Predicting dynamic clinical outcomes of the chemotherapy for canine lymphoma patients using a machine learning model

구자민†
홍익대학교
(jaminkoo.82@gmail.com†)

First-line treatments of cancer do not always work, and even when they do, they cure the disease at unequal rates mostly owing to biological and clinical heterogeneity across patients. Accurate prediction of clinical outcome and survival following the treatment can support and expedite the process of comparing alternative treatments. We describe the methodology to dynamically determine remission probabilities for individual patients, as well as their prospects of progression free survival. The proposed methodology utilizes ex vivo drug sensitivity of cancer cells, immunophenotyping results, and patient information such as age and breed in training machine learning models, as well as the Cox hazards model. We applied the methodology using the three types of data obtained from 242 canine lymphoma patients that participated in a retrospective study. The results demonstrate substantial enhancement in the predictive accuracy of the models by incorporating a greater variety of data. They also highlight superior performance and utility in predicting survival compared to the conventional stratification method.