

Second malignant neoplasm in breast, after treatment of carcinoma tongue: A case report

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Abstract

We report a case of carcinoma left lateral border tongue, timely treated by external radiation. Three months after completion of radiation, she noticed a swelling in her left breast, histopathology revealed infiltrating duct carcinoma. She was treated by lumpectomy followed by chemotherapy and radiotherapy.

Key Words: *Second malignant neoplasm, multiple primary tumors, breast carcinoma, oral carcinoma.*

Introduction

Head and neck cancer is often associated with a second primary neoplasm. These cancers commonly involve other regions of the head and neck, esophagus and lung. Development of multiple primary tumors of aero digestive tract has been linked to various etiological factors such as smoking, alcohol consumption, tobacco chewing, hereditary and nutrition.² Studies have shown an increase in secondary neoplastic lesions, such as those of the thyroid and breast following radiotherapy to the neck and chest to treat an enlarged thymus, tonsils, tinea capitis, cervical cancer, tuberculosis, hemangioma or Hodgkin's disease early in life^[3]. These reports indicate that radiation has the potential to induce cancers regardless of physical type, dose and frequency of exposure, and that this risk persists for many years^[3]. We report a case of squamous cell carcinoma of the left lateral border of tongue, successfully treated by radiotherapy, who subsequently developed infiltrating ductal carcinoma in her left breast, three months later.

Case report

A 38 year old female reported to Department of Radiotherapy, with complaints of nonhealing ulcer on left lateral border of tongue of one month duration. There

was history of tobacco chewing and "mishri" application (form of tobacco used for cleaning teeth) since last twenty years. She had married, but was divorced after one year. She has no issue and her menstrual cycles were regular. She had past history of pulmonary tuberculosis, 20 years back for which she received complete treatment. On clinical examination there was 3x4 cm. proliferative lesion present on left lateral border of tongue and a 2x2 cm. lymph node over left submandibular region. Her routine blood and biochemical investigations were within normal limits. Chest radiograph showed old healed pulmonary tuberculosis. A biopsy from the growth over the left lateral border of tongue revealed moderately differentiated squamous cell carcinoma (Stage:T2, N1, MO). She was treated by radical radiation. Radiotherapy was given by Cobalt Unit, by bilateral face and neck fields. Total dose given was 6600 cGy in 33 fractions over a period of six weeks. Field reduction was carried out after 4600 cGy. Following complete treatment she was on regular monthly follow up. On her third follow up (three months after completion of radiation treatment), she complained of a lump in her left breast. On examination it was seen that the primary malignancy over left lateral border of the tongue had regressed, all radiation reactions had subsided and there were no enlarged neck nodes (Figure: 1).

On examination of her breasts, there was a 3x3 cm firm to hard, mobile, non tender lump in lower outer quadrant of left breast (Figure:2). There were no enlarged axillary / supraclavicular lymph nodes on left side. Right breast was normal and there were no enlarged axillary / supraclavicular nodes on right side.

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Fig 1: Photograph showing the post radiotherapy complete regression of lesion over tongue



Fig 2: Showing left breast lump in lower outer quadrant

FNAC of the left breast lump was which was positive for malignant cells. She was investigated again for routine blood and biochemical analysis which were within normal limits. X-ray chest did not show any evidence of metastases. Ultrasonography of abdomen and pelvic region was within normal limits. She was then diagnosed as a case of second malignant neoplasm in breast after radiation treatment of carcinoma tongue. Lumpectomy was carried out and a histological diagnosis of infiltrating duct carcinoma was made (Figure: 3).



Fig 3: Showing the post radiotherapy complete regression of lesion over tongue and left breast lump over lower outer quadrant, left breast lump.

Post lumpectomy she was given six cycles of chemotherapy CMF-regime (Inj. Cyclophosphamide 600mg. / m², Inj. Methotrexate 40mg./m² & Inj. Five fluorouracil 600mg./m²) at three weekly interval. Radiation was given to left breast, axilla and supraclavicular region by medial and lateral tangential fields and supraclavicular fields. Total dose delivered was 5000 cGy. in 25 fractions over a period of 5 weeks. She completed her chemotherapy and radiotherapy in July 2005. She was then put on Tab. Tamoxifen 10 mg. BD. She was on regular follow up. Three months, after her last chemotherapy course she started complaining of pain and swelling at her primary malignancy site, tongue and upper neck. On examination infiltrative lesion was present over the left lateral border of tongue. She was given palliative chemotherapy, but did not respond, and she died in Jan. 2006 because of her poor general condition, poor intake and persistent malignancy. Till her last follow up there were no evidence of distant metastases in lung and liver as evidenced in X-ray chest and Ultrasonography of abdomen and pelvis.

Discussion

The true incidence of multiple primary neoplasia (MPN) is unknown, but may be increasing. In the original review by Warren and Gates, the incidence was 3.7% in a series of 1078 patients. Recent reviews have reported a higher incidence between 5% and 26%. This increase may reflect improved survival from primary tumors, as well as an increased recognition of MPN by clinicians[1]. The most prominent sites for second primary malignancy following first primary oral cancers include the oral cavity, pharynx, as well as the respiratory tract for men and women. Second primaries were also common at the breast for women and the prostate for men[4]. There is increased risk of developing carcinoma breast after therapeutic radiation treatment for Hodgkin's disease and atomic bomb exposure individuals[5,6].

Radiotherapy for primary oral cancers is a risk factor for second primary malignancy. The specific second primary sites for which radiation therapy was a risk factor included cancers of the oral cavity, pharynx, esophagus, lung, colon, liver, brain and nervous system. Development of leukemia and second primary cancers in the irradiated head and neck area is biologically plausible with potential mechanisms such as DNA damage. In contrast, the increased risk of colon, liver and lung cancers due to radiotherapy was unexpected and may be due to radiotherapy exposure beyond the

intended field or reduced immune function resulting from radiotherapy treatment. Another possible mechanism for out-of-field second primary cancer occurrence is the radiation-induced bystander effect, where cells that have not been directly exposed to radiation may exhibit effects of having been exposed to radiation, such as chromosome instability and mutations[4]. The effects of radiation exposure are dependent upon the tissue type exposed. Proliferating cells such as those of the hematopoietic system and intestinal epithelium are most sensitive to radiation. Leukemia tends to develop a few years after radiation exposure, with the risk declining after 10 years; whereas the proposed latent period for the initiation of solid cancers is generally 10 years. The risk may persist over a long period[4].

Possibility of developing carcinoma breast, due to radiotherapy treatment for carcinoma tongue is very rare, that too at such a small interval of three months. The short interval between the primary and second malignancy, reflect the chances of development of both malignancies simultaneously, due to involved risk factors. Possible explanations may be, that she was at higher risk for developing oral cancer due to tobacco chewing and “mishri” addiction for last twenty years. Dietary factor was also contributory as she belongs to low socioeconomic status. She was at higher risk for developing carcinoma breast due to her nulliparity, and tobacco addiction. At our centre, it is not routine to examine the breasts of a female, diagnosed to have oral for malignancy. In this case it quite possible, that she may have had an asymptomatic very small lump in the breast when she first reported to the department. The possibility that she had both cancers simultaneously

cannot be ruled out. Her primary tongue lesion was well under control till she was on chemotherapy for cancer breast. Recurrence appeared three months after her last dose of chemotherapy. Chemotherapy drugs are well known for their carcinogenic effects[4]. The drugs used for cancer breast chemotherapy in CMF regime may have controlled the primary tongue lesion for 7-8 months or it may be that radiotherapy may have contributed to recurrence of the primary.

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