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Ethics-Guided Radiation Therapy (EGRT): A necessity in radiation oncology practice

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Abstract

Medical ethics principles have been the basis of medical practice since early human civilization. The well-accepted principles are autonomy, beneficence, non-maleficence, and justice. With the advancement of academia, industry, medicine, and technology, there is a need to empower ethics-guided radiation therapy (EGRT). A PubMed search was done on Oct. 22, 2023, using the words: ("Radiotherapy"[Mesh]) AND "Ethics, Clinical"[Mesh]) and the results were a total of 58. Among these, 17 titles seem to be in relation, but only a handful were of intimate relation to ethics and radiotherapy. An additional handful of non-PubMed references were found. EGRT, in my opinion, is a new acronym for an old concept that needs further elaboration and experts' consensus in the modern radiation oncology literature. In parallel with the technological advances in radiotherapy, like intensity-modulated radiation therapy "IMRT" and image-guided radiation therapy "IGRT," we are aiming to create an initiative to establish EGRT to be like a model that every radiation oncologist can follow in the daily radiotherapy practice. The coming work will be composed of an extensive literature review, international survey, and expert consensus, and it is intended to be a base for further efforts in this aspect.

Keywords: *Radiation Oncology, Medical Practice, Medical Ethics, Medical Education, Cancer.*

Introduction

In my daily practice as a radiation oncologist for more than two decades, I come across many clinical scenarios for which I can find many treatment options; some of them are similar in efficacy, logistics, and complexities to others, and I can easily select the most suitable choice to my patients without any conflict of interest, but in other scenarios, although the options might be similar in outcomes, are not similar in the financial interest point of view as a treating physician or to my private group and facility, as some are more financially appropriate, and I have to make the decision.

Radiation therapy is one of the three primary cancer therapies besides surgery and systemic therapies. Its role is just after surgery, the only tool of cancer therapy till the late 1800s. The use of ionizing radiation for the treatment of cancer dates back to the late 19th century, remarkably soon after Roentgen described X-rays in 1895 and the use of brachytherapy after Marie and Pierre Curie discovered radium in 1898 (1). Nowadays, the revolutionary momentum of radiation and its technological aspects have achieved tremendous milestones in cancer treatment.

In the last four decades, and only in breast radiotherapy, we noticed many randomized clinical trials that concluded with similar or different outcomes but wide variations in expenses for the care provider, the funder and the patients and their families. In the publicly funded facilities, we are adopting 26 Gy in 5 sessions in one week, while in privately funded facilities, we are still sticking with the 50.4 Gy in 28 sessions over 5.6 weeks, and we may add the boost for another 1-2 weeks (2). This is just an example, and we can notice many other examples in other clinical sites. What is the right choice? Should we prioritize cost-effectiveness over scientific evidence or patient choice? This area needs more elaboration.

Lately, I faced a patient with lung cancer with 35 brain metastatic secondary lesions, who was pushing for stereotactic radiosurgery (SRS) treatment. I had a conversation with the patient to consider whole-brain radiotherapy (due to the extensive disease burden). However, my patient refused, as he had heard from YouTube about SRS and its complexity and superiority to the simple whole brain radiotherapy, but not its suitability to his particular situation. Moreover, SRS was more expensive, and many people think that it would

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be more appropriate in the modern era. Unfortunately, that patient ended up receiving SRS from another colleague. Still, his SRS was followed by an extended hospital time, an unproven efficacy in this heavy burden status, and death in the ICU due to the acute brain radio-toxicity and early death. The whole picture is just because the patient wanted this fancy treatment, and the physician needs to address the patient's request!

Medical ethics principles have been the basis of medical practice since early human civilization. The well-accepted principles are autonomy, beneficence, non-maleficence, and justice. With the advancement of academia, industry, medicine, and technology, there is a need to empower ethics-guided radiation therapy (EGRT). A PubMed search was done on Oct. 22, 2023, using the words: ("Radiotherapy"[Mesh]) AND "Ethics, Clinical"[Mesh]) and the results were a total of 58. Among these, 17 titles seem to be in relation, but only a handful were of intimate relation to ethics and radiotherapy (3 – 6). An additional handful of non-PubMed references were found (7, 8). EGRT, in my opinion, is a new acronym for an old concept that needs further elaboration and experts' consensus in the modern radiation oncology literature.

The advances in technologies and science can be associated with potential bias in its human application. The same can be noticed when the financial payment is connected with the advances in radiation technologies. We need a guide in our profession's daily practice and research. There is a need to determine the risks versus benefits versus treatment costs. We need to know when enough is enough and when to move the patients to the hospice and best supportive care. The Knowledge, Attitude and Practice (KAP) questionnaire about EGRT to radiation oncology practitioners globally is ongoing, and the outcomes and recommendations will be released in 2024.

In conclusion, there is a need to connect the medical ethics principles with the daily practice of radiotherapy on a global scale, which is the background of this work. In parallel with the technological advances in radiotherapy, like intensity-modulated radiation therapy "IMRT", image-guided radiation therapy "IGRT" and volumetric-modulated arc therapy "VMAT", we are aiming to create an initiative to establish ethics-guided radiation therapy "EGRT", to be like a model that every radiation oncologist can follow in the daily radiotherapy practice. The coming work will be composed of an extensive literature review, international survey, and expert consensus, and it is intended to be a base for further efforts in this aspect.

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