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Case Report

Collision tumor of low grade endometrial stromal sarcoma and cervical squamous cell carcinoma: a case report

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Abstract: Uterine collision tumor is a rare pathologic type composed of two or more malignant tumors, with cervical collision tumors being even rarer. The mechanism of occurrence of collision tumors is not clear. We hope to help clinicians and pathologists understand and diagnose this condition. We report a case of a 53-year-old female diagnosed with poorly differentiated squamous cell carcinoma of the cervix through biopsy. After reviewing previous reports on collision tumors in different locations and theiry types in the cervix and uterus, we found that collisions between cervical squamous cell carcinoma and low-grade endometrial stromal sarcoma were rare. Identifying this type of collision tumor may help with future diagnosis and treatment.

Keywords: Collisional tumor, squamous cell carcinoma, low-grade stromal sarcoma of the uterus, tumor

Introduction

Cervical cancer is the fourth most common cancer among women worldwide [1]. Cervical squamous cell carcinoma (CSCC)is the main type of cervical cancer. In recent years, the main histologic types of CSCC were defined according to the 2014 WHO.

Low-grade endometrial stromal sarcoma (LGESS) is a malignant tumor that resembles proliferative endometrial stromal cells and exhibits infiltrative and invasive growth into the uterine muscle layer and/or lymphatic vessel spaces [2]. LGESS has a good prognosis, with a 5-year disease-specific survival rate of 90% for stage I or II and 50% for stage III or IV [3].

Uterine collision tumor is a rare pathologic finding composed of two or more malignant tumors, without the presence of intervening tissue. They can be benign or malignant, primary or secondary. In some cases, they are the first manifestation of occult disease [4]. The mechanism of collision tumors is still unclear, and it may be a coincidence of two tumors in an adjacent area; or a single carcinogenic stimulus may alter a specific site, allowing multiple tumors to occur simultaneously; or existing tumors may cause local environmental changes, creating suitable conditions for the development of other tumors [5].

This case emphasizes a rare collision tumor between cervical squamous cell carcinoma and low-grade endometrial stromal sarcoma. Reviewing previous reports on collision tumors in different locations and types of the cervix and uterus will lay the foundation for future clinical management and prognosis.

Case report

A 53-year-old female patient had abnormal vaginal bleeding for 1+ years, manifested as irregular menstruation, incomplete menstrual flow, and increased menstrual volume. She was diagnosed with the above clinical symptoms at a local hospital, which was considered to be caused by subcutaneous contraceptive devices. She did not have a family history of inherited diseases. The patient visited our hospital again nearly a month ago due to menstrual bleeding and pain in the lumbar and sacral regions. A biopsy report showed cervical squamous cell carcinoma, and the patient was subsequently admitted to our hospital for treatment. Based on the preliminary diagnosis, an extended aux-

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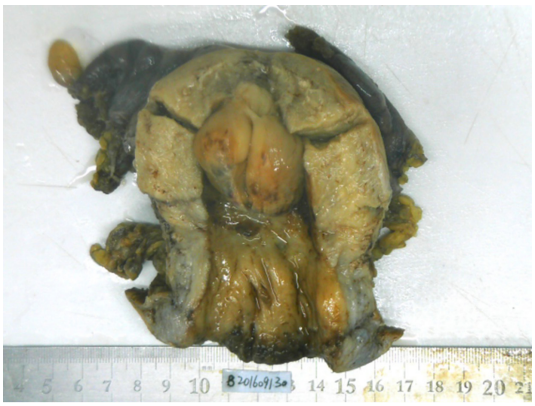

Figure 1. Gross appearance and schematic view of the hysterectomy specimen. An exogenous mass on the posterior lip of the cervix with surface erosion; a polypoid mass is seen in the posterior wall and fundus of the uterine cavity.

iliary examination was performed: computed tomography (CT) of the abdomen and pelvis showed a soft tissue density mass in the cervical body junction area, approximately 3.4 cm × 4.5 cm × 4.1 cm, with an unclear boundary with the endometrium, muscle layer infiltration, no lymph nodes or extrauterine involvement, and no abnormalities on chest CT scan.

According to this preoperative diagnosis, surgical treatment includes hysterectomy, bilateral salpingectomy, and oophorectomy, as well as lymph node dissection, with no tumor at the resection margin. General examination revealed an exogenous mass on the posterior lip of the cervix, with surface erosion and a volume of approximately 2.5 cm × 1.7 cm × 0.5 cm. The mass had a grayish white, solid, slightly hard texture, and invaded less than ½ the depth of the myometrium. A polypoid mass with a volume of approximately 3.5 cm × 3.3 cm × 1.5 cm was seen on the posterior wall and lower uterine segment (**Figure 1**). The cut surface of the mass was gray-white and solid, soft, and fish-like. The mass was visible to the naked eye and had penetrated the superficial muscle layer of the uterine body. Extensive sampling was conducted on cervical tumors and polyp-like tumors at the lower uterine segment, and two independent tumor components were seen under the microscope. One type of tumor (cervix) was composed of medium-sized atypical cells, distributed in a patchy manner, with cell morphology mostly spindle-shaped or oval-shaped, tumor cells infiltrated into the superficial stroma of the cervix (**Figure 2A**, **2B**). Tumor giant cells were occasionally seen, with less cytoplasm and deeply stained nuclei. Some tumor cells had clear cytoplasm and many mitotic figures were observed (**Figure 2C**); The adjacent tumor (uterine fundus) cells had different morphology, similar to proliferative endometrial stromal cells, and were distributed uniformly, oval to spindle-shaped, and nest-shaped to bundle shaped. Tumor cell cytoplasm was lightly stained and eosinophilic. The nucleus was small, round to oval in shape, with < 5 nuclei per 10 HPF. Tumor cells infiltrate the superficial layer of the uterine myometrium (**Figure 3A**).

On further examination, immunohistochemistry and chemical staining showed that the cancer components, including P16 protein (P16), P63 protein (P63), and CK5/6, were all positive (**Figure 2D-F**), and the proliferation index (Ki67) was about 80%. In the sarcoma components CD10 (**Figure 3B**), ER (**Figure 3C**), PR (**Figure 3D**), Bcl-2 were all positive, desmin, SMA, and caldesmon were all negative, and Ki67 was about 20%. The final diagnosis was: 1. Cervical poorly differentiated squamous cell carcinoma, with infiltration of <1/2 of the entire cervical stroma; 2. Low-grade endometrial stromal sarcoma, infiltrating <1/2 of the myometrium.

After surgery, clinical oncology, radiation oncology, and pathology were comprehensively evaluated to determine adjuvant chemotherapy and/or radiation therapy for the purpose of achieving a cure, and treatment was planned to be completed within 8 weeks. The patient was discharged after completing treatment and was lost to follow-up.

Discussion

14 articles published from 1987 to 2024 on different types of collision tumors in the female reproductive tract were found (**Table 1**) [6-19], including 1 case of clear cell carcinoma and stromal tumor, 1 case of rhabdoid tumor and endometrioid adenocarcinoma, 4 cases of endometrial stromal sarcoma, 7 cases of endometrial cancer, and 1 case of adnexal tumor. Uterine collision tumors are rare, and a review of previous literature was conducted to compare treatment methods and outcomes. The prognosis of a collision tumor between endometrioid adenocarcinoma and endometrial

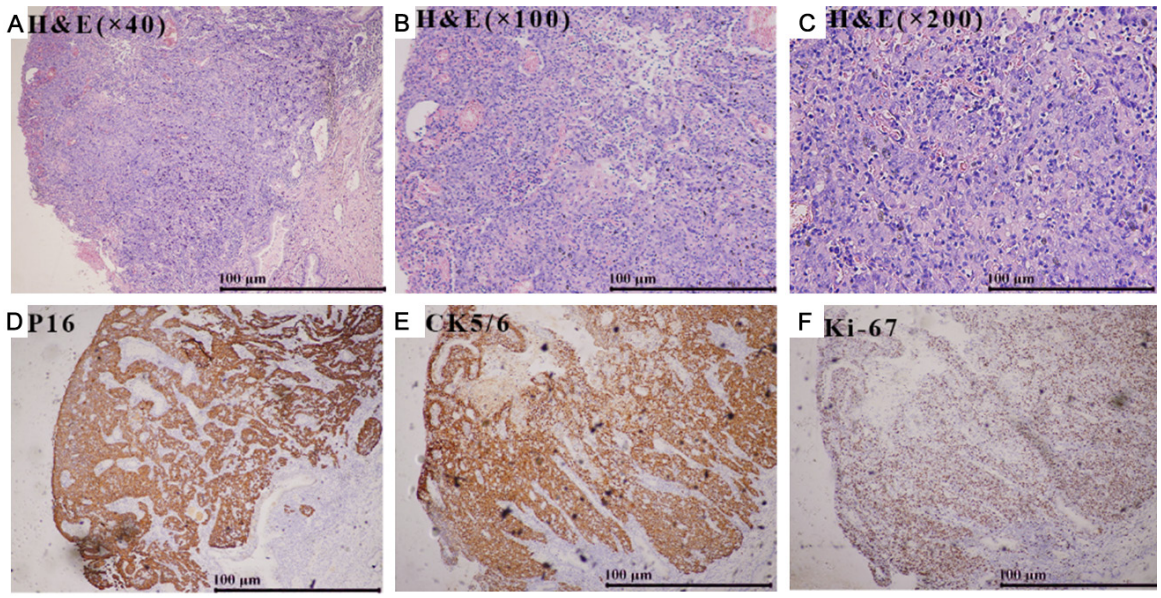

Figure 2. Histopathology of the hysterectomy specimen, H&E stain. A: SCC component infiltrates into the cervical stroma (H&E, ×40); B: Sheets of atypical spindle cells (H&E, ×200). C: Tumor cells with brisk mitotic activity (H&E, ×400). D: SCC component immunoreactive for p16 with strong staining (IHC, ×40). E: SCC component immunoreactive for CK5/6 with strong staining (IHC, ×40). F: Approximate 80% expression of Ki-67 (IHC, ×40).

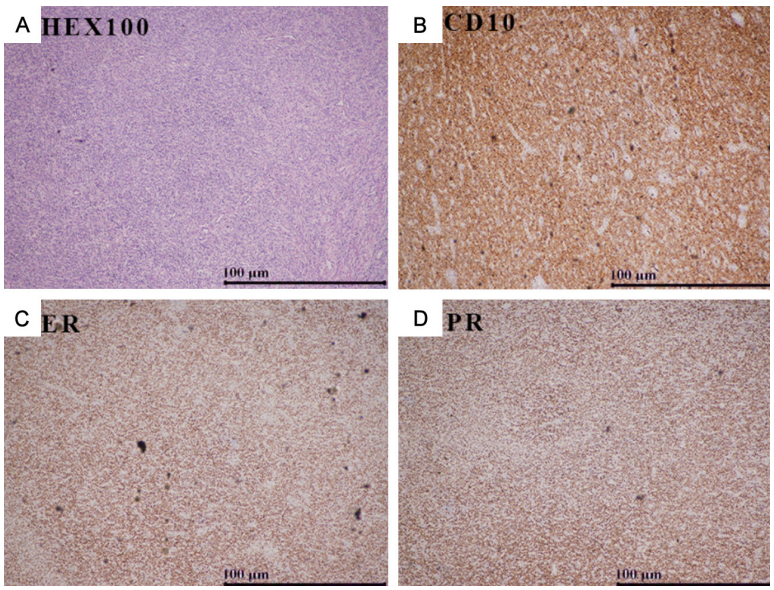

Figure 3. Histopathology of the hysterectomy specimen, H&E stain A: LESS invading superficially into the myometrium (H&E, ×40). B: LESS component immunoreactive for CD10 (IHC, ×40). C: LESS component immunoreactive for ER (IHC, ×40). D: LESS component immunoreactive for PR (IHC, ×40).

stromal sarcoma was found to be better than that of a highly invasive carcinosarcoma. The treatment of carcinosarcoma requires multiple methods, including surgery, chemotherapy, radiation therapy, and sometimes hormone therapy. The literature suggests that patients with collision tumors can forego adjuvant surgeries such as lymph node dissection, omentectomy, and adjuvant chemoradiotherapy as required for carcinosarcoma. Pathologic findings suggest that the various components of collisional tumors occur by chance and are not related to each other, and their biologic behavior depends on their respective tumor characteristics. The collision of high-grade serous adenocarcinoma with malignant mixed Mullerian duct tumors supports this explanation. Advanced adenocarcinoma, such as serous carcinoma (Case 4) [9], shows metastatic soluble lesions and significant pelvic lymph node enlargement, while malignant mixed Mullerian duct tumor is limited to the endometrium (Case 5) [10]. The invasive and metastatic components of collision tumors are believed to depend on their primitive biologic behavior.

Table 1. Summary of diagnosis, management, and outcome of present and previously reported cases of uterine collision tumor

Number	Author	Year	Tumor 1	Tumor 2	Treatment	Outcome
1	Lifschitz-Mercer [6]	1987	Ndometrial diffuse clear cell stromal sarcoma	Other endometrial stromal sarcomas	NA	NA
2	E M Gaertner [7]	1999	Rhabdoid tumor	Endometrioid adenocarcinoma	RTx	4 m, died
3	K Y Lam [8]	1999	Endometrioid carcinoma	Stromal sarcoma of the uterus	NA	NA
4	Shaco-Levy R [9]	2004	Endometrial tumor combining papillary serous carcinoma	Small cell carcinoma.	RTx	5 m, died
5	Ki-Seok Jang [10]	2012	Malignant mixed müllerian tumor	Apapillary serous carcinoma, and endometrioid adenocarcinom	CTx and RTx	8 year, alive
6	Kim G [11]	2015	Endometrioid adenocarcinoma	Endometrial stromal sarcoma	CTx and RTx	8 year, alive
7	Nadeem Tanveer [12]	2017	Uterus-squamous cell carcinoma	Endometrial stromal sarcoma	CTx	4 m, alive
8	Seema Kaushal [13]	2018	High-grade neuroendocrine Carcinoma, small cell type	Squamous cell carcinoma	CTx	1 year, alive
9	Yun-Fei Pan [14]	2020	Endometrial adenocarcinoma	Primary serous fallopian tube carcinoma	CTx	1 m, died
10	Shobhna Sharma [15]	2021	Endometrial stromal sarcoma	Endometrioid adenocarcinoma	NA	32 m, alive
11	Nektarios Koufopoulos [16]	2023	PEComa	Endometrioid carcinoma	RTx	NA
12	Franco Rafael Ruiz-Echeverría [17]	2023	Endometrial serous adenocarcinoma	Cervical adenosarcoma	CTx and RTx	16 m, died
13	Xue Fan [18]	2023	Endometrial adenocarcinoma	Cervical carcinosarcoma	CTx and RTx	13 m, alive
14	Yujin Lee [19]	2024	Adult granulosa cell tumor	Mesonephric-like adenocarcinoma	NA	NA

NA, not available; CTx, chemotherapy; RTx, radiation therapy.

The characteristic of collision tumors is the occurrence of two or more parallel histologic tumor types at the same anatomic site. Low-grade endometrial stromal sarcoma is a well-known mesenchymal tumor of the uterus, characterized by malignant stromal components. However, in our case, this would be a misdiagnosis since there were two adjacent and histologically distinct tumors, also including cervical squamous cell carcinoma, best classified as a collision tumor. Postoperative management is guided by histopathologic diagnosis, which may avoid complications in patients due to additional chemotherapy and radiation therapy in certain situations.

Conclusion

This case report emphasizes the importance of accurate pathologic diagnosis for mixed tumors of uterine epithelium and stroma, which will guide treatment and greatly affect prognosis. Extensive gross sampling and careful immunohistochemical morphologic examination are needed to diagnose this rare entity and avoid misdiagnosis. To our knowledge, this is the first SCC and LGESS case reported in the literature. More such cases need to be studied and reported to determine treatment and outcome.

Disclosure of conflict of interest

None.

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