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Original Article - Case Report

Synchronous Uterine Dedifferentiated Endometrioid Carcinoma and Ovarian Brenner Tumor: An Extremely Unusual Concurrence

*Zachariah Chowdhury [1,2], Paramita Rudra Pal [1,2,] *, Neha Singh [1,2], Ajita Verma [1,2]*

[1] Department of Oncopathology, Homi Bhabha Cancer Hospital (HBCH) and Mahamana Pandit Madan Mohan Malviya Cancer Centre (MPMMCC), Sundarpur, Varanasi, India
[2] Tata Memorial Centre, Homi Bhabha National Institute (HBNI), Varanasi, India

* *Corresponding author*: *Dr. Paramita Rudra Pal,* Department of Oncopathology, Mahamana Pandit Madan Mohan Malviya Cancer Centre (MPMMCC) Sundar Bagiya Colony, Sundarpur, Varanasi, UttaPradesh, India; Email: imtiazbashir7@gmail.com

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ABSTRACT

Dedifferentiated endometrial carcinoma (DEC) is a rare and aggressive subtype of endometrial cancer characterized by the coexistence of differentiated and undifferentiated tumor components. We report a case of synchronous DEC and a benign ovarian Brenner tumor in a 68-year-old postmenopausal woman presenting with abnormal uterine bleeding. Histopathological examination revealed a biphasic tumor composed of FIGO grade 2 endometrioid carcinoma and an undifferentiated carcinoma with rhabdoid features. The tumor was accurately staged as pT1aN0, corresponding to FIGO stage IA. This case highlights limitations of endometrial biopsy in diagnosing DEC due to under-sampling of the undifferentiated component. Immunohistochemistry showed diffuse cytokeratin positivity and moderate estrogen receptor expression with retained INI1 and wild-type p53. The coexistence of DEC with a benign ovarian Brenner tumor is exceptionally rare and poses diagnostic and pathogenetic considerations.

Keywords

Dedifferentiated Endometrial Carcinoma, Brenner Tumor.

Abbreviations

Dedifferentiated endometrial carcinoma (DEC); Magnetic Resonance Imaging (MRI); Pathological tumor–node–metastasis (pTNM); American Joint Committee on Cancer (AJCC); Epithelial membrane antigen (EMA); Estrogen receptor (ER); Progesterone receptor (PR); Mismatch repair (MMR).

INTRODUCTION

Dedifferentiated endometrial carcinoma (DEC) is believed to be an uncommon subtype of endometrial cancer, despite the absence of a definitive incidence rate. Conversely, it is recognized that the range of 1-9% represents the incidence percentage of undifferentiated endometrial carcinoma[1]. Moreover, several retrospective analyses have demonstrated that in 37-87% cases, low-grade endometrial adenocarcinoma was associated with undifferentiated endometrial carcinoma component[1]. Herein we report an extremely rare case of dedifferentiated endometrial carcinoma coexisting with an ovarian Brenner tumor in a 68-year-old female. Brenner tumors are rare, solid fibro-epithelial neoplasms (2-3% of ovarian

neoplasms) that resemble proliferating epithelial elements with a transitional cell appearance that indicates metaplasia. Incidental Brenner tumors are frequently observed in specimens following oophorectomy. Brenner tumors may manifest as aberrant uterine bleeding during the postmenopausal stage, and may occasionally be linked to endometrial adenocarcinoma, hyperplasia, and polyposis[2]. It is unclear, though, if the estrogenic hormone activity of hormone-producing Brenner tumors could be the source of these abnormalities. Only few case reports of coexisting endometrial adenocarcinoma and ovarian Brenner tumor have been published till now[2].

CASE PRESENTATION

A 68-year-old female presented with 2 episodes of postmenopausal bleeding. Magnetic Resonance Imaging (MRI) revealed an irregular, T2 intermediate-to-hyperintense, heterogeneously enhancing mass involving the lower half of the endometrial cavity, measuring 2.7 x 2.5 x 2.6 cm. Extent of myometrial involvement was <50%. Endocervical extension was seen but cervical stroma was not involved. Ovaries were normal for age. Clinically the patient was diagnosed as endometrial carcinoma stage IA2. On endometrial biopsy, the histopathological diagnosis was endometrioid carcinoma, FIGO grade 3 with focal high-grade areas favoring high-grade serous carcinoma. Total abdominal hysterectomy with bilateral salpingo-oophorectomy was performed and the specimen was sent for histopathological examination. Grossly, a specimen of uterus with cervix and bilateral salpingooophorectomy was received measuring 9.5x8x4cm. A polypoid tumor measuring 4.3x4.1x4cm was identified in the uterus involving the posterior, right lateral and left lateral wall and the fundus, with the epicenter of the tumor being endometrium. Tumor involved less than half of the myometrial thickness (0.3cm/1cm=30.00% of myometrial thickness). Cervix was free of tumor; however, the lower uterine segment was involved by the tumor. The right and left fallopian tubes measured 2.1 cm and 2 cm in length respectively, while the two ovaries measured 2.5x2x1 cm (right) and 2.8x2x1 cm (left). Microscopic analysis unveiled a biphasic tumor composed of differentiated and undifferentiated areas (see **Figure 1**). The differentiated area consisted of tumor cells with features of endometrioid carcinoma, FIGO grade 2, while the undifferentiated area consisted of large sized tumor cells arranged in discohesive sheets and scattered singly.

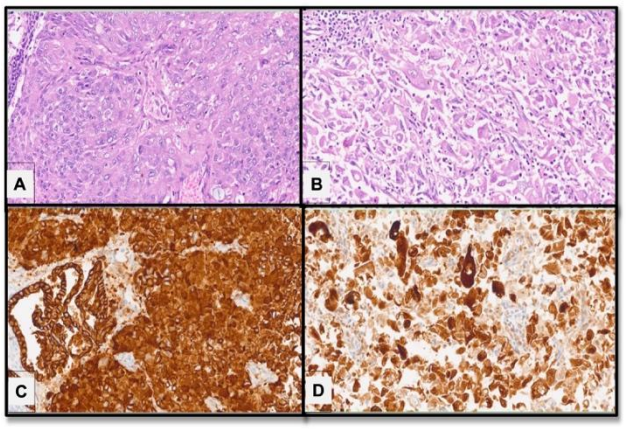

Figure 1. **Histopathological features of dedifferentiated endometrial carcinoma.** (A) Differentiated endometrioid component showing glandular architecture (H&E, ×400). (B) Undifferentiated carcinoma component composed of discohesive tumor cells with rhabdoid morphology (H&E, ×400). (c,d) Immunohistochemistry showing diffuse AE1/AE3 positivity in both the component

Cells with rhabdoid morphology (large oval to round cells with vesicular nuclei, prominent macro nucleoli and moderate eosinophilic cytoplasm) were prominent. The tumor was myoinvasive, invading the lower uterine segment but involved less than half of the myometrial thickness. Focal necrosis was present. On immunohistochemistry, tumor cells in the undifferentiated area were immunoreactive for AE1/AE3 (diffuse) and estrogen receptor (~ 45% of tumor cells expressed nuclear positivity of moderate intensity) while were negative for desmin, myogenin, myoD1, p16 and WT1. INI1 was retained by the tumor cells. p53 immunostaining was of wild type (heterogeneous staining). 31 bilateral pelvic lymph nodes were found, none of which contained tumor deposits. Based on these findings, the diagnosis offered was dedifferentiated endometrioid carcinoma. Pathologic stage as pathological tumor- node-metastasis (pTNM), American Joint Committee on Cancer (AJCC) 8th edition was pT1aN0 and FIGO stage IA. Besides, the right ovary of the patient divulged a benign Brenner tumor (see **Figure 2**), while the left ovary exhibited features of serous cystadenoma. Considering the high-risk histological features, systemic chemotherapy was chosen as the preferred treatment over chemoradiotherapy for further treatment of the patient. The patient remains disease-free on short-term follow-up (2 months).

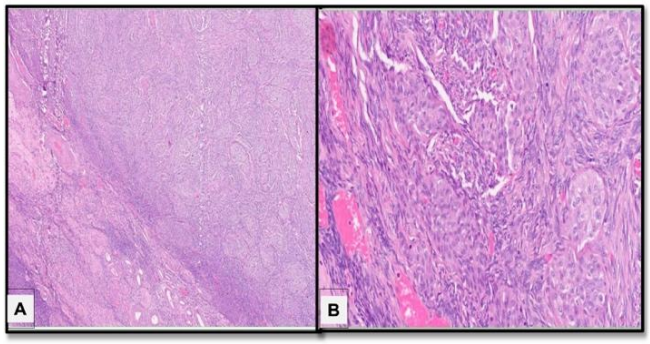

Figure 2. Ovarian Brenner tumor. (A) Nests of transitional-type epithelial cells within dense fibrous stroma (H&E, ×100). (B) Higher magnification highlighting characteristic coffee-bean nuclei (H&E, ×400).

DISCUSSION

A tumor with elements of both undifferentiated carcinoma and a differentiated carcinoma (typically of FIGO grade 1 or 2 endometrioid carcinoma) is termed a dedifferentiated endometrial carcinoma (DEC). The differentiated component can also be high grade endometrioid adenocarcinoma, high grade serous carcinoma or clear cell carcinoma. A distinct border marking the transition between the two tumor components is generally conspicuous. DEC was initially described as a variation of well-differentiated endometrial cancer that had advanced to carcinoma of higher grade after treatment by Tenti et al. in 1989[1]. Several years later, in 2006, Silva et al. defined dedifferentiated endometrioid cancer as an aggressive carcinoma composed of low-grade and undifferentiated endometrial carcinoma[1]. Subsequently, DEC was described in different literatures and has been found to have a very poor prognosis even with < 20% undifferentiated components1. Therefore, it is crucial to differentiate it from its mimickers like FIGO Grade 2 or Grade 3 endometrial cancer. The discrepancy between the initial biopsy diagnosis and final hysterectomy specimen underscores the limitations of endometrial biopsy in diagnosing DEC, as the undifferentiated component is often focal and deeper within the tumor[1,3]. Immunohistochemical studies are highly beneficial in this scenario. While the expression of keratins, epithelial membrane antigen (EMA), estrogen receptor (ER), and progesterone receptor (PR) markers are almost nonexistent in undifferentiated tumor areas, or there is only focal staining for EMA and keratins, these markers are significantly positive in areas of differentiated morphology[3]. Retention of INI1 and wild type p53 further supported the diagnosis.

DEC is difficult to diagnose preoperatively using only endometrial curettage. Confirming the definitive diagnosis of DEC requires a sufficiently large specimen sample because the undifferentiated components of the tumor are perceived deeper in the myometrium compared to the differentiated components[3]. The undifferentiated component of DEC brings forth varied differential diagnosis such as uterine carcinosarcoma, higher-grade endometrial carcinoma, neuroendocrine carcinoma, and unclassified sarcoma, which thus need to be precluded[1]. The sixth and seventh decades of life are the most usual times for DEC to occur which was apparent in our case also, while examples at younger ages have also been chronicled[4]. Clinically, vaginal bleeding is a common symptom. In many cases, metastasis has already transpired by the time the diagnosis is made, with brain, bone and adrenals being the commonest metastatic sites[1]. However, in our case, no metastasis was detected. DEC has occasionally been found to be associated with Lynch syndrome, an autosomal dominant condition caused by germline mutations in the mismatch repair (MMR) genes[1]. Recent advances in molecular classification, including The Cancer Genome Atlas framework, have emphasized the importance of assessing MMR status, p53 abnormalities, and POLE mutations in endometrial carcinoma[5]. MMR-deficient tumors, including a subset of DEC, have demonstrated significant benefit from immune checkpoint inhibitors, both as monotherapy and in combination with chemotherapy[6]. Although MMR testing was not performed in the present case, this represents a limitation and highlights the need for comprehensive molecular evaluation in future cases.

Brenner tumor is a rare ovarian tumor, usually, presenting in the fifth or sixth decade of life[2]. In 4-14% of cases, Brenner tumors are linked to endometrial hyperplasia and stromal luteinization, which produces estrogen and can manifest as vaginal bleeding. Endometrial cancer may develop as a result of an imbalance in the production of progesterone and estrogen brought on by Brenner tumors. The coexistence of endometrioid carcinoma can likely be explained by the fact that the incidental Brenner tumor in the patient's ovary was likely secreting estrogen. But in the present case, it is not reasonable to state that the hormone production of the Brenner

- **Dedifferentiated endometrial carcinoma is a rare, aggressive tumor that is often underdiagnosed on biopsy.**
- **Coexistence with an ovarian Brenner tumor is extremely uncommon and adds to limited reported literature.**
- **Accurate diagnosis with immunohistochemistry and molecular evaluation is essential for appropriate management.**

tumors contributed to the development of the endometrial adenocarcinoma considering the small size of the Brenner tumor. Systemic chemotherapy was administered in this case in view of the high-risk histological features associated with the undifferentiated carcinoma component, in accordance with current management principles for high-risk endometrial carcinoma.

CONCLUSION

This case underscores the diagnostic challenges of dedifferentiated endometrial carcinoma, particularly on limited biopsy material, and highlights the importance of accurate staging and comprehensive immunohistochemically and molecular evaluation. Awareness of this rare but aggressive entity is essential for appropriate therapeutic decision-making, especially in the era of molecularly guided treatment strategies.

Conflict of Interest

The authors declare no conflict of interest.

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Ethical approval was obtained prior publication. The privacy rights of the patient have been strictly observed. Informed consent was obtained.

Authors' Contribution

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

AI use statement

No artificial intelligence tools or generative AI were used in the creation of this work.

References

1. Giordano G, Ferioli E, Guareschi D, Tafuni A. Dedifferentiated Endometrial Carcinoma: A Rare Aggressive Neoplasm-Clinical, Morphological and Immunohistochemical Features. Cancers (Basel). 2023 Oct 26;15(21):5155.
2. Sharma M, Khangar B, Mallya V, Khurana N, Gupta S. Coexisting brenner tumor and endometrial carcinoma. J Mid-life Health 2017;8:89-91.
3. Kani V, A S, P J, Menon D. A Rare Case Report of Dedifferentiated Endometrioid Carcinoma. Cureus. 2024 Mar 17;16(3):e56329.
4. Goh C, Farah BL, Ho WY, Wong SL, Goh CHR, Chew SH, Nadarajah R, Lim YK, Ho TH. Dedifferentiated endometrioid adenocarcinoma of the uterus: A case series and review of literature. Gynecol Oncol Rep. 2020 Jan 30;32:100538.
5. Makker V, Colombo N, Herráez AC, Casado Herráez A, Taylor MH, Aghajanian C, et al. Lenvatinib plus pembrolizumab in previously treated advanced endometrial cancer: updated efficacy and safety from the randomized phase III Study 309/KEYNOTE-775. J Clin Oncol. 2023;41(16):2904–2910. doi:10.1200/JCO.22.02152.
6. Mirza MR, Chase DM, Slomovitz BM, dePont Christensen R, Novák Z, Black D, et al. Dostarlimab for primary advanced or recurrent endometrial cancer. Ann Oncol. 2023;34(23):2145–2158. doi:10.1016/j.annonc.2023.07.012