - History,
  - Physical examination with pelvic examination and
  - Tumor markers every:
    - 3 months for the first 2 years then
    - 6 months during years 3–5 or until progression is documented.
- Pelvic ultrasound should be performed every 6 months in those patients who underwent fertility-sparing surgery.
- CT scans of the abdomen and pelvis is usually performed yearly.
References


