

Case Report: Precision Oncology in Stage IV Squamous Cell Carcinoma Arising from Ovarian Mature Teratoma — A Complete Metabolic Response

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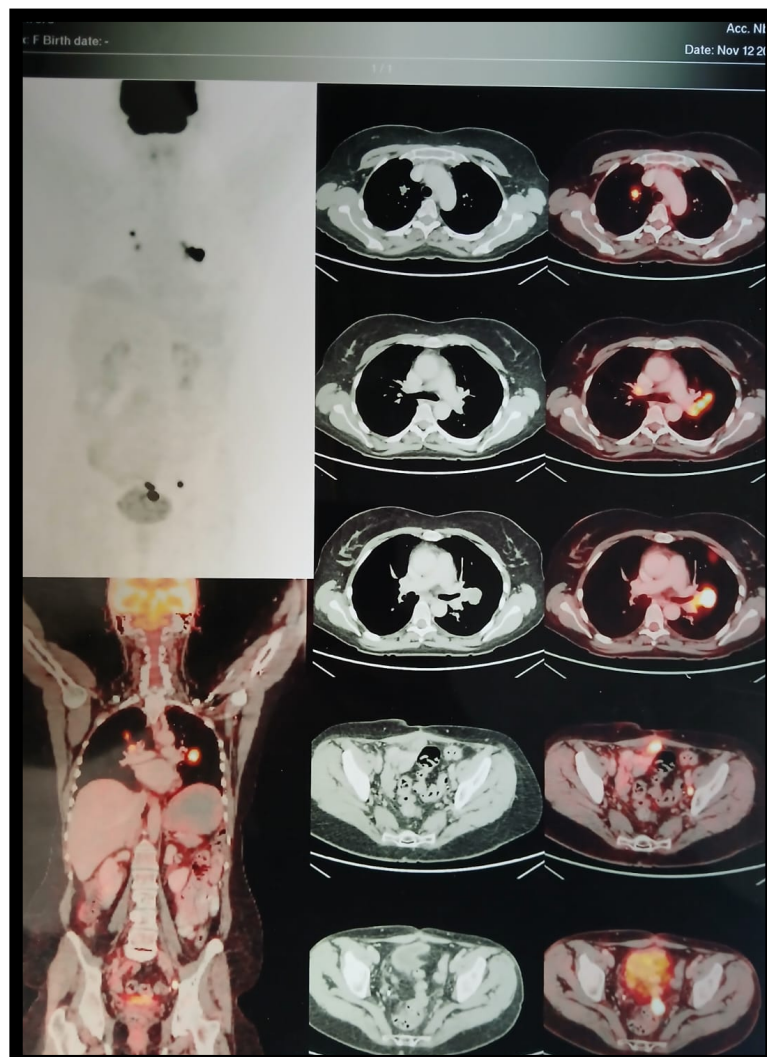
Introduction

Squamous cell carcinoma (SCC) arising from mature cystic teratomas (MCTs) is a medical rarity, seen in only **0.17–2%** of all ovarian MCTs. Advanced-stage presentations are even rarer, often with poor prognosis due to limited evidence-based treatment pathways. This case highlights a **successful** outcome through **precision-guided, integrative oncology**, where a patient with **stage IV metastatic SCC from MCT** achieved **complete metabolic response**, guided by functional molecular diagnostics and a blended chemotherapeutic-nutraceutical regimen.

Case Presentation

Patient Background

A 47-year-old woman, was diagnosed with **metastatic SCC arising from a mature teratoma of the left ovary**. She underwent **TAH-BSO on April 30, 2024**. Initial PET/CT imaging confirmed **extensive metastases** to pelvic peritoneum, lymph nodes, and lungs.



Treatment Journey

Initial Chemotherapy:

Two cycles of **Carboplatin** were administered pre-molecular testing to curb disease progression.

Molecular Profiling with RGCC:

RGCC *Onconomics Plus* profiling (Nov 2024) identified key therapeutic sensitivities and tumor vulnerabilities:

- **High Chemosensitivity:** Carboplatin, Cisplatin, Nedaplatin.

II. Gene Expression Panel — Tumor Drivers

Gene/Protein	Expression	Function/Implication
VEGF	65% ↑	High angiogenesis; supports Bevacizumab therapy
EGF, c-erb-B1	50%, 45% ↑	EGFR pathway activation; contributes to proliferation, therapy target
COX-2	45% ↑	Chronic inflammation, tumor progression
IGF-r1/2	25%, 10% ↑	Insulin-like growth factor axis; supports metabolic targeting
TGF-β	15% ↑	Tumor immune evasion and fibrosis
CDK4/6	70% ↑	Cell cycle acceleration; targetable with inhibitors

III. Resistance Markers and Immune Escape

Marker	Finding	Interpretation
MDR1 (ABCB1)	Overexpressed	Indicates risk of multidrug resistance
PTEN	30% loss	Tumor suppressor deficiency, pathway vulnerability
PARP1-17	30% ↑	DNA repair activation; possible benefit from PARP-i
PD-L1 / PD-1 / PD-L2	All 0%	Immune checkpoint therapy not indicated

Precision Oncology Protocol

Based on RGCC insights, the patient transitioned to a **customized regimen** consisting of:

Conventional Agents

- **Weekly Carboplatin (240 mg)**

- **Abraxane (200 mg Nab-paclitaxel)**
- **Bevacizumab (900 mg every 3 weeks)** — This anti-VEGF monoclonal antibody was strategically incorporated due to the **high expression of VEGF and other angiogenic markers**. By targeting tumor-induced vascular proliferation, Bevacizumab served a pivotal role in controlling both local and systemic disease dissemination. Over a five-cycle course, it contributed significantly to **tumor vascular regression**, enabling better chemotherapy penetration and potentiation of the nutraceuticals’ effects.

Integrative Therapeutics (based on RGCC sensitivity)

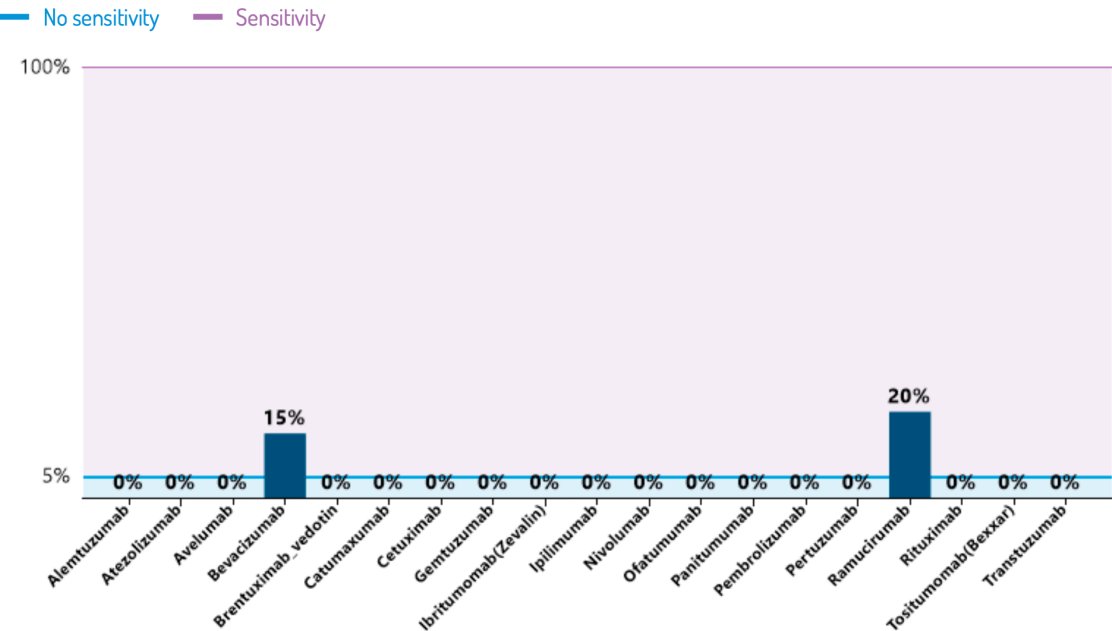
- **High-dose IV Vitamin C (50g)** – Immune and oxidative stress modulation
- **IV Artesunate (120 mg)** – Apoptosis induction via oxidative stress
- **Nutraceutical Regimen:**

II. Molecular Target Justification (per RGCC markers)

Agent(s)	Target Pathway	Molecular Justification
Ivermectin, Quercetin	MDR1 (multidrug resistance)	Downregulates ABCG2 pumps
Celecoxib, AKBA (Boswellia)	COX-2	Inflammatory driver
Curcumin, Sulforaphane	PTEN pathway, epigenetic repair	Tumor suppressor activation
Metformin	mTOR/AMPK signaling, glycolysis	Metabolic stress inhibitor
High-dose IV Vitamin C (IVC)	Redox modulation, pro-oxidant	Sensitizes to chemo

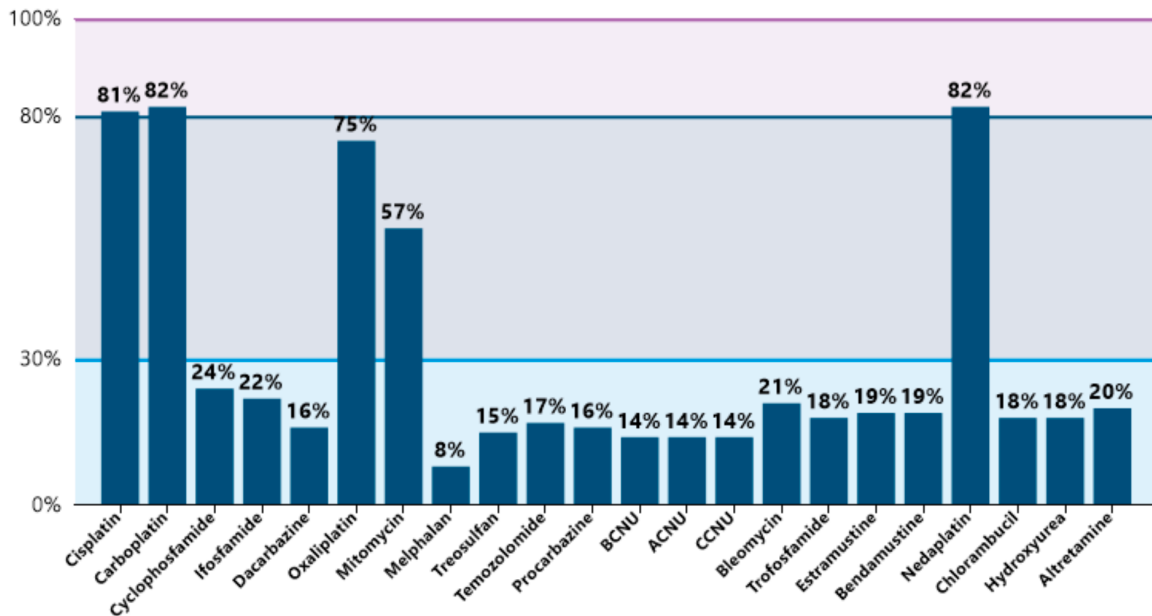
All treatments were administered under close supervision, with dose and frequency calibrated to maximize efficacy and minimize toxicity.

Moab -Monoclonal Antibodies



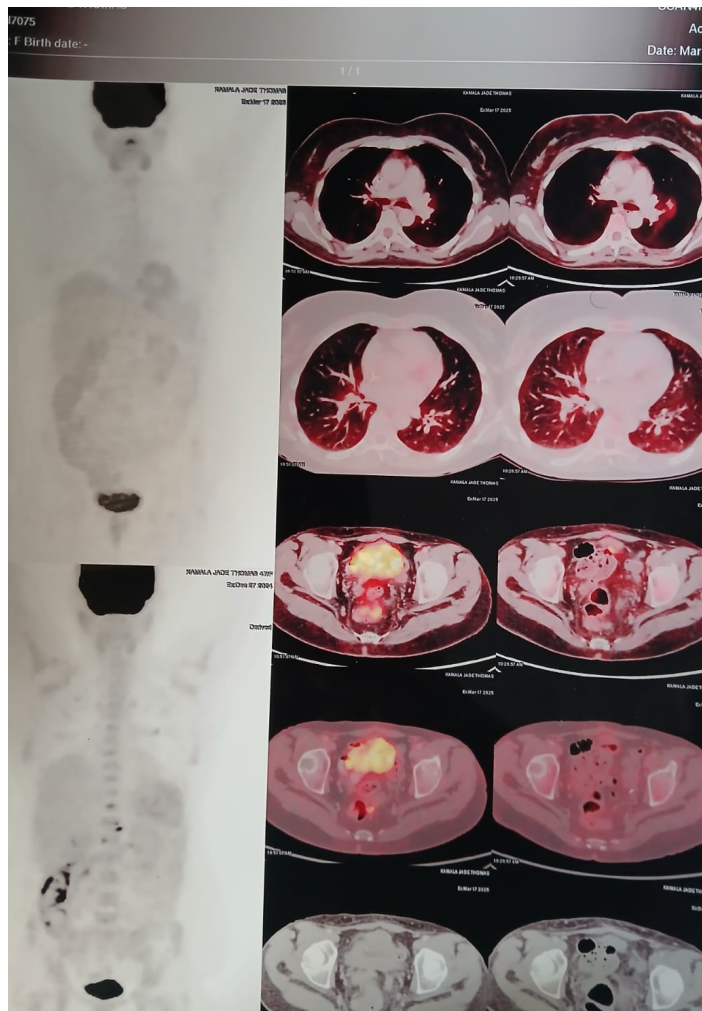
Alkylating Agents

High sensitivity: **Cisplatin**, **Carboplatin**, **Nedaplatin**



Response Assessment

PET/CT Monitoring:



Date	Result
Nov 2024	Intense FDG avidity in peritoneum, lungs, and lymph nodes
Dec 2024	Significant reduction in lesion avidity and volume (partial response)
Mar 2025	Complete metabolic response — no detectable FDG avid lesions

Discussion

This case exemplifies the potential of **integrative precision oncology** in achieving remission in rare, high-risk malignancies:

- **Bevacizumab's inclusion** was a cornerstone strategy, based on VEGF overexpression. By modulating angiogenic pathways, it not only suppressed metastatic progression but enhanced the impact of chemotherapeutics and nutraceuticals.
- **RGCC profiling** proved indispensable in tailoring therapy and avoiding ineffective drugs, addressing tumor heterogeneity, immune evasion, and resistance mechanisms.
- The incorporation of **scientifically selected botanicals and metabolic agents** optimized redox balance, immune activity, and cell cycle arrest — a model of translational integrative oncology.

Conclusion

██████ case represents a paradigm shift in the management of rare and advanced gynecologic cancers. The use of real-time RGCC diagnostics, combined with a multidisciplinary regimen of **standard-of-care chemotherapy, anti-angiogenics, and RGCC-directed nutraceuticals**, led to **complete disease remission**. This underscores the utility of **functional diagnostics and integrative modalities** in expanding therapeutic frontiers for patients with limited standard options.