

Patients with Locally Advanced Cervical Cancer may be Predicted Treatment Response by Biomarkers

Gary Fonseca*

Department of Radiation Oncology, University of Washington, Seattle, USA

Abstract

In this study, patients with locally advanced cervical cancer were evaluated for their response to definitive chemo radiation therapy in relation to quantitative metabolic and volumetric FDG PET/CT characteristics. Ninety patients with newly diagnosed locally advanced cervical cancer underwent research. At staging and following treatment, PET/CT was performed on all patients. Patients with and without a complete metabolic response were compared with regard to metabolic and volumetric markers, Total Lesion Glycolysis, and Metabolic Tumor Volume (MTV), of the primary tumour and metastatic lymph nodes. In a subset of FIGO IB2-IIB patients, a similar study was carried out; Results: SUVmax and SUVmean of the primary tumour as well as those of metastatic lymph nodes and TLG were found to be considerably higher than those of the primary tumour. Patients with locally advanced cervical cancer who will not respond to definitive chemo radiation therapy have higher levels of quantitative metabolic and volumetric markers assessed from PET/CT. In particular, MTV and TLG values can be used to predict therapy response in individuals who are not metastatic at staging, which may change the course of treatment.

Introduction

One of the most prevalent and dangerous cancers in women is uterine cervix cancer. Depending on the cancer's phase, cervical cancer treatment is chosen. Although decisive chemo radiation is a widely approved treatment for individuals with locally advanced cervical carcinoma, 20–40% of these patients will not react or will experience a disease recurrence. The evaluation of tumor-related characteristics that potentially forecast treatment response is motivated by the need for further treatment optimization and enhancement of result. Important imaging techniques for cancer patients included computed tomography and form of a non-positron emission tomography. Particularly to rule out extra pelvic illness the histological type and level of differentiation of cervical cancer are directly correlated with [F18] FDG uptake levels. Additionally, a cancer with a relevant for the following is more likely to metastatically spread. Prognostic information related to the extent and metabolic status of the disease [F18] FDG PET/CT may measure a variety of tumour metabolic and volumetric factors in both the main tumour and its metastases. The standardised uptake value, including the SUVmax and SUVmean, is the most frequently utilised parameter. The disease's metabolic tumour volume and the total lesion glycolysis, which is calculated by multiplying MTV and SUVmean, are additional parameters. Compared to SUV, MTV and TLG are thought to be more thorough parameters that reflect the metabolic tumour burden. When compared to anatomic imaging techniques like CT and MRI, tumour volume measurements on serial [F18] FDG PET/CT studies after chemotherapy or radiotherapy represent the shrinkage of the live tumour. Previous studies have shown that quantitative metabolic and volumetric indicators, such as SUVmax, MTV, and TLG in the original tumour and lymph node metastases, might help predict the effectiveness of treatment and offer crucial prognostic information to cervical cancer patients. Higher levels are associated with less effective treatment outcomes.

**Address for Correspondence:* Gary Fonseca, Department of Radiation Oncology, University of Washington, Seattle, USA, E-mail: Garyfon@gmail.com

Copyright: © 2022 Fonseca G. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Date of Submission: 06 June, 2022, Manuscript No. jomp-22-74702; **Editor Assigned:** 11 June, 2022, PreQC No. P-74702; **Reviewed:** 22 June, 2022, QC No. Q-74702; **Revised:** 25 June, 2022, Manuscript No. R-74702; **Published:** 30 June, 2022, DOI: 10.37421/2157-7145.2022.7.162

Description

The morphological and metabolic indices SUVmax, MTV, and TLG, on the other hand, were found to have minimal prognostic value for locally advanced cervical cancer. Age at diagnosis, tumour histology and stage, as well as information on the chemoradiation treatment, were all noted as clinical data. An expert in nuclear medicine examined each PET/CT study [1]. SUVmax and SUVmean in the primary tumour at staging and three months after the end of treatment were measured, together with size and [F18] FDG uptake parameters in the pelvic and paraaortic lymph nodes that were affected. Lymph nodes were judged abnormal based on their typical position, size, and uptake intensity. Additionally, MTV and TLG of all disease sites were calculated using the MIRADA XD programme both during staging and after therapy, with a fixed relative threshold of 41% of SUVmax. Using the Mann-Whitney test, differences between continuous variables were evaluated. The chi-square test was used to determine how different categorical parameters were from one another. Cervical cancer is one of the most prevalent solid tumours affecting women and a primary cause of cancer-related death in women globally [2].

The preferred treatment for locally advanced cervical cancer is definitive chemoradiation; however up to 40% of patients do not respond as expected to it. Therefore, it is crucial to identify these patients as soon as possible and provide them with a more suitable course of treatment. Clinically significant is the definition of metabolic and volumetric characteristics that can aid in predicting therapy response. Previous research has highlighted the importance of metabolic and volumetric metrics such SUVmax, MTV, and TLG in assessing the original tumour and lymph node metastases in order to provide prognostic information and predict response. Which looked at 38 cervical cancer patients who received curative chemoradiation, demonstrate that pretreatment metabolic activity and glycolytic volume can provide crucial prognostic data [3].

The current study examined the use of various metabolic and volumetric markers of the original tumour and its metastases in predicting response to treatment in 90 patients with locally advanced cervical cancer who had final chemoradiation therapy. Two analyses were conducted: one with the entire study population and the other just with patients who had disease that was restricted to the cervix, top two thirds of the vagina, or parametrium. This study's primary flaw is that it is retrospective in nature [4]. To further quantify the relevance of metabolic and volumetric indicators that can be detected by [F18] FDG PET/CT in predicting treatment response in patients with locally advanced cervical cancer, current findings need to be validated in a large, prospective trial. The use of the FIGO 2009 classification, which was initially

used to classify the majority of patients, is another drawback. This study did not take into account the pathologic response or the patients' overall survival; this is another study weakness. Instead, it only looked at the full metabolic response of the main tumour and lymph node metastases [5].

Conclusion

Patients with cervical cancer who will not totally react to chemoradiation treatment have greater metabolic and anatomic characteristics determined at staging than complete responders. Threshold values found for MTV and TLG can also aid in predicting response to therapy and enable therapeutic strategy change in individuals who are anticipated not to respond, if subsequently proven in a larger cohort of patients in a subgroup of patients with FIGO IB2-IIB illness.

References

1. Kidd, Elizabeth A., Barry A. Siegel, Farrokh Dehdashti and Perry W. Grigsby. "Pelvic lymph node F-18 fluorodeoxyglucose uptake as a prognostic biomarker in newly diagnosed patients with locally advanced cervical cancer." *Cancer* 16 (2010): 1469-1475.
2. Grigsby, Perry W., Barry A. Siegel, Farrokh Dehdashti and Janet Rader, et al. "Posttherapy [18F] fluorodeoxyglucose positron emission tomography in carcinoma of the cervix: Response and outcome." *J Clin Oncol* 22 (2004): 2167-2171.
3. Im, Hyung-Jun, Tyler Bradshaw, Meiyappan Solaiyappan and Steve Y. Cho. "Current methods to define metabolic tumor volume in positron emission tomography: Which one is better?" *Nucl Med Mol Imaging* 52 (2018): 5-15.
4. Mirpour, Sahar, Joyce C. Mhlanga, Prashanti Logeswaran and Gregory Russo, et al. "The role of PET/CT in the management of cervical cancer." *Am J Roentgenol* 201 (2013): W192-W205.
5. Vestergaard, Lau K., Douglas N.P. Oliveira, Tim S. Poulsen and Claus K. Høgdal, et al. "Oncomine comprehensive assay v3 vs. oncomine comprehensive assay plus." *Cancers* 13 (2021): 5230.

How to cite this article: Fonseca, Gary. "Patients with Locally Advanced Cervical Cancer may be Predicted Treatment Response by Biomarkers" *J Oncol Med & Pract* 7 (2022): 162.