 Gombe NMA J, 1 (1): 1 - 4 (2024)

Case Report

Radiation Recall in Oropharyngeal Cancer with Background Retroviral Disease: A Case Report

Sunday AA, Gaddafi Y, Munir S

Radiotherapy and Oncology Department, Ahmadu Bello University Teaching Hospital, Zaria – Kaduna State

Correspondence: Dr Gaddafi Yusuf Radiotherapy and Oncology Department, Ahmadu Bello University Teaching hospital, Shika – Zaria, Kaduna State, Nigeria. Email: gmyuusuf@yahoo.com

ABSTRACT

Radiation recall is not a common phenomenon in cancer patients but it can occur in any cancer patient who received radiation therapy prior to commencement of chemotherapy. It is caused by a tissue reaction that develops in a previously irradiated area precipitated by administration of certain drugs or triggering agents or disease conditions. This is a case report of a 30 years old patient with oropharyngeal cancer and background retro viral disease who was managed in our facility. She initially had six cycles of chemotherapy using cisplatin and paclitaxel in 2015 followed by radiotherapy which she completed and certified disease free in 2016. Five years later in December 2021, she was diagnosed with recurrent disease with extension into nasopharynx. She was re-evaluated, properly optimized and commenced on another round of chemotherapy. Ten days after the first cycle, she developed radiation recall with erythema, dry desquamation and pruritus at the previously irradiated site in addition to mucositis, difficulty and pain on swallowing and xerostomia. The manifestation of radiation recall was successfully managed without worsening of prognosis. Patient is in her 9th year since diagnosis. This communication is aimed at contributing to existing body of knowledge, highlighting the possibility of radiation recall in cancer patients, for the purpose of continuous medical education and mentor-ship in residency training.

KEYWORDS: Radiation Recall, Oropharyngeal Cancer, Chemotherapy

INTRODUCTION

Radiation recall phenomena is a tissue reaction that develops throughout a previously irradiated area commonly precipitated by the administration of certain drugs.[1-4] Chemotherapy agents (Taxanes, Doxorubicin, Gemcitabine and Actinomycin D) are the most commonly believed causes of radiation recall, but other triggering conditions could include COVID-19, antibiotics and anti-tuberculosis drugs.[3]

Radiation recall was first described in 1959.[5] It is a poorly understood phenomena and the mechanism for its occurrence is still unknown, but however several hypotheses were proposed which include cytotoxic treatment inducing a remembered reaction in the remaining surviving cells, mutation caused by the radiation yielding a more vulnerable cell that cannot tolerate cytotoxic treatment and a vascular reaction occurring after radiotherapy.[1-3]

Oropharyngeal cancer is one of the common head and neck cancers that frequently arises from the tonsils, tongue base, valleculae, soft palate and posterior pharyngeal wall. The risk of oropharyngeal cancer is mostly attributable to smoking, alcohol consumption, HPV and HIV infections.[6] HIV- infected individuals were found to have three-fold higher risks of prevalence of oral HPV infection and hence at a higher risk of developing oropharyngeal cancer.[6]

Retro viral disease patients usually present with aggressive diseases and their response to standard treatment is often sub-optimal and hence are at risk of recurrent disease.[7] The incidence of HIV- associated oropharyngeal cancer in the general population has increased by about 7.5% per year since 1984 such that about 70% of Oropharyngeal squamous cell carcinoma is

now attributed to HPV.[8] The true incidence of radiation recall is unclear due to the limited literature[6] and no literature found on radiation recall in retro viral disease patient with oropharyngeal cancer. The paucity of the literature and infrequent occurrence of the condition necessitates this case presentation for medical education and awareness in our environment.

CASE REPORT

In 2015, a 30-year-old woman presented with recurrent sore throat of 1-year duration with associated progressive change in voice, difficulty in swallowing, hemoptysis and weight loss. She is a known retro viral positive patient diagnosed in 2014 and she is regular on Highly Active Anti-Retroviral Therapy (HAART).

A

B

Her general physical examination findings were normal with Karnofsky performance status (KPS) of 80%. Head and Neck examination revealed a mass occluding the right side of oropharynx, a fixed matted right jugulodigastric / submandibular lymph node measuring about 3x4cm in dimension and ipsilateral cranial nerves I and VIII were affected. Biopsy of right Tonsil revealed squamous cell carcinoma. Her CD4 count was 262 cells/ul and viral load less than 20 copies/ul. Other investigations results including abdominopelvic USS, Chest X-Ray, Full Blood Count and Differentials,

C

Electrolytes, Urea, serum creatinine and Liver Function Tests were normal. A diagnosis of locally advanced oropharyngeal cancer, histologically confirmed squamous cell carcinoma on background retroviral disease was made.

D

E

The patient received neoadjuvant chemotherapy according to local protocol, six courses of 3-weekly Chemotherapy using IV Cisplatin 100mg D1, IV Paclitaxel 240mg D1 followed by External Beam Radiotherapy (EBRT) to the oropharynx with a total of 66Gy in 33 fractions, 2Gy/fraction over 6.5 weeks in two phases with sparing of the spinal cord at 40Gy. She completed her treatment successfully. She had post-treatment evaluation and certified disease free in 2016 and then placed on follow-up every 3 months for first 2 years, then every 6 months for another 2 years and yearly thereafter.

During her 5th year follow-up in December 2021, she presented with haemoptysis, right nasal blockage, right earache and headache. An endoscopy was done which revealed a mass in the right oropharynx with

extension into the nasopharynx, nasal cavity, and right eustachian tube. Biopsy done during endoscopy revealed squamous cell carcinoma which was consistent with initial histology report of 2015. An MRI of the head and neck was also done which revealed a solid lobulated mass in the oropharynx about 3.5x5 cm extending into nasopharynx, infiltrating the sphenoid and ethmoidal sinuses, right parapharyngeal space, right masticator and carotid space with no intracranial extension.

The patient was then diagnosed of recurrent locally advanced oropharyngeal cancer with extension into nasopharynx and sinuses and was scheduled to receive another six courses of platinum-based chemotherapy. Decision at Multidisciplinary review suggests use of same regimen in view of previous excellent response and interval of more than 5 years after last treatment. Ten (10) days after receiving the first course of chemotherapy, she developed erythema, dry desquamation and pruritus at previously irradiated sites in addition to mucositis and xerostomia as shown in the figures (a), (b) and (c).

A diagnosis of radiation recall was made and patient was counseled on need for proper oral hygiene, regular mouth wash and liberal fluid intake. Antibiotics, analgesics and anti-fungal were also given to the patient. After 7 days, her symptoms disappeared and never reappeared throughout the remaining cycles of chemotherapy as shown in the figures (d) and (e). The patient continued with her chemotherapy followed by external beam radiotherapy, 40Gy in 20 fractions to the involved fields as scheduled which she completed in July 2022. Post-treatment CT scan done on August, 2022 showed radiation changes with no evidence of tumour. Similarly, post-treatment pan-endoscopy showed absence of any gross tumour. She is currently on follow up and advised on continuation of oral hygiene and HAART.

DISCUSSION

Cancer treatments especially for locally advanced disease involves use of multi-modality treatment options with the widespread use of chemotherapy and radiotherapy.[8] The pattern of Head and Neck cancers especially nasopharyngeal cancer in our environment is that of late presentation with advanced stage disease warranting multi-modality and multidisciplinary team approach to cancer care.[9] Chemotherapy after radiation therapy can be valuable clinically, however, it can induce a phenomenon of radiation recall.

Several theories try to describe its mechanism and this include drug hypersensitivity and local vasculopathy in the irradiated areas as inducing factors. Although uncommon, radiation recall is induced by several agents including chemotherapeutic agents, antibiotics, lipid lowering agents, anti- tubercular agents and COVID- 19.[10] The most notable and reported agents inducing radiation recall are taxanes, gemcitabine, doxorubicin, capecitabine and Actinomycin D. The symptoms varied depending on the site of the irradiation but mainly include erythema, pruritus, desquamation, mucositis, xerostomia.[10] The time interval between the end of radiation and the recall reaction ranged from a few days to 15 years.[10,11]

The index case reported was a radiation recall phenomenon in a patient with oropharyngeal cancer and background retro viral disease who was previously treated with radiotherapy and while on follow up she presented with a recurrent disease 5 years after warranting another round of chemotherapy. Ten (10) days after the first cycle of chemotherapy, she developed symptoms of radiation recall. Her symptoms resolved 5-7 days after treatment with oral antiseptics, antibiotics, anti-fungals and analgesics. Patient's recurrent disease could be due to peculiarities of suboptimal response to standard treatment as found in retro viral disease patients.[9]

Su-yu Zhu reported a case of radiation recall in a 44-year-old man with Nasopharyngeal cancer treated with taxane-based (docetaxel) chemotherapy where the patient developed erythema, papules and dysphagia due to mucositis few days after commencing chemotherapy.[12] This findings and time resolution of the symptoms is similar to our patients. Similar case was reported by Masakuni et al in a 60-year-old man who previously received spinal irradiation due to spinal metastasis and developed erythema at the previously irradiated site 7 days after the commencement of taxane-based chemotherapy.[13]

The two cases cited in the literature review are similar to the case presented with respect to symptoms and signs of radiation recall and the time interval between administration of chemotherapy and onset of radiation recall and similarly, complete resolution of radiation recall was seen in our patient. The only difference is that the index case is a woman. The expected outcome was not altered by the presence of radiation recall in these patients. In all these cases, the most likely chemotherapy culprit is the use of taxanes, paclitaxel in our index patient and docetaxel in Masakuni et al and Su-yu Zhu cases.[12,13]

The authors advise high index of suspicion to pick up patients who might develop radiation recall for prompt and optimal treatment since its appearance does not worsen prognosis but delay in identifying patients may affect quality of life and compliance of patients to treatment protocol

CONCLUSION

Radiation recall phenomena, although infrequent, it's diagnosis should be kept in mind by exhibiting high index of suspicion. Several theories try to describe its

mechanism and this include drug hypersensitivity and local vasculopathy in the irradiated areas as inducing factors. Radiation recall can be successfully managed with no interference with the cancer treatment and prognosis is not worsened.

REFERENCES

1. Azria D, Magne N, Zouhair A et al. Radiation recall: a well-recognized but neglected phenomenon. Cancer Treat Rev 2005; 31:555–570.
2. Caloglu M, Yurut-Caloglu V, Cosar-Alas R et al. An ambiguous phenomenon of radiation and drugs: recall reactions. Onkologie 2007; 30:209 –214.
3. Camidge R, Price A. Characterizing the phenomenon of radiation recall dermatitis. Radiother Oncol 2001; 59:237–245.
4. Yeo W, Johnson PJ. Radiation-recall skin disorders associated with the use of antineoplastic drugs. Pathogenesis, prevalence, and management. Am J Clin Dermatol 2000; 1:113–116.
5. D'Angio GJ, Farber S, Maddock CL. Potentiation of x-ray effects by actinomycin D. Radiology 1959; 73: 175–177.
6. CC Wang, JM Palesfsy. Human Papilloma virus-related oropharyngeal cancer in the HIV-Infected population. Oral Disease 2016; 22:96-106.
7. Adewuyi SA, Shittu SO, Rafindadi AH. Cervical Cancer in HIV Seropositive patients. Case reports. West African Journal of Radiology. 2007; vol. 14(1):31-38.
8. CE Brickman, KJ Propert, JS Merlin et al. Treatment and Outcomes of orpharyngeal cancers in people with Human Immunodeficiency virus. AIDS RESEARCH AND HUMAN RETROVIRUSES 2019; 35(10): 934-940.
9. Adewuyi SA, Usman AM, Samaila MOA, Ajeikigbe AT, Ketiku KK. Clinicopathologic Characterization of Nasopharyngeal Carcinoma seen in Radiotherapy and Oncology Department, Ahmadu Bello University Teaching Hospital, Zaria – Nigeria: 2006 – 2010. West African Journal of Radiology 2013; 20(2):89-95.
10. Howard A. Burris III, Jame H. Radiation recall with anticancer agents. The oncologist 2010; 15: 1227-1237.
11. Hird AE, Wilson J, Symons S, Suclair E, Davis M, Chow E. Radiation dermatitis: case report and review of the literature. Current Oncology 2008;15(1) 53-62.
12. Su- yu Z, Yuan YZ. Radiation recall. Two cases studies illustrating an uncommon phenomenon secondary to anticancer agents. Cancer Biol Med 2012; 9:202-203.
13. Masukuni S, Toshinya M, Takuya A, Naoya I, Docetaxel-induced radiation recall dermatitis with atypical features: A case report. Medicine 2018; 97:36.