

Bhadrasain Vikram: future road of radiation—radiomics and genomics will play important roles

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Editor's note

The 10th Shanghai International Conference on Radiation Oncology, SICRO X was held on August 11, 2018 in Shanghai, China. Numerous outstanding experts around the world attended the conference, bringing up-to-date information about promoting patient-oriented and data-based radiotherapy in the treatment of lung cancer and esophagus cancer.

During the conference, the Editorial Office of *Precision Cancer Medicine* was honored to make a face-to-face talk with Prof. Bhadrasain Vikram, the Chief of the Clinical Radiation Oncology Branch at the NCI. Prof. Vikram shared his experience among the peer regarding the use of radiomics and genomics in radiation. In the end of the talk, he appealed that institutes should share data through papers to benefit more cancer patients.

Expert introduction

Prof. Bhadrasain Vikram (*Figure 1*) received his medical degree from the University of Delhi and trained in radiation oncology at Memorial Sloan-Kettering Cancer Center in New York City. He subsequently served on the faculties of Memorial Sloan-Kettering, Cornell University Medical College and Mount Sinai School of Medicine. From 1992–2003, he served as Professor and University Chair of the Department of Radiation Oncology at the Albert Einstein College of Medicine and Radiation Oncologist-in-Chief at the Montefiore Medical Center in New York City.

From 2003–2006, he served on the ACGME Residency Review Committee for Radiation Oncology. He has authored over 150 scientific publications and was listed as among the 1000 'Best Doctors in America' by American Health magazine, a Reader's Digest publication.

From 2002–2006, he worked at the International Atomic Energy Agency of the United Nations in Vienna, Austria, helping to establish or upgrade cancer therapy facilities in about 100 low and middle income countries, and founded



Figure 1 Prof. Bhadrasain Vikram.

the Program of Action for Cancer Therapy (PACT). In 2005, he shared in the Nobel Peace Prize awarded to the IAEA whose contribution to global cancer control was cited by the Nobel committee.

Since 2006, he has served as Chief of the Clinical Radiation Oncology Branch at the NCI, overseeing a portfolio of clinical research grants within the Radiation Research Program as well as assisting the Cancer Therapy Evaluation Program and the Coordinating Center for Clinical Trials with NCI's cooperative clinical trials groups program. He also continues his work on improving cancer prevention and control worldwide.

Interview (*Figure 2*)

PCM: *The topic of your speech today is future radiation oncology: combining radiomics and genomics? Would you please tell us your take home message?*

Prof. Vikram: My take home message is that much work needs to be done to improve the cure rates and reduce



Figure 2 Bhadrasain Vikram: future road of radiation—radiomics and genomics will play important roles (1).

Available online: <http://www.asvide.com/article/view/27317>

toxicity. New tools we have now are radiomics and genomics, which I think can be combined to provide the best outcomes for cancer patients, both in tumor control and toxicity reduction.

PCM: *What's the current status of radiation oncology?*

Prof. Vikram: For some kinds of cancers, especially early cancers, radiation is very effective. But for other kinds of cancers, especially more advanced cancers, radiation is not so effective. So I think, for those cancers that could be cured by radiation, we need to reduce the toxicity of radiation. And for cancers could not be cured by radiation, we should try to increase the cure rate. I think this is our aim.

PCM: *What are the advantages of applying radiomics in radiation oncology? Is radiomics widely used in current radiation oncology?*

Prof. Vikram: Radiomics may allow us to understand the patient's tumor before or during the treatment, that is whether the patient is going to do well or not going to do well. Therefore, we can add some additional treatments, change some treatments, or give other drugs to achieve the best outcome. Regretfully, it is not widely used in current radiation oncology. I think radiation oncology is behind in medical oncology in using biomarkers, so we have to work extra hard to develop genomic and radiomic biomarkers to make radiation oncology more effective and less toxic.

PCM: *What do you think is the role of radiation oncology in cancer treatment? Is it a supplementary role or a key role?*

Prof. Vikram: I think it is a very key role. If we are able to find more cancers at an early stage, it would have an even more key role, because the smaller the cancer, the more easily it can be cured by radiation and with less toxicity. For some cancers, such as pancreatic cancer which could not be diagnosed at an early stage, the outcome of radiation is very poor. If we can diagnose them early, then radiation may cure even these cancers. As for other cancers, such as lung cancers or breast cancers, radiation can cure some of these patients but we would like to cure all of them.

PCM: *How do you see radiation oncology in the era of precision oncology?*

Prof. Vikram: As I said earlier, radiation oncology is a bit behind, because we do not study the cancer after radiation has failed. I think we should study them more closely to find the reasons of failure, and then we can identify new targets, new drugs and new techniques to reduce the failure rate. And same thing with the side effects. We try to understand a patient's genomics for example, to figure out whether this patient will have more side effects. In this case we can change some treatments or drugs to reduce the side effects.

PCM: *What would be your expectation to our journal, Precision Cancer Medicine?*

Prof. Vikram: I would like the journal to publish papers and also encourage authors of these papers to share their data widely, because we can learn more if we have more data. Instead of each institute keeping own data, I would recommend all institutes to share their data, so that we can learn from tens of thousands of cases. I think we can make progress much faster with data shared through the journal.

PCM: *Thank you for your suggestions! We will surely try our best to make a better journal.*

Prof. Vikram: Thank you!

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Footnote

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