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Symposium

Human iPS cell technology as non-clinical tools for predicting cardio-oncology therapy side effects

Yasunari Kanda¹¹*Div Pharmacol, NIHS*

As cancer patients live longer, it is important to recognize cardiotoxicity that induce electrophysiological or structural changes by many oncology drugs, such as anthracyclines and tyrosine kinase inhibitors. Thus, understanding of cardio-oncology (also known as onco-cardiology) is more critical for the effective care of cancer patients. Human induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) have been widely used to evaluate cardiotoxicity as highly physiologically relevant human cells. We all-japan consortium have proposed a new proarrhythmia risk assessment method using hiPSC-CMs by our large-scale validation study. In addition to proarrhythmia risk, it is necessary to detect other type of side effects, such as chronic effects and impaired contractility from the viewpoint of cardio-oncology. To investigate how to use hiPSC-CMs for oncology drugs, we have attempted to make standardized protocols for long-term effects of drugs using motion vector system. In the symposium, I would like to share our recent data and discuss future perspectives for the usage of hiPSC-CMs in the cardio-oncology field.