A Rare Case of Synchronous Cervical and Breast Carcinoma

Amol Padegaonkar¹ · Pranav Chadha² · Archana Shetty¹

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Introduction

Multiple primary neoplasms occurring in the same individual are generally related to common or related etiological factors [1]. In women, there are reports of common occurrence of breast cancer with ovarian cancer, endometrial cancer, soft tissue tumors, salivary gland tumors, and lung cancers [2], but the synchronous occurrence of breast cancer with cervical cancer is a rare event, probably because of the contrasting predisposing factors [3]. In the current environment of increasing use of PET-CT, the number of diagnosed synchronous cancers is increasing and present diagnostic as well as therapeutic challenges. Here, we present a case of a patient who presented with synchronous cervical and breast cancer.

Case Report

A 63-year-old female presented with a month's history of vaginal discharge. Per speculum and per vaginal examination showed a 4-cm endocervical growth extending to the vagina. Per rectal examination showed involvement of right parametrium. MRI abdomen and pelvis revealed a $3.2 \times 5.2 \times 6$ cm lesion involving the cervix and lower uterus extending into the upper two thirds of vagina with parametrial extension. No lymphadenopathy was seen. Biopsy was suggestive of moderately differentiated squamous cell carcinoma. A staging FDG PET-CT scan showed a FDG avid (SUV max 14.9) heterogeneously enhancing $25 \times 19 \times 37$ mm soft tissue lesion in the cervix with involvement of the lower uterus and upper vagina. Incidentally, another FDG avid (SUV max 14.9)

enhancing 13×11 mm soft tissue lesion was seen in the upper outer quadrant of the left breast (Fig. 1). On examination, there was a 2-cm lesion in the upper outer quadrant of the left breast with no palpable lymphadenopathy. A mammosonography revealed a $1.8 \times 1.6 \times 1.1$ cm BIRADS V hypoechoic lesion in the upper outer quadrant of the left breast. Core biopsy was reported as infiltrating ductal carcinoma (IDC) grade II, ER (estrogen receptor) strongly positive, PR (progesterone receptor) positive, cerb B2 negative, and Ki-67 10–12%. The patient's final diagnosis was synchronous cervical carcinoma stage II B and carcinoma left breast stage I.

After discussion in our tumor board meeting, it was recommended to proceed with upfront surgery for the breast carcinoma and administer concurrent chemoradiation for the cervical cancer.

After due deliberation with the patient, we decided to go ahead with a mastectomy and sentinel node biopsy rather than breast conserving surgery, to avoid additional breast radiotherapy as she was going to be subjected to pelvic irradiation. The final histopathology report was a 2-cm grade 3 IDC, node negative.

After 14 days of surgery, she was started on concurrent chemoradiation with external beam radiotherapy—image-guided radiotherapy technique, a total dose of 50 Gy/25 fractions over five weeks followed by two weekly sessions of intracavitary brachytherapy on 8 Gy X 2 sessions. Five cycles of cisplatin 60 mg was also given in weekly basis.

She is now on an aromatase inhibitor and is well on close follow-up.

Discussion

Multiple primary neoplasms in the same patient are not uncommon [4]. Lesions can be distributed in the same organ or multiple organs. It can be categorized into two types according to the SEER (surveillance epidemiology and end results) register held by the US National Cancer Institute (NCI):

✉ Archana Shetty
Archana.shetty@relianceada.com

¹ Department of Surgical Oncology, Kokilaben Dhirubhai Ambani Hospital, Mumbai, India

² Department of Radiation Oncology, Kokilaben Dhirubhai Ambani Hospital, Mumbai, India

Fig. 1 PET-CT image showing FDG avid lesions in cervix and left breast

1. Synchronous—with lesions presenting at the same time or within 2 months of the primary malignancy.
2. Metachronous—wherein lesions occur at more than 2-month interval.

The International Agency for Research on Cancers sets the border line between synchronous and metachronous cancers at six months [5].

The simultaneous occurrence of different cancers may be due to common or related etiological factors such as tobacco (lung cancer, head and neck cancer, bladder cancer).

The most common site of metastasis from breast cancer is to the lung, bone, and liver. Metastasis to the genital tract is less common and among that, metastasis to ovary is most common [6].

The simultaneous occurrence of breast and cervical cancer is rare as the etiological factors for both the cancers are different. Because of this rarity of the combined entity makes it difficult to study factors responsible for concomitant occurrence.

A thorough search of literature was done and very few cases of synchronous cervical and breast carcinoma were found.

In 1984, Schenker et al. [7] reported an 8% incidence of multiple primary neoplasms in breast cancer without any case of synchronous carcinoma cervix and carcinoma breast.

Gaulayev in 1984 [8] reported a case of triple primary simultaneously arising malignancy in the breast, cervix, and uterus.

Rose et al. in 1993 [9] reported a HIV infected young women with invasive breast carcinoma, microinvasive cervical cancer, and intraepithelial neoplasm of vulva. They suggested that immunosuppression due to HIV infection was the cause of multiple primary neoplasms in this patient and thorough work up should be done in immunocompromised patients to look for multiple primary neoplasms.

Plachta et al. in 2017 [10] presented a case series of 200 cervical cancer patients in stage 11B-111B who underwent PET-CT for planning. Among this group, four patients (2%)

were found to have synchronous cancers, out of which two were breast cancers. They have emphasized that treatment of such complicated clinical cases should be in a multidisciplinary setting.

The rarity may also be due the lack of advanced imaging modality in the past. Also, with the advent of PET scans, there can be an increase in the detection of synchronous cancers. Possibility of synchronous lesion also emphasizes the role of thorough clinical examination.

Compliance with Ethical Standards

Informed Consent Informed consent was taken from the patient prior to submission.

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