

Post-irradiation vaginal spindle cell sarcoma

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Key words

Post-irradiation sarcoma • Cytology • Histology • Immunohistology

Summary

The genetic profile is one of the major possible causes of spindle cell sarcoma. Irradiation has also been linked to this type of cancer. This means that if tissues have already been irradiated for other types of cancer, they can afterwards develop this form of sarcoma. Also, previous radiotherapy can determine specific genetic alterations, which result to uncontrolled cell division, that is neoplasia. We report one such cause in a female patient 80 years old with a uterus adenocarcinoma (endometrioid type) FIGO Stage IC, who had been treated with surgical resection and pelvic irradiation.

Ten years after radiotherapy a vaginal spindle cell sarcoma was diagnosed by cytology (Pap smear) and confirmed by histology and immunohistology.

This case is presented to focus the ability of cytology in diagnosis of spindle cell sarcoma in Pap smear with confirmation by histo-immunohistology.

Post-radiation sarcoma is one type of malignancy first reported by Beck in the 1920. Postirradiation sarcomas of bone and soft tissue are the most common. Most post-irradiation bone sarcomas described in the literature are osteosarcomas or fibrosarcomas, and have developed after external radiotherapy¹⁻⁴. Bone sarcomas have also frequently developed in persons with skeleton deposited radionuclides, resulting from therapy and occupational hazard⁵. Most postirradiation soft tissue sarcomas have developed after external radiotherapy, and have been fibrosarcomas or spindle cell sarcomas. Fibrosarcoma in the tongue following interstitial therapy has also been reported⁶.

The risk of secondary malignancies after radiation therapy is debated⁷. One reason for the query is that patients receiving radiotherapy are in the hazard of a second cancer because of their life status or hereditary profile, which could be more prevailing than the radiation hazard⁸.

We present a case of a female patient 80 years old with an uterus adenocarcinoma (endometrioid type) FIGO Stage IC, who had been treated with surgical resection and pelvic irradiation. However a vaginal spindle cell sarcoma was diagnosed by cytology (Pap smear) and confirmed by histology and immunohistology, 10 years after radiotherapy.

Case report

An 80- years old female patient hospitalized at a Maternity clinic suffering from vaginal bleeding.

Past personal history was of a uterus adenocarcinoma (endometrioid type) FIGO Stage IC ten years ago. She was treated with surgical resection and pelvic radiation. A vaginal Pap smear was obtained fixed for routine Papanicolaou stain.

In biopsy specimens from the vagina, fixed in 10% formalin, the H-E stain was performed.

The markers cytokeratin MNF116, CK7, CK19, CK5/6, HMB45, CD34, Desmin, S-100, SMA, Vimentin and CD10 were used for immunohistology.

Cytology showed isolated elongated neoplastic cells with large nucleus and nucleoli, with abundant cytoplasm in a hemorrhagic background (Fig. 1).

Histologically abundant hemorrhagic and necrotic material with spindle neoplastic cells, with large nucleus (rarely binucleated), prominent nucleoli and atypical mitoses and mild eosinophilic cytoplasm (Fig. 2) were observed.

Immunohistologically, the tumor cells expressed cytoplasmic Vimentin (Fig. 3), SMA and S100 markers, but were found to be negative for cytokeratin MNF116 (Fig. 4), CK7, CK19, CK5/6, HMB45, CD34 and CD10 markers.

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Fig. 1. Spindle cell sarcoma. Vaginal smear: Isolated elongated neoplastic cells with large nucleus and nucleoli, with abundant cytoplasm in a hemorrhagic background. Papanicolaou stain X 400.

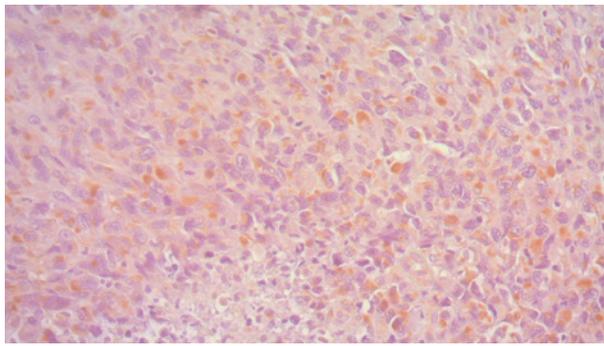


Fig. 2. Spindle cell sarcoma. Tumor section: Spindle neoplastic cells, with large nucleus, prominent nucleoli, atypical mitoses and mild eosinophilic cytoplasm. H&Estain X 200.

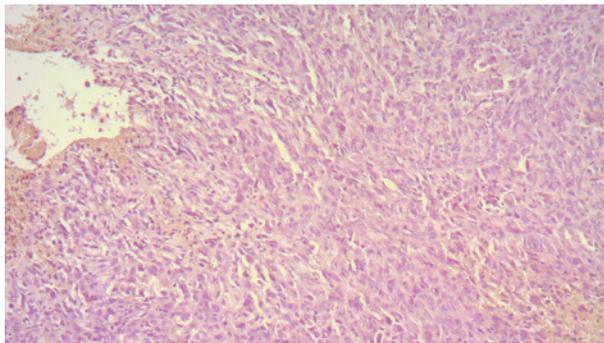


Fig. 3. Spindle cell sarcoma. Tumor section: Tumor cells express cytoplasmic Vimentin. Vimentin immunostain X 200.

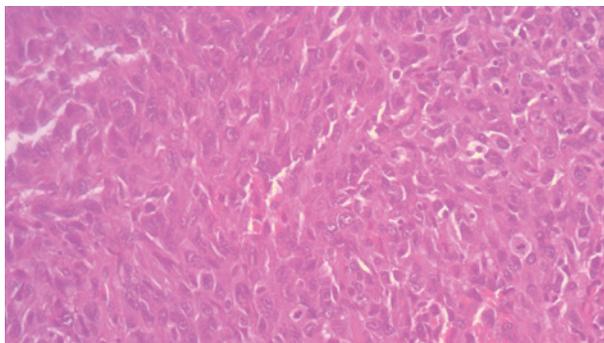
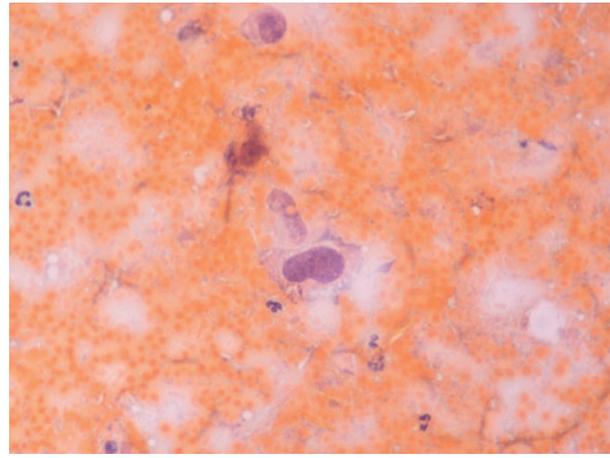


Fig. 4. Spindle cell sarcoma. Tumor section: Tumor cells are negative for cytokeratin MNF116. MNF116 immunostain X 100.



nant vaginal lesions and of all soft tissue sarcomas⁹. The most common of these tumors are leiomyosarcomas^{10 11}. Drs. Labidi-Galy, Tassy, and Blay provide an overview of the clinical manifestations, prognosis, imaging and treatment of radiation-induced soft tissue sarcoma in an ESUN article. They report that “the incidence of radiation-induced soft tissue sarcomas (RIS) is increasing as survival after radiotherapy improves, RIS develop within ten years and include different histological types, their majority are high grade and deep tumors, and that large size and positive histologic margins after surgery are responsible for high local relapse rates and short survival”.

They also state that “in approximately 60% of all patients with cancer who will receive radiotherapy during the course of their disease a second malignancy can develop years later as a result of this life-saving therapy, radiotherapy has been demonstrated to play a causative role in the pathogenesis of RIS from the early 1900’s, and RIS constitute about 3% of all sarcomas”¹². The incidence of metachronous sarcoma is 3.2 per 1000 at 15 years after diagnosis¹³.

In this case we report a rare post-radiation spindle cell sarcoma of the vagina, that developed 10 years after postoperative external beam radiation therapy for uterus adenocarcinoma in a 80 years old female patient, and diagnosed by Pap smear cytology, confirmed by histology and immunohistology.

A diagnosis of post-irradiation spindle cell sarcoma was rendered by cytology and confirmed by histology and immunohistology. The patient received three courses of taxane plus carboplatin chemotherapy. She is under regular quarterly visits to the physician, since 9 months without evidence of disease.

Vaginal primary malignant neoplasms are rare gynecologic tumors. Primary vaginal sarcomas are even more unusual lesions, representing fewer than 2% of malig-

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