Expanding Horizons in Cancer Imaging

Nikhil H. Ramaiya, MD

Guest Editor, *Korean Journal of Radiology*

I would first like to take this opportunity to thank Editors Yeon Hyeon Choe, MD, PhD and Seong Ho Park, MD, PhD for taking me on as guest editor for this special cancer imaging issue. Although it would be nearly impossible to cover the entire spectrum of cancer imaging in just one issue, it is a credit to the KJR that they recognize the growing need to highlight the changes in such a rapidly evolving field. Within this issue we will touch on some major breakthroughs, and reflect upon how this has expanded the role of the cancer imaging radiologist.

We begin with a piece by Dr. Ailbhe C. O'Neill et al., entitled "Evolving Cancer Classification in the Era of Personalized Medicine: A Primer for Radiologist." Using lung cancer as a model, this paper examines how precision oncology has impacted the field, and how these changes will affect the cancer imaging radiologist. Her work makes it clear that the radiologist's eye must be retrained in order to recognize the inherent intricacies and understand the expected outcomes of these new treatment models.

With respect to these intricacies, it is clear that the traditional format for radiological consultation is outdated. In "Radiology Consultation in the Era of Precision Oncology: A Review of Consultation Models and Services in the Tertiary Setting," by Dr. Pamela J. DiPiro et al., we examine how

Dana-Farber Cancer Institute has addressed the issue of consultation during this new age. This work uses breast cancer as a model to explore the "hybrid consultation model," and shows how it is helping cancer imaging radiologists reach beyond the old standards in order to meet the expanding needs of precision oncology. By assigning radiologists to specific disease centers (in reading rooms stationed within the clinic) Dr. DiPiro notes the resulting reports have become more personalized, more in-depth, and better suited to the type of individualized treatment plans which the multi-disciplinary approach dictates. Furthermore, we have observed an increase in satisfaction among cancer clinicians, radiologists, and patients alike.

As newly FDA-approved molecular targeted therapies hit the market, cancer patients of any stage are living longer and consequently in need of more follow-up imaging. In his piece entitled "Evidence-Based Cancer Imaging," Drs. Atul B. Shinagare and Ramin Khorasani, examines traditional radiology practices with an eye towards adapting the field to reflect the changing face of cancer treatment. He shows that by generating evidence-based imaging recommendations to assess for metastatic disease, we can maximize impact and minimize risk while concurrently increasing cost-effectiveness, streamlining efficiency, and catering to the increasing personalization of treatment. Creating evidence-based imaging guidelines will help to evolve the field of radiology in step with the advancements made in treatment and management, and will result in the optimization of care in oncologic patients.

To expand on the topic of specific molecular targeted

Corresponding author: Nikhil H. Ramaiya, MD, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA.

therapies, Dr. Katherine M. Krajewski et al., look at anti-angiogenic, non-anti-angiogenic, and immune checkpoint inhibiting therapies. As they both correctly identify, it is critical to cancer imaging that we learn to recognize typical and atypical response patterns to new therapies. The hope here is to deepen the radiologist's knowledge base to include the expected outcomes of new therapies while simultaneously maintaining a maximum standard of care.

One might note that thus far we have only discussed the more common malignancies, such as lung and breast cancer. However, the changes in the field of precision oncology certainly reach well beyond the common malignancies. In pieces written by Drs. Hina J. Shah et al., Hye Sun Park et al., Akshay D. Baheti et al., and Sree Harsha Tirumani et al., we will discuss lymphomas and sarcomas in great depth. Each piece will explore how the world of molecular targeted therapy is rapidly changing the way we treat these types of malignancies, and in turn changing the expectations for radiologists.

In sum, the rapidly evolving field of cancer treatment is driving the expansion of the cancer imaging radiologist's role. Patients are now presenting with novel treatment outcomes which do not align with those seen through traditional methods, and which dictate care moving forward. As the changes mount, it is clear that the techniques built upon traditional chemotherapeutic cancer treatment must be altered to reflect the best care possible in the burgeoning field of precision oncology. In the pages to follow we hope to help close the knowledge gap and keep the field trending toward the optimization of cancer treatment.