A search for protection against chemotherapy cardiotoxicity

December 20 2007

Researchers at the University of Grenoble, in France, have discovered that erythropoietin administration prevents acute cardiotoxic effects induced by doxorubicin and trastuzumab exposures. The research article describing this work entitled “Erythropoietin pretreatment protects against acute chemotherapy toxicity in isolated rat hearts” will be featured in the January 2008 issue of *Experimental Biology and Medicine*.

Although rare, cardiotoxicity is a serious complication of cancer treatment. Indeed, the use of chemotherapeutic agents such as anthracycline or trastuzumab in oncology is limited by their cardiac toxicity. Therefore, it is of interest to identify new protective agents preventing these adverse effects.

“The increasing use of doxorubicin and trastuzumab in adjuvant breast cancer therapy and the growing population of long-term pediatric cancer survivors mean that, more than ever, cardiotoxicity will continue to remain an important issue for oncology. Cardiomyopathy induced by chronic chemotherapy may result, at least in part, from acute cardiotoxic effects accompanying each drug exposure.” said Professor Mireille Mousseau, head of the Department of Oncology.

The research team, led by Christophe Ribuot, a professor of pharmacology, explored the beneficial cardioprotective effect afforded by recombinant human erythropoietin (rhEPO) against various stresses, through experimental and clinical investigations.

“This study is an excellent illustration of a fruitful collaboration between researchers in experimental pharmacology, Christophe Ribuot and Marie Joyeux-Faure, and the oncologist M. Mousseau. Here, we observed for the first time that only a unique rhEPO administration prevents cardiac damage induced by an acute doxorubicin or trastuzumab exposure, using the isolated rat heart model.” said the article’s first author Amandine Ramond. “RhEPO administration could, therefore, be used during chemotherapy administration to reduce acute cardiotoxic effects accompanying each drug exposure and, potentially, to prevent long-term development of cardiomyopathy. Further clinical investigations are now needed to explore the potential benefit of rhEPO in oncology.”

Dr. Steven R. Goodman, Editor-in-Chief of Experimental Biology and Medicine, said “Amandine Ramond and her colleagues have provided an insightful study demonstrating that rhEPO can reduce the cardiotoxic effects of chemotherapeutic agents, doxorubicin and trastzumab, in a rat heart model. If rhEPO has similar effects on humans then this study will be of substantial benefit to cancer patients worldwide”.

Source: Society for Experimental Biology and Medicine