Editorial

Impact of Artificial Intelligence in Oncology

Shashwat S. Banerjee

MAEER MIT Pune's MIMER Medical College and Dr. BSTR Hospital, Talegaon Dabhade, Pune, Maharashtra, India

Artificial intelligence (AI) holds the promise of transforming health care by improving health outcomes and patient safety, increasing accessibility and efficiency, and decreasing the cost of care.[1,2] In the field of oncology, AI is opening new important opportunities by reshaping the landscape and horizons, thus leading to significant improvements in the management of cancer patients.[3] Food and Drug Administration (FDA)-approved AI-based cancer diagnostic is already in clinical practice and has led to improving the management of cancer patients. Although the devices have not been conceived as a substitute for classical analysis/diagnostic workflow, they are intended as an integrative tool to be used in selected cases. At present, the areas where AI is gaining prominence are in the diagnostic areas, which count for most of the approved devices (>80%), in particular radiology and pathology.[3] Furthermore, the cancer types that are benefiting more from AI-based devices in clinical practice are breast cancer, lung cancer, and prostate cancer. This may be because of their higher occurrence compared with other tumor types. However, in the future, additional tumor types will also benefit, including rare tumors that still suffer from the lack of standardized approaches.[3] Since AI requires a large dataset of cases, the development in the treatment of rare neoplasms will likely take more time, although rare tumors are one of the most important categories in precision oncology.[4] Thus, strategizing AI development for this tumor group demands greater effort.

On another clinical front, AI is finding increasing attention in optimizing treatment for cancer patients. They are not only being used in drug discovery, but they provide accurate prospective recommendations on the most effective therapeutic approaches for individual cancer patients by integrating data on tumor growth kinetics, molecular profiling, and pharmacological properties.[5]

The enormous potential of this powerful asset as a potent amplifier of human potential should be exploited to the fullest. The AI health-care sector is predicted to grow from approximately US $15 billion in 2023 to $103 billion by 2028. With this, a significant advancement in predictive diagnostics, particularly the early identification and diagnosis of cancer is expected with the application of AI in health care.[6]

As one of the most important innovations of our time, AI is anticipated to significantly improve practices followed in all fields of medicine, although some safety concerns related to AI exist. Regulators such as the US FDA are attempting to strike a balance between technological innovation and patient safety. With further development, AI will have the potential to revolutionize the healthcare sector, not only in the way healthcare professionals diagnose and treat but also in how they manage the disease. AI is anticipated to alter the trajectory of cancer and reduce the vulnerability and cost of our health systems if it is implemented effectively and responsibly.

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Address for correspondence:
Shashwat S. Banerjee, Department of Central Research Laboratory, MAEER MIT Pune's MIMER Medical College and Dr. BSTR Hospital, Pune, Maharashtra, India. E-mail: shashwatbanerjee@mitmimer.com

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