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KRUKENBERG SYNDROME IN AN 18-YEAR-OLD PATIENT: A CASE REPORT

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ABSTRACT

Background: Krukenberg tumors are rare metastatic ovarian tumors, often originating from the gastrointestinal tract, particularly the stomach. Their presentation may mimic primary ovarian neoplasms, especially in young women with non-specific gastrointestinal symptoms. **Case presentation:** We report the case of a 18-year-old nulligravid woman with a history of chronic dyspepsia who presented with pelvic pain. Imaging studies revealed a right ovarian mass suspicious for malignancy (ORADS 5). Laparoscopy followed by laparotomy revealed a right ovarian tumor, leading to adnexectomy and biopsies. Histology and immunohistochemistry suggested a metastatic adenocarcinoma of gastrointestinal origin. Upper GI endoscopy revealed a gastric adenocarcinoma. Multidisciplinary management was initiated with neoadjuvant chemotherapy. **Conclusion:** This case underscores the need to consider extra-genital origins in the differential diagnosis of adnexal masses in young women, particularly when accompanied by gastrointestinal symptoms.

KEYWORDS: Krukenberg tumor, ovarian mass, gastric adenocarcinoma, metastasis, laparoscopy, neoadjuvant chemotherapy.

INTRODUCTION

Ovarian tumors in young women often evoke suspicion of benign or primary malignant processes. However, metastatic ovarian tumors, although rare, must not be overlooked, especially when the clinical presentation includes gastrointestinal symptoms. Among these, Krukenberg tumors represent a distinctive entity, first described in 1896 by Friedrich Krukenberg, characterized by metastatic mucin-producing signet-ring cell adenocarcinomas, most frequently of gastric origin.

Krukenberg tumors typically present in women aged 30–40 years and account for 1–2% of all ovarian neoplasms. Bilaterality is a common feature, although unilateral presentations also occur. The clinical presentation often includes abdominal pain, bloating, or menstrual irregularities. Unfortunately, due to their deceptive presentation, these tumors are frequently misdiagnosed as primary ovarian cancers, leading to delays in identifying the true origin.

We present a detailed case of a young woman with a unilateral ovarian mass initially suspected to be of gynecologic origin but ultimately diagnosed as metastatic gastric adenocarcinoma.

CASE REPORT

An 18-year-old unmarried and nulligravid woman, with no notable past medical or surgical history except for dyspeptic syndrome treated with proton pump inhibitors for approximately one year, presented to the gynecology department of Moulay Ismail Military Hospital in Meknès, Morocco. Her dyspeptic symptoms had recently worsened despite treatment. She complained of colicky pelvic pain localized to the hypogastrium and bilateral iliac fossae, without urinary or gynecological symptoms such as menstrual disturbances, abnormal bleeding, or vaginal discharge. Due to her virgin status, she declined a pelvic examination.

Clinical examination revealed mild suprapubic tenderness without palpable masses. Transabdominal pelvic ultrasonography performed with a full bladder

identified a right adnexal mass measuring over 10 cm, with a solid component, thickened wall, and polylobulated contours, without associated ascites. Serum tumor markers were elevated. Pelvic MRI confirmed a suspicious right ovarian lesion consistent with ORADS 5, while the left ovary appeared normal and no peritoneal carcinomatosis was observed. In light of these findings, a diagnostic laparoscopy was indicated.

During laparoscopy, a large, irregular, solid, polylobulated right ovarian mass with malignant features was visualized, and the left ovary remained macroscopically normal. Due to the high suspicion of malignancy, conversion to a laparotomy via a Pfannenstiel incision was performed, enabling a right adnexectomy along with biopsies of the left ovary, omentum, and peritoneum. The mass appeared firm, poorly circumscribed, and irregular. No ascites or digestive or peritoneal metastatic lesions were detected.

Histopathological examination showed a moderately differentiated adenocarcinoma with signet-ring cells embedded in a fibrous stroma, establishing the diagnosis of a Krukenberg tumor. Immunohistochemistry was positive for CK20 and CDX2 while negative for CK7 and WT-1, strongly suggesting a gastrointestinal primary origin. Biopsies of the contralateral ovary, omentum, and peritoneum were negative for malignancy.

A subsequent abdominal ultrasound did not identify a primary tumor. However, upper gastrointestinal endoscopy revealed an ulcerated, exophytic lesion in the gastric antrum, and histological analysis confirmed a moderately differentiated adenocarcinoma. A thoraco-abdominopelvic CT scan did not show any other metastatic sites.

The case was presented at a multidisciplinary tumor board meeting. Considering the absence of extensive metastatic disease and the possibility of curative treatment, the patient was scheduled to begin neoadjuvant chemotherapy, followed by surgical management of the primary gastric tumor depending on treatment response.

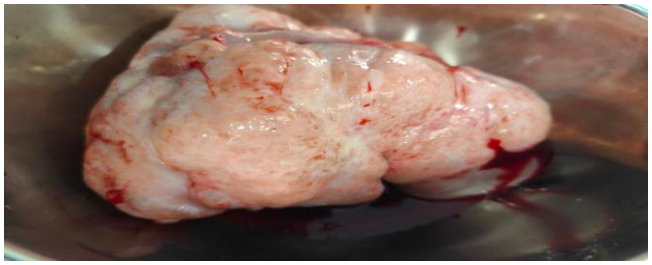

Figure 1: Krukenberg's ovarien tumor.

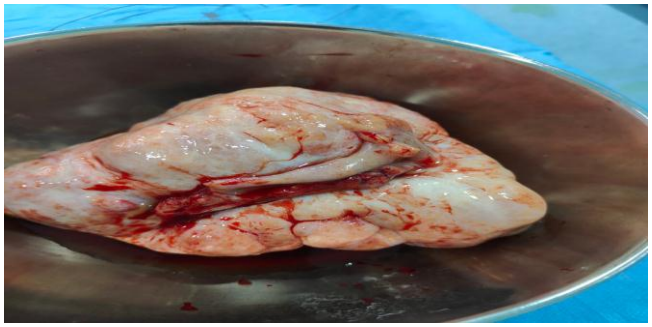

Figure 2: right ovarian mass after adnexectomy.

DISCUSSION

Krukenberg tumors represent a rare and distinctive subset of metastatic ovarian malignancies, most commonly originating from primary gastrointestinal adenocarcinomas, especially those of gastric origin. Their diagnosis remains clinically challenging, particularly in young women who frequently present with vague and non-specific symptoms. The pathophysiological mechanisms of spread may include transcoelomic dissemination, hematogenous spread, or, more characteristically in gastric cancer, retrograde lymphatic extension toward the para-aortic and pelvic lymphatic chains.

Clinically, patients often report abdominal pain, distension, or gastrointestinal complaints that can mimic benign gynecologic disorders. Menstrual disturbances may be observed but are not universal. In virginal patients or those who defer pelvic examination, early diagnostic steps such as transvaginal ultrasound may be limited, potentially contributing to delayed detection, as seen in our case where diagnosis relied on transabdominal imaging modalities.

Radiological evaluation through ultrasound and MRI may detect complex adnexal masses with solid components, irregular borders, and occasionally bilateral involvement, features that heighten suspicion for

metastatic disease. However, imaging alone rarely allows definitive differentiation between primary and secondary ovarian tumors. Therefore, histopathological confirmation remains essential to diagnosis. The hallmark finding is mucin-containing signet-ring cells dispersed within a fibrous stroma. Immunohistochemical profiling further aids in identifying the primary site: the CK7-negative/CK20-positive phenotype combined with CDX2 positivity, as identified in our patient, strongly supports a gastrointestinal rather than primary ovarian origin.

The differential diagnosis includes primary ovarian mucinous carcinoma, endometriosis-associated masses, tubo-ovarian abscesses, and metastases from other primary sites such as the breast, pancreas, or appendix. Misclassification remains common, emphasizing the importance of a multidisciplinary diagnostic approach—particularly when gastrointestinal symptoms coexist with adnexal masses.

Management strategies depend primarily on the extent of disease and the resectability of the primary tumor. When possible, curative intent includes cytoreductive surgery and systemic chemotherapy. In cases with isolated ovarian involvement—though uncommon—timely diagnosis may provide an opportunity for aggressive intervention and prolonged survival. Nevertheless, the overall prognosis remains poor, with median survival ranging between 12 and 24 months. Younger age, limited metastatic burden, and favorable response to chemotherapy are positive prognostic indicators.

This case highlights several key considerations: the growing recognition of gastric malignancies among younger female populations, the necessity of including gastrointestinal evaluation in the workup of malignant-appearing ovarian tumors, and the role of early multidisciplinary decision-making. Initiation of neoadjuvant chemotherapy in our patient aims to improve tumor resectability and long-term outcomes, reflecting current evidence favoring such an approach in metastatic gastric disease. Ultimately, awareness and timely recognition of Krukenberg tumors remain essential for optimizing management and prognosis in young women presenting with adnexal masses of uncertain origin.

CONCLUSION

This case emphasizes the need for a multidisciplinary approach in the evaluation of adnexal masses, particularly in young women with gastrointestinal symptoms. Metastatic disease, though rare, should be considered early, especially in cases where imaging and tumor markers suggest malignancy. A comprehensive diagnostic workup, including gastrointestinal endoscopy, is crucial for identifying the primary tumor and guiding effective management.

DECLARATIONS

Patient Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflict of Interest: The authors declare no conflicts of interest.

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