Low-Grade Serous Ovarian Carcinoma in a Young Woman

Executive Summary · Country Focus: Zambia

Overview

Low-grade serous ovarian carcinoma (LGSOC) makes up about 5–10% of serous ovarian cancers but affects younger women than the high-grade form, which makes fertility and early menopause central concerns. This session presented an advanced case managed by a gynaecologic oncology team in Zambia, and discussed diagnosis, surgery, hormonal and targeted therapy, fertility preservation and the barriers to care in African settings.

Case at a Glance

Patient	24-year-old woman
Presentation	Two years of abdominal distension, weight loss and intermittent breathlessness, needing repeated fluid drainage
Imaging	Large complex pelvic mass, massive ascites, hydronephrosis, pleural effusion and suspected metastases
Diagnosis	Umbilical nodule biopsy inconclusive; laparotomy confirmed bilateral ovarian tumours with peritoneal deposits: FIGO stage IIIC LGSOC
Chemotherapy	Six cycles of carboplatin and paclitaxel: little change in the primary mass but marked reduction of peritoneal and mesenteric disease
Surgery	Interval debulking: hysterectomy, bilateral salpingo-oophorectomy, infracolic omentectomy and removal of enlarged pelvic nodes
Outcome	In remission more than a year after surgery, on letrozole with treatment for surgical menopause symptoms

A Distinct Disease

LGSOC is not simply a milder high-grade serous cancer. It usually arises from serous borderline tumours, is driven by the MAPK pathway (often KRAS, BRAF or NRAS mutations) rather than p53 and BRCA, grows slowly and responds poorly to chemotherapy. Most tumours express oestrogen receptors. Median survival is long, often several years even in advanced disease, but late relapse is common, so long-term follow-up is needed.

Feature	Low-grade serous	High-grade serous
Typical age	Younger, often 20s–40s	Usually over 55
Molecular driver	KRAS/BRAF (MAPK pathway)	TP53, often BRCA or HRD
Pathology	p53 wild-type, low Ki-67, psammoma bodies	p53 aberrant, diffuse p16, high Ki-67
Chemosensitivity	Low (about 5–25% response)	High (about 70–80% response)
Receptor status	Usually ER-positive	Variable

Immunohistochemistry is therefore essential to confirm the grade and guide treatment. CA-125 can be raised but is less reliable than in high-grade disease.

Surgery and Chemotherapy

Complete cytoreduction (no visible residual disease, R0) is the single most important factor for outcome, so primary surgery by a gynaecologic oncologist is preferred where it is achievable. Neoadjuvant chemotherapy is reserved for women in whom complete resection is not initially feasible or who are too unwell; as in this case, it may shrink peritoneal disease even when the primary mass changes little. Diagnostic laparoscopy and frozen section, where available, help assess resectability and guide surgical decisions.

Hormonal and Targeted Therapy

- **Endocrine therapy:** letrozole or another aromatase inhibitor after primary treatment is associated with longer progression-free survival and is a low-cost, oral option well suited to resource-limited settings. It is also used for recurrence and is being studied as an alternative to chemotherapy.
- **MEK inhibitors:** trametinib improved progression-free survival over standard treatment in recurrent LGSOC, and avutometinib with defactinib has been approved in the United States for KRAS-mutated recurrent disease. Cost and availability limit access in much of Africa.

Fertility and Survivorship

Fertility should be discussed before any treatment. In stage I disease confined to one ovary, fertility-sparing surgery with unilateral salpingo-oophorectomy and full staging, preserving the uterus and other ovary, can be considered; cystectomy alone carries a higher recurrence risk and suits only carefully selected cases. Oocyte or embryo freezing may be possible before treatment. In advanced bilateral disease, as here, options are very limited and require individual multidisciplinary counselling.

Surgical menopause at a young age brings hot flushes, night sweats, vaginal dryness, sexual difficulties and bone loss. Because LGSOC is usually oestrogen-driven and letrozole is often used, oestrogen replacement is generally avoided. Non-hormonal options (SSRIs or SNRIs, gabapentin, vaginal moisturisers and lubricants), bone density monitoring with calcium and vitamin D, weight-bearing exercise and psychosocial support are important parts of care.

Challenges in African Settings

- Late referral from limited imaging and image-guided biopsy; inconclusive biopsies delay diagnosis.
- Limited access to laparoscopy, immunohistochemistry and gynaecologic oncologists.
- High costs of targeted drugs and fertility preservation, and few fertility specialists or counsellors.
- A multidisciplinary team (gynaecologic oncology, pathology, radiology, medical oncology, fertility and psychosocial care) and referral to specialist centres improve outcomes.

Key Takeaways

- Suspect ovarian cancer in young women with persistent distension, ascites or weight loss, and refer early.
- Confirm LGSOC with immunohistochemistry; it behaves differently from high-grade disease.
- Aim for complete cytoreduction by a specialist surgeon; chemotherapy has a limited role.
- Use letrozole as an affordable, effective option, and target MAPK pathway drugs where available.
- Discuss fertility before treatment and manage surgical menopause without oestrogen.