

The use of Artificial Intelligence in Predicting Treatment Response in Ovarian Cancer

Azlem Azdemir*

Department of Cancer Research, University of Gazi, Ankara, Turkey

*Corresponding author: Department of Cancer Research, University of Gazi, Ankara, Turkey, E-mail: ozdmirozlem.md@gmail.com

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Description

Ovarian cancer is a deadly illness that often presents at an advanced stage because there are no early warning signs and few reliable screening techniques. The two main treatments for ovarian cancer are surgery and chemotherapy, although the latter is frequently difficult to administer because of patient variability and the emergence of drug resistance. The field of oncology has found Artificial Intelligence (AI) to be a potent technology that has the ability to completely change how ovarian cancer treatment responses are predicted. This thorough examination looks at the methods, advantages, difficulties and potential applications of AI in treatment outcome prediction.

Artificial Intelligence (AI) comprises several techniques, such as Machine Learning (ML), Deep Learning (DL) and Natural Language Processing (NLP), which are capable of analyzing large datasets to detect trends and generate forecasts. To anticipate how individual patients could react to particular medications, AI models are trained using a variety of datasets related to ovarian cancer, such as clinical records, genomic data, imaging tests and treatment histories. The development of predictive models frequently makes use of machine learning techniques including gradient boosting machines, random forests and Support Vector Machines (SVM). In order to uncover intricate links and interactions that conventional statistical methods can miss, these algorithms are able to examine multidimensional data. A branch of machine learning called "deep learning" is very helpful for evaluating genomic and imaging data since it uses multi-layered neural networks to extract features from data. The two types of DL architectures used here are Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs).

Applications of AI in ovarian cancer treatment

Genomic profiling: AI is used to analyze genomic data to identify