

Case Report

Clear Cell Carcinoma of Ovary: A Rare Clinico-Pathological Entity

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Abstract

Clear cell carcinoma of ovary is rare neoplasm and has varied clinical manifestations. Mean age at presentation is between 40–70 years. We report a case of a 53 year old female who presented with complaints of pain, lower abdomen. Imaging revealed a large ovarian mass with multiple metastatic deposits at presentation. Morphology and IHC favored a diagnosis of Clear cell carcinoma of left ovary. This case is presented for its rarity, varied histomorphology, morphological overlap with the commoner serous carcinoma of Ovary and its poor response to conventional chemotherapy.

Keywords: Ovarian Carcinoma; Clear Cell Carcinoma; Serous Carcinoma; Napsin

Introduction

In India, Ovarian carcinoma is women's third most common and lethal cancer type, accounting for 6.7% of observed cancer incidences [1]. Epithelial carcinomas of the ovary can be grouped into five histological subtypes, which differ in their histopathological characteristics and molecular pathogenesis. Its histological types are: High-grade serous, endometrioid, Clear-Cell (CCC), mucinous and low-grade serous carcinomas [2]. Clear-Cell Carcinoma (CCC) is a rare malignant tumor of the ovary. Women diagnosed with clear cell carcinomas are generally younger and diagnosed at earlier stages than those with high-grade serous histological types [3]. Clear cell carcinoma (CCC) represents only 2–10% of all epithelial ovarian cancers. The median age of presentation is between 40 to 70 years with peak incidence at 52 yrs. We present a case of a 53 year old diagnosed as a case of metastatic clear cell carcinoma ovary at presentation. The aim of this case report is to sensitise the Pathologists and Oncologists about this unique entity. The diagnosis is important due to unique clinical challenges, varied histomorphology, morphological overlap with the commoner serous carcinoma of Ovary and its poor response to conventional chemotherapy.

Case Report

We present a case of 53 year female who presented with complaints of pain abdomen in lower abdomen. She was diagnosed as Carcinoma Ovary stage III on imaging and on the basis of CA 125 being 324 U/mL at presentation in outside hospital.

She underwent TAH BSO and NACT (Paclitaxel and carboplatin) 3 cycles at that time. She was symptomatically better for a period of 3 months and thereafter again developed pain in lower abdomen. On investigation, metastatic deposits were found in anterior abdominal wall and periumbilical region with extensive omental deposits. Patient was thereafter started on chemotherapy (Paclitaxel, bevacizumab and carboplatin) at our hospital. The CA 125 levels were 61.2 IU/mL after chemotherapy. Omental biopsy at our center at this time revealed a poorly differentiated carcinoma. Secondary cytoreductive surgery with HIPEC was done. On gross examination, a circumscribed $4 \times 2.5 \times 2$ cm pelvic mass was found and macroscopic deposits were found in greater omentum, paraaortic lymph nodes and pelvic lymph nodes. On microscopic examination, tumor cells were arranged in small sheets, glands and tubules separated by fibrous stroma. These were lined by clear and hobnail cells (Figure 1, Figure 2). The cells were cuboidal to columnar with abundant clear cytoplasm and eccentric nucleus. Immunohistochemistry showed PAX8 and Napsin positivity (Figure 3, Figure 4). WT1, ER and PR were negative. Overall morphology and IHC favored a diagnosis of Clear Cell Carcinoma of left ovary.

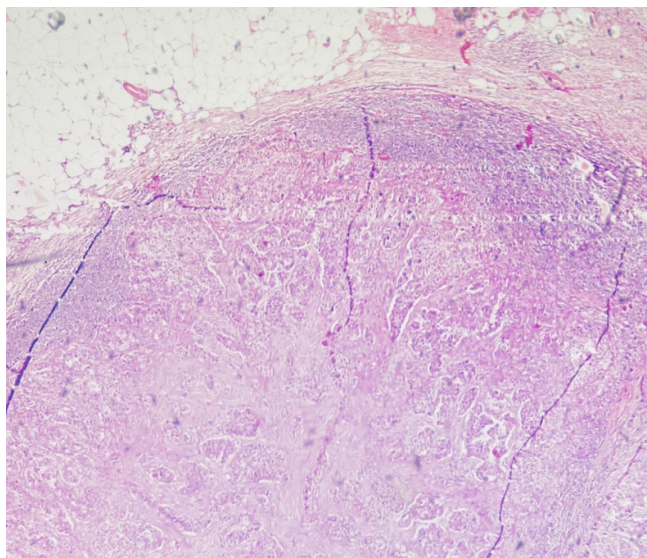


Figure 1: H&E 40X: Omental deposits of clear cell carcinoma

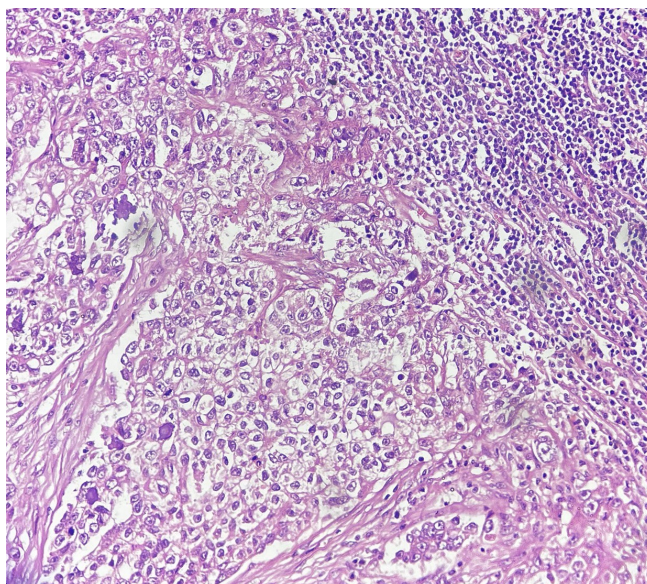


Figure 2: H&E 400X: Clear tumour cells in sheets and vague nests

Discussion

Patients with Clear Cell Carcinoma of Ovary usually present with pelvic mass or as an incidental finding, with a mean age of 52 yrs and an average size of 13 cm [4]. Ours was a 53 years female presenting with pain right lower quadrant. This patient did not have endometriosis which is a common finding associated with clear cell carcinoma ovary [5]. The size of the mass was $15 \times 12 \times 6$ cm which is slightly larger than the mean size according to Kurman et al. 2014 which was 13 cm [4]. The case at presentation was widely metastatic to omentum and liver.

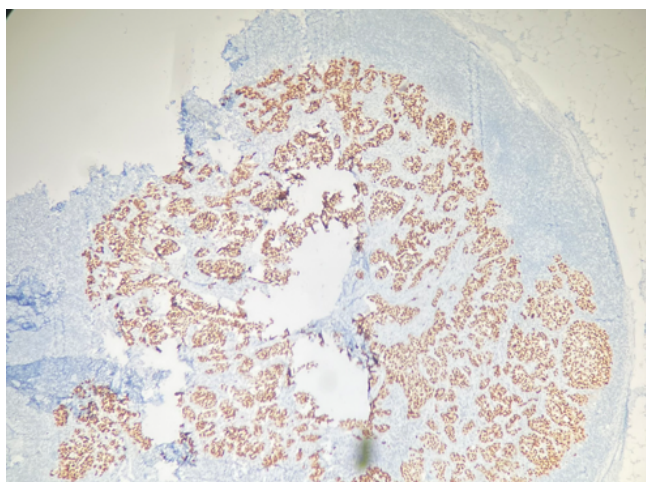


Figure 3: IHC PAX8 (clone ZR1) 40X: Positivity in tumour cells

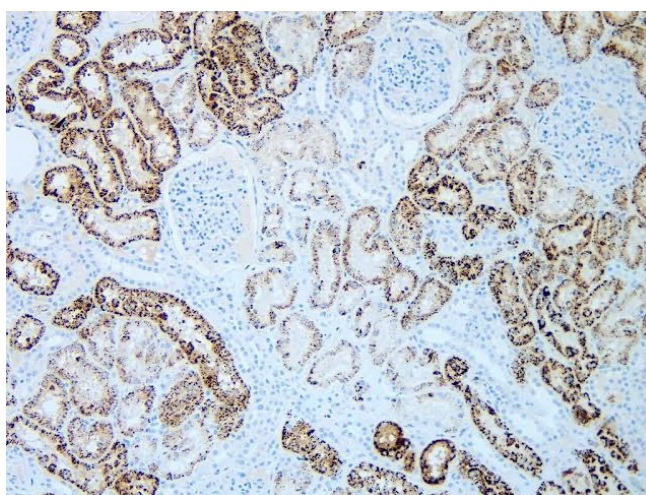


Figure 4: IHC Napsin (clone EP205) 100X: Positivity in tumour cells

Conclusion

Ovarian Clear Cell Carcinoma poses significant diagnostic and therapeutic challenges due to its rarity and chemoresistance. Its poor prognosis necessitate a personalized approach to management. This case underscores the importance of early diagnosis by paying attention to morphology, use of immunohistochemistry to differentiate from high grade serous carcinoma with which it can have morphological overlap and the potential role of novel therapeutic strategies in improving outcomes.

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Competing Interests: None

References

1. Mhatre A, Sengupta S, Patil P, Chandrani P, Kane S, Mulherkar R, et al. Multi-omics analysis of the Indian ovarian cancer cohort revealed histotype-specific mutation and gene expression patterns. *Front Genet.* 2023;14:1102114. doi:10.3389/fgene.2023.1102114.
2. Prat J, D'Angelo E, Espinosa I. Ovarian carcinomas: at least five different diseases with distinct histological features and molecular genetics. *Hum Pathol.* 2018;80:11–27.
3. Gadducci A, Multinu F, Cosio S, Carinelli S, Ghioni M, Aletti GD, et al. Clear cell carcinoma of the ovary: Epidemiology, pathological and biological features, treatment options and clinical outcomes. *Gynecol Oncol.* 2021;162(3):741–50.
4. Kurman RJ, Carcangiu ML, Herrington CS, Young RH, editors. WHO classification of tumors of female reproductive organs. Lyon: IARC; 2014.
5. Gupta N, Rajwanshi A, Suri V. Clear cell carcinoma of the ovary in a 24-year-old female associated with endometriosis. *Adv Cytol Pathol.* 2017;2(1).