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P O L I S H G Y N E C O L O G Y

# GINEKOLOGIA

## POLSKA

ORGAN POLSKIEGO TOWARZYSTWA GINEKOLOGICZNEGO  
THE OFFICIAL JOURNAL OF THE POLISH GYNECOLOGICAL SOCIETY

ISSN: 0017-0011

e-ISSN: 2543-6767

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**DOI:** 10.5603/gpl.96501

**Article type:** Clinical vignette

**Submitted:** 2023-07-14

**Accepted:** 2023-09-07

**Published online:** 2023-09-18

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Articles in "Ginekologia Polska" are listed in PubMed.

# **Squamous cell carcinoma evolving from mature cystic teratoma of the ovary**

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Mature cystic teratoma (MCT) is a common benign germ cell tumor that may occur in 10–20% of women during their lifetime, in majority in the reproductive years [1]. It originates from primordial germ cells and might be composed of tissues derived from three germ cell layers (ectoderm, endoderm, mesoderm). A rare complication of MCTs, noted in 0.17–2% of the cases, is the malignant transformation of any of the contained tissues [2].

We present a case of a 33-years old woman who was admitted to the department of gynecological oncology with the medical examination report which emphasized that there is a massive tumor arising from right ovary. Her medical and family history was insignificant. The patient reported no abdominal pain, unexplained weight loss, dysuria nor any other ailments. The menstrual cycle was regular (28 days, 4 days duration) with no cessation or irregular bleeding. The patients went through two vaginal births. Her BMI was 23.

The physical examination showed a palpable abdominopelvic mass extending two fingers above the navel. The transvaginal ultrasound was performed, and there was a massive solid mass with irregular echo and septums in the right adnexal area. According to IOTA guidelines, two of the B —rules and two of the M-rules were applied to the ultrasound features in this case: B3 — presence of acoustic shadows, B5 — absence of blood flow, M3 — at least four papillary structures and M4 — irregular multilocular-solid tumor with largest diameter > 100 mm. This is a rare combination indicating an increased risk of malignancy (diagnostic suspicion: borderline tumor or teratoma). There was an anteversion of the normal uterus, 3 mm, homogenous endometrium and no sign of fluid in the recto-uterine pouch. Tumor markers were negative [CA 125: 15.2 U/mL (0–35), HE4: 44 pmol/L (> 150)]. Patient signed informed consent for the laparotomy and adnexectomy was performed. A smooth-surfaced solid cyst mass was found. It was about 20 cm large. Macroscopically it contained hair, lipids and bone tissue. Intraoperative pathology initial diagnosis revealed mature teratoma with necrosis. (Fig. 1.A) The patient has been recovering well since then and was discharged 3 days after operation.

A definitive histopathological diagnosis revealed the transformation of MCT to the squamous cell carcinoma - G2 with no sign of angio- or neuroinvasion. (Fig. 1.B–D) The final staging of the tumor was FIGO 1A. After the final histopathological exam and decision on the need for adjuvant chemotherapy in this case, the patient did not agree to perform surgical staging.

Squamous cell carcinoma (SCC) is the most common malignant transformation of MCT, which occurs in > 80% of the cases [3]. Due to its rarity the mechanism of this transformation is yet not clear, there are no specific symptoms for early-stage transformation, as well as the lack of validated preoperative detection techniques. Hence, it is in the majority detected post-operatively, based on histopathological findings [1, 2, 4]. However, there are some factors predicting malignancy such as the patient age (mainly postmenopausal women), larger tumor size (> 9.9 cm or rapid growth), imaging characteristics (USG-Doppler -measurements of blood flow resistance in the intratumoral vessels and invading solid component in MR) or the elevated serum tumor markers (CA-125, CA19-9, CEA and SCC-antigen) [3].

No treatment guidelines have yet been established. However most frequently adjuvant chemotherapy is performed in FIGO stages II-IV and in I-stage diagnosed after the surgery to improve overall survival [3]. Congcong Li et al. [6] reported that platinum-based chemotherapy was related to better overall survival compared with others. Radiotherapy and Chemoradiotherapy did not improve

survival. Currently, due to a limited number of cases, there is no recognized first-line adjuvant therapy for SCC arising in MCT [6]. However, there is evidence that cisplatin is active against gynecological SCC, hence the authors advocate cisplatin-based adjuvant chemotherapy. In the literature, patients with SCC arising from MCT frequently received the POMB regimen (comprised of cisplatin, vincristine, mitomycin-c, bleomycin), PF (cisplatin, 5-fluorouracil) and POB (cisplatin, vincristine, bleomycin) [3].

In this case due to the postoperative diagnosis of SCC and no invading signs of the tumor the patient has been registered for the adjuvant chemotherapy.

Compared to epithelial ovarian cancer SCC-MCT has a poorer prognosis, hence there should be awareness of the possibility of malignant transformation of MCT, risk factors and treatment practices. The early diagnosis and tailored treatment play a pivotal role in improving overall survival. Our case highlights that it is important to consider all tumors malignant [unless the contrary is proved](#).

## **Article information and declarations**

### ***Ethics statement***

Written informed consent for publication was obtained from the patient.

### ***Author contributions***

The authors confirm sole responsibility for the following: Author 1: Marlena Cwynar: study conception and design; Author 2: Karolina Kowalczyk: manuscript preparation; Author 3: Grzegorz Cwynar: data collection; Author 4: Piotr Ptak: data collection; Author 5: Mykola Chekan: analysis and interpretation of results.

### ***Funding***

None.

### ***Acknowledgments***

None.

### ***Conflict of interest***

The authors declare no conflict of interest.

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**Figure 1.** Intraoperative and postoperative histopathology

