International Journal of
Rare Diseases & Disorders

CASE REPORT

Concurrent Breast Cancer and Thymoma in an Immune Reconstituted HIV Positive Patient

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Summary

A unique case of thymoma and breast cancer occurring simultaneously in a viral suppressed immune restored HIV infected woman is described.

Case Report

Introduction

Successful viral suppression using combination antiretroviral therapy (cART) in the HIV infected, reportedly, has no impact on the occurrence of non-HIV associated malignancies [1].

HIV is known to affect the host's killer T cells resulting in immune dysregulation which in turn leads to impairment of the immune cells capability for cancer surveillance [2].

Additionally, chronic activation of B cells, which also accompanies established HIV infection, further leads to impaired immune regulation of the Epstein Barr virus, and both these features promote lymphoid malignancy [3].

The expectation that the introduction of modern cART against HIV, leading to viral suppression and functional cure, would also herald complete immunological recovery has not materialised. In reality, even with the most effective cART, complete immunological recovery is seldom achieved, especially, if initiated at later stages of the disease. Thus, patients who do not achieve full immunological recovery remain at increased risk of cancers, chronic immune activation, inflammation and impaired coagulation.

We describe a case of concurrent presentation of thymoma and breast cancer in a viral suppressed immune restored HIV infected woman. The simultaneous occurrence of these two tumours of different heterogeneity has never been reported before.

Case Description

A 43-year-old African woman was diagnosed with HIV (Clade C, wild type) in 2008 during routine screening. Nadir CD4 cell count was 236 cells/ul; baseline viral load was 83000 copies/ml. Syphilis serology, Hepatitis B and Hepatitis C serology were negative. Viral resistance was ascertained and single tablet regimen of Tenofovir, Emtricitabine and Efavirenz was started in September 2010. Viral suppression and CD4 cell immune recovery were achieved after six months and were sustained throughout the follow up period. Cervical cytology was normal. In early 2015 she self-presented with a left breast lump. Core biopsy of the lump confirmed a grade 3 triple negative invasive ductal carcinoma. At this stage, her CD4 count was 638 cells/ul. She had no family history of breast cancer. She underwent a left breast wide local excision with one-step nucleic acid amplification (OSNA) sentinel node biopsy. Surgical histology showed a 38 mm grade 3 invasive ductal carcinoma which was fully excised and both sentinel nodes sampled were negative (final staging pT2 pN0 pMx). Her antiretroviral therapy was changed to Tenofovir, Emtricitabine and Raltegravir due to potential interactions with her planned adjuvant chemotherapy. Acyclovir prophylaxis against Herpes simplex virus reactivation was also initiated. In June

Citation: Winceslaus SJ, Sivaraj V, Hall J, Singer R (2018) Concurrent Breast Cancer and Thymoma in an Immune Reconstituted HIV Positive Patient. Int J Rare Dis Disord 1:003

Received: March 10, 2018; **Accepted:** April 19, 2018 ; **Published:** April 21, 2018

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2015, she started third generation adjuvant chemotherapy with FEC-T (3 cycles of fluorouracil, epirubicin, and cyclophosphamide, followed by 3 cycles of docetaxel) at the standard doses, with granulocyte colony-stimulating factor (G-CSF) support. During chemotherapy she had a drop in CD4 count to 122 cells/ul (29%) but had no viral blip. After 2 cycles of chemotherapy she developed shortness of breath and a CT pulmonary angiogram was performed, which showed no pulmonary embolus but an incidental finding of an anterior superior mediastinal mass measuring 72 × 44 mm. Initially, this mass was thought to be mediastinal secondary metastasis of the breast tumour or tuberculosis. However, when biopsied the mediastinal mass turned out to be a type A thymoma.

Following subsequent chemotherapy, the thymoma reduced in size, with maximal dimensions of 50 × 40 mm. The thymoma was surgically resected successfully without any significant post-operative events. She was disease free from breast cancer and thymoma, and her HIV remains well controlled at 12 months follow up.

Conclusions

A retrospective review of population-based AIDS and cancer registries showed the risk of breast cancer is not increased in patients with HIV/AIDS (relative risk 1.1), though the numbers were small (143 cases of breast cancer, in 302,843 patients with AIDS between 1978-1996) [4].

Another retrospective study of population registries, between 1980 and 2002, showed a significantly reduced standardised incidence ratio for breast cancer in HIV positive women, compared to the general population (SIR 0.69, 95% CI 0.62-0.77) [5]. However, over the study period (which spans the pre- to post-cART era) the incidence of breast cancer in HIV positive women rose, and by 2002 approached the incidence in the general population, suggesting that the effect of HIV on reducing breast cancer incidence is reversed by successful treatment of HIV.

Thymomas are rare tumours of the mediastinum, originating from the epithelium of the thymus (incidence 1.7/1,000,000 per year). Type A thymomas, as in our case, have a good prognosis, with 90-95% 10-year survival. Surgery is the mainstay of treatment, with chemotherapy and radiotherapy having a role in advanced disease. The thymus is the site of maturation of T cells. Thymomas which are usually associated with autoimmune disease can also be associated with severe immunodeficiency that mimics HIV infection (Good syndrome). However, the incidence of thymoma is not elevated in HIV positive patients. The literature on thymoma in HIV positive patients is scanty. A MEDLINE search revealed 3 case reports and no higher-level evidence.

Due to associated immune disturbances, thymoma patients generally have a higher incidence of other cancers [6] and benign thymoma is more often associated with other cancers than malignant thymoma [2]. A US cohort reported a 0.8% incidence of breast cancer among thymoma patients [2]. Non-Hodgkin Lymphoma and digestive system cancers form the major associated cancers in thymoma [2]. Ionising radiation such as radiotherapy was not found to be a risk factor for thymoma [2]. The association of breast cancer with thymoma is rare (incidence 0.8%) [2] and the diagnosis in our HIV patient initially treated for breast cancer was purely serendipitous. The multidisciplinary approach for the management of the concurrent pathologies in our patient, without doubt, contributed to the eventual good outcome achieved.

The British HIV Association guidelines for HIV-associated malignancies 2014 advises that patients with cancers that are less well described in the HIV positive population should be offered the standard cancer care offered to HIV-negative patients, but that a multi-disciplinary approach involving HIV physicians should be used [7].

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