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Positive sentinel lymph node in a patient with clinical stage I vaginal cancer

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1. Introduction

Primary vaginal cancer is rare and comprises 1–2% of all gynecologic malignancies (Adhikari et al., 2016). Risk factors for vaginal cancer include infection with human papillomavirus and herpes simplex virus, exposure to diethylstilbestrol, chronic irritation, and prior radiation therapy (Merino, 1991). Approximately 90% of vaginal cancers are squamous histology and involve the superior third of the vagina (Adhikari et al., 2016). Vaginal cancer is staged according to either the International Federation of Gynecology and Obstetrics (FIGO) staging system which is based on extension of disease from the vagina or the American Joint Committee on Cancer Staging (AJCC) which incorporates the involvement of regional lymph nodes and distant metastasis (Pecorelli, 2009; Amin et al., 2017).

For a majority of patients, radiation is the treatment of choice. However, surgical management in patients with small, superficial lesions may be considered. This includes partial vulvectomy with hysterectomy if the uterus is still in place with consideration of lymph node dissection (Adhikari et al., 2016). Given the rarity of this disease, there is little information regarding the utility of sentinel lymph node (SLN) dissection in vaginal cancer. However, sentinel lymph node mapping has been demonstrated to be highly sensitive in patients with cervical and uterine cancer (Skanjeti et al., 2019). Additionally, a small study of pretreatment lymphatic and sentinel lymph node mapping with lymphoscintigraphy in patients with vaginal cancer demonstrated feasibility of this approach identifying at least one sentinel lymph node in 79% of patients (Frumovitz et al., 2008).

In this case report, we present a woman with a squamous cell vaginal cancer of the proximal vagina who initially declined definitive chemoradiation and was found to have a positive SLN at time of surgical management.

2. Case

A 52-year-old presented for annual gynecologic care and was found to have a new vaginal mass on exam. Cervical pap test was performed demonstrating high grade squamous intraepithelial lesion with features suspicious for invasion, atypical glandular cells, and negative high-risk HPV testing. She subsequently underwent exam under anesthesia, excision of vaginal mass, loop electrosurgical excision procedure (LEEP) of the cervix, endometrial curettage, and endocervical curettage by her gynecologist. Intraoperative findings included a one-two centimeter pedunculated hyper-vascular mass on the posterior right vaginal wall just laterally at the fornix but clearly separate from the cervix. Pathology of the vaginal mass was consistent with poorly differentiated squamous cell carcinoma 2.0 cm in greatest dimension with focal angiolymphatic space invasion and negative margins. Endocervical, endometrial, and LEEP pathology were all benign.

She was seen in consultation by gynecologic oncology for her FIGO stage I vaginal cancer and radiation therapy with or without radiosensitizing cisplatin was recommended. After discussion, the patient declined radiation therapy due to concern for side effects and associated morbidities. She was amenable to surgical management therefore robotic radical hysterectomy with upper radical vaginectomy and pelvic lymph node assessment were recommended. A preoperative PET scan demonstrated uptake in the vagina and a mildly avid but non-specific portacaval lymph node with signal comparable to background activity.

At the beginning of the procedure the site of the prior vaginal excision in the right posterior vaginal wall was noted to be well-healed without evidence of a persistent lesion. Indocyanine green dye was injected into the cervix as well as submucosally at the site of the resected lesion. Upon entering the retroperitoneum on the right an

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external iliac sentinel lymph node was identified and noted to be slightly enlarged though suspicious in appearance. It was sent for intraoperative frozen assessment and was consistent with metastatic carcinoma. Given this finding, decision was made to abort the radical hysterectomy and proceed with right common iliac and lower *para*-aortic lymph node dissection. Of note, no other enlarged or suspicious lymph nodes were identified. Left pelvic sentinel lymph node dissection was also performed. Final pathology demonstrated metastatic carcinoma in the right external iliac sentinel lymph node with all other lymph nodes being negative making the patient FIGO and AJCC stage III.

Following surgery, the patient was referred to radiation oncology. She then underwent external beam radiation in 25 fractions for a total dose of 45 Gy with concurrent radiosensitizing cisplatin (40 mg/m^2) followed by vaginal brachytherapy via cylinder applicator. She is currently without evidence of disease and doing well 5 months after completion of therapy.

3. Discussion

The accuracy and sensitivity of SLN dissection in vaginal cancer is currently unknown and given the rarity of this cancer, large prospective trials of SLN mapping are unlikely. However, a prospective cohort study and a handful of case reports including this one have demonstrated the feasibility of this technique. In the cohort study by Frumovitz et al, of the 14 patients with vaginal cancer, a SLN was identified on pretreatment lymphoscintigraphy in 11 patients (79%) after undergoing injection with Technetium-99. In the five patients undergoing surgery, Technetium-99 was injected prior to lymphoscintigraphy then isoflurane was injected intradermally in the operating suite. One patient with melanoma was found to have a metastatic sentinel lymph node (Frumovitz et al., 2008). Dam and colleagues published a case series in which 3 of 4 patients with vaginal cancer had identifiable SLN. One of these patients with a stage III vaginal cancer (versus recurrent cervical cancer) had positive sentinel nodes (Van Dam et al., 2004). Most recently, Lee et al demonstrated successful SLN mapping in one patient using indocyanine green (Lee et al., 2017). Each of these reports identified sentinel nodes however there were no reports of positive sentinel nodes in early staged patients with non-melanoma lesions.

Benefits of SLN mapping in vaginal cancer may be several-fold. As in this case, identification of a positive SLN would allow surgeons to abort their planned procedure allowing patients to begin definitive chemoradiation in a short interval. Furthermore, by aborting the radical hysterectomy in a patient with the need for definitive chemoradiation, the patient may have decreased risk of treatment toxicities as studies of cervical cancer patients have shown concern for an increased risk of genitourinary toxicities in patients undergoing both radical surgery and radiation (Landoni et al., 1997).

Additionally, SLN mapping may impact treatment planning including radiation fields by identifying anomalous patterns of lymphatic drainage. Currently, radiation fields are designed by the anatomic location of the vaginal tumor and the predicted draining lymph node basin. This may result in nodal basins being undertreated in the case of aberrant lymphatic drainage. For example, in the study by Frumovitz and colleagues, three (33%) of the nine patients being treated with definitively radiation had their fields altered based on lymphoscintigraphy. These patients had lesions located at the vaginal introitus yet were found to have SLN in the pelvis which may not have been covered if relying on standard radiation fields (Frumovitz et al., 2008).

In summary, this case demonstrates the feasibility of SLN mapping in a patient with clinical stage I vaginal cancer and to our knowledge is the first report in the literature of a positive SLN in a stage I vaginal cancer with a non-melanoma lesion and the first positive SLN identified with Indocyanine green dye. In this case, the planned radical resection was abandoned in favor of definitive chemoradiation and provides further evidence that identification of SLN in vaginal cancer is an option for treatment planning.

Consent

The patient has given consent to this case report.

Author contributions

LM, MHV and DOM participated in data collection and analysis. LM, MHV, DOM and MB participated in writing, editing and final approval of the manuscript.

Declaration of Competing Interest

The authors declare there are no applicable conflicts of interest associated with this paper and there is no financial support.

References

Adhikari, P., Vietje, P., Mount, S., 2016. Premalignant and malignant lesions of the vagina. Diagn Histopathol. 23, 28–34.
Merino, M.J., 1991. Vaginal cancer: the role of infectious and environmental factors. Am. J. Obstet. Gynecol. 165, 1255–1262.
Pecorelli, S., 2009. Revised FIGO staging for carcinoma of the vulva, cervix, and endometrium. Int. J.. Gynaecol. Obstet. 105 (2), 103–104.
Amin, M.B., Edge, S.B., Green, F.L. (Eds.), 2017. AJCC cancer staging manual, eight ed. Springer, New York.
Skanjeti, A., Dhomps, A., Paschetta, C., et al., 2019. Sentinel node mapping in gynecologic cancers: a comprehensive review. Semin. Nucl. Med. 49 (6), 521–533.
Frumovitz, M., Gayed, I.W., Jhingran, A., et al., 2008. Lymphatic mapping and sentinel lymph node detection in women with vaginal cancer. Gynecol. Oncol. 108 (3), 478–481.
Van Dam, P., Sonnemans, H., van Dam, P.J., et al., 2004. Sentinel node detection in patients with vaginal carcinoma. Gynecol. Oncol. 92 (1), 89–92.
Lee, I.O., Lee, J.Y., Kim, S., et al., 2017. Sentinel lymph node mapping with indocyanine green in vaginal cancer. J. Gynecol. Oncol. 28 (4), e29.
Landoni, F., Maneo, A., Colombo, A., et al., 1997. Randomised study of radical surgery versus radiotherapy for stage Ib-IIa cervical cancer. Lancet 350 (9077), 535–540.