

A Case of Oligometastatic Breast Cancer with Situs Inversus Totalis: Case Report with Review of Literature

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Abstract: This is a rare case report of a oligometastatic breast cancer with situs inversus totalis. It is the first case report from India, dealing with curative intent even during the panic of COVID19 pandemic. The patient had a breast conservation surgery followed by adjuvant chemotherapy, radiotherapy and hormonal therapy. Conformal radiotherapy was necessary to meet the radiation tolerance of organs at risk like heart, lung etc. As she was young and premenopausal she had undergone ovarian ablation by pelvic radiation for a better systemic control. Despite all the odds the patient is doing clinically well with a progression free interval of more than 19 months.

Keywords: Situs Inversus Totalis, Breast cancer, Oligometastasis, Radiotherapy

Key Messages: This rare case report focuses on curative intent even with the presence of an anatomic anomaly during the challenging period of COVID 19 pandemic, in a tertiary cancer hospital in eastern India.

1. Introduction

Breast cancer remains the most common cancer in women worldwide, and the second leading cause of cancer-specific death.^[1] We report a rare case of oligometastatic invasive ductal carcinoma of right breast with solitary liver metastasis on upfront diagnosis. The Patient was incidentally diagnosed with Situs inversus totalis which is a rare condition of the organs being transposed within the abdominal and chest cavities and its etiology is still unknown.^[2] BCS (Breast conservation surgery) followed by radiation therapy to the intact breast is now clearly established as the most acceptable standard of care for the majority of women with early stage invasive disease. Recommended techniques for breast cancer treatment are wide local excision (WLE) of the primary tumor preferably with clear margins, axillary lymph node dissection and breast irradiation (45-50Gy) and usually a boost of (10-12Gy) depending on tumor characteristics and status of the surgical margin^[3]. In this case report we have discussed the management in a post-BCS case with particular reference to dosimetry and treatment delivery of the planned radiation therapy. This case report is the first of its kind from India, as per our knowledge.

2. Case History

A 35 year old premenopausal woman presented to our OPD (Outpatient department) after Breast Conserving Surgery with axillary lymph node dissection for the consideration of adjuvant therapy in august 2019. She previously had a painless, gradually progressive lump on her right breast for 6 months. On examination a 3×2 cm lump was observed at 9 o' clock position, 3 cm from NAC (nipple areolar complex) and there was a mobile palpable lymph node on right axilla. Bilateral mammography revealed spiculated high density lesion causing architectural distortion in superolateral quadrant of right breast with a spiculated hypoechoic mass lesion at 9-10o' clock (BIRADS-5). Core biopsy revealed invasive ductal carcinoma, NOS (not otherwise specified) with ER positive, PR positive, HER 2 NEU negative and Ki67 40%

and modified Bloom Richardson score was 8 (3+3+2). Histopathologic examination of the specimen confirmed the same diagnosis. The patient was initially diagnosed as having dextrocardia on routine chest X-ray, later CECT Thorax and Pelvis revealed situs inversus totalis along with hepatic oligomets (two in number). A CT guided FNAC from one liver lesion confirmed the metastasis. The case was discussed in the Institutional Multidisciplinary Tumor Board (TB No 19/746) and the Board had opined for adjuvant therapy on a curative intent. The Patient had received 4cycle AC (adriamycin + cyclophosphamide) followed by 4cycle Paclitaxel on a 3weekly regime as per standard guideline.

Adjuvant radiation was given by 3DCRT (Truebeam Linac), 50Gy to whole breast with 10Gy Photon boost (10MV) to lumpectomy cavity keeping the dose constraints within normal limit. As the patient was having situs inversus totalis, keeping the heart dose tolerance within normal limit was challenging with satisfactory PTV (Planning target volume) coverage. (Table 1).

Table1: Dosimetric evaluation of the Case

Parameters	D90 (Percentage)	V90 (Percentage)	Mean
PTV (Plan sum)	93.50	94.11	50Gy (whole breast) 60Gy (boost)
OAR	V20	V30	Mean
Heart	22.44	20.04	17.89Gy
Lungs	7.82	6.01	8.17Gy
Esophagus	-	-	5.84Gy
Spinal cord	-	-	Dmax- 6.5Gy

The hepatic mets persisted after adjuvant chemotherapy and so we initially planned for a Hepatic Wedge resection in March 2020. But due to COVID pandemic her operation was postponed and she defaulted due to lockdown. She came after 6 months and was doing well clinically. She was a premenopausal woman and was put on Tamoxifen therapy initially, later we planned for

ovarian ablation therapy by pelvic radiation (16Gy in 4 fractions) followed by switch over to letrozole, after six months of completion of her treatment. She was on regular follow up since then as per Multidisciplinary Tumor Board decision.

3. Discussion

Due to complete transposition of thoracic and abdominal viscera in situs inversus totalis as of this case and the tumour being situated on the right breast, treatment planning had to be done with more concern to maintain the radiation dose to the heart within the tolerance level of the heart [4]. Ebubekir Gundes et al showed that the coexistence of SIT and gastric cancer is a very rare condition and a careful preoperative assessment should be carefully conducted because there can be accompanying vascular anomalies [5]. Deng Xiang et al showed proper investigative procedures like ultrasonography (USG), chest x-ray (CXR) and contrast-enhanced computed tomography (CECT) were done to surgically resect a pseudopapillary pancreatic tumor in a case of SIT [6]. Henceforth proper investigations and treatment planning is required for treatment in cases of SIT. A radiation boost reduces the risk of recurrence in the breast but may be omitted for older patients with good prognosis and clear margin [7]. We have used systemic chemotherapy in this patient for nodal involvement and oligometastasis followed by radiation therapy post-BCS. Endocrine therapy is one of the important cornerstones in management of hormone positive breast cancer. The publication of SOFT AND TEXT randomised trials have increased considerably the interest in OA (ovarian ablation) as adjuvant treatment either in combination with tamoxifen or AI (androgen inhibitors). [8] This patient being a high risk patient (premenopausal breast cancer patients with hormone-receptor positivity) was required ovarian ablation either surgically or medically or by radiation therapy to block mainly the agonistic effects of estrogen on the residual breast tissues [9] and on the endometrium to prevent chances of endometrial carcinoma in future. The 'oligometastatic state' has gained increasing visibility and attention as we have come to appreciate the incredibly complex biologic diversity among primary and metastatic tumors. Moreover, with the exception of rare case reports and series noting extraordinary durations of response to local treatments, there is not yet any consistent data to suggest that oligometastatic disease is truly curable. [10] Lastly, the data regarding oligometastatic breast cancer is evolving; this rare case report focuses on curative intent even with the presence of an anatomic anomaly during the challenging period of COVID 19 pandemic, in a tertiary cancer hospital in eastern India.

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