Repurposing nitroglycerin for anti-cancer treatments

27 August 2015

For over a century, nitroglycerin has been used medically – particularly in the treatment of angina, or chest pain. It is a safe, cheap and effective treatment. Now, according to the latest study in ecancermedicalscience, researchers find that nitroglycerin is the latest in a series of medicines that could be repurposed to treat cancer.

The Repurposing Drugs in Oncology (ReDO) project (www.redo-project.org), an international collaboration between the Anticancer Fund, Belgium, and US based GlobalCures, finds that existing and widely-used non-cancer drugs may represent a relatively untapped source of novel therapies for cancer.

Treatment failures for many cancers have been attributed to tumour hypoxia, or the lack of oxygen inside the tumour environment, explains study author Vidula Sukhatme, founder of GlobalCures. The stifling conditions make it difficult to penetrate the tumour with treatments.

"Any intervention that improves tumour oxygenation could improve radiation and chemotherapy outcomes," Sukhatme says.

"Nitroglycerin is one such agent," she explains. "It's immediately available, inexpensive and relatively non-toxic. It would be a shame to ignore its potential for patient benefit just because it is an old drug and has multiple mechanisms of action."

"In addition to tackling tumour hypoxia, nitroglycerin has excellent potential for improving the delivery of anticancer drugs," adds study author Pan Pantziarka, PhD, member of the ReDO project and the Anticancer Fund.

"One of the nicest things about nitroglycerin is the method of delivery – transdermal patches, which mean that patients may be able to get additional benefit from their existing treatments without having to take more tablets or intravenous medicines."

Nitroglycerin has had a long history of being put to unusual uses. Over a hundred years ago, the scientist who invented dynamite – an explosive based on nitroglycerin - regretted the destruction his creation had wreaked. Thus, Alfred Nobel sought to balance the history books by repurposing his fortune, and founded the Nobel Prize to reward humanity's highest achievements.

The ReDO researchers see a clear call to action: support and interest is needed to help nitroglycerin gain ground as an anti-cancer agent. But one thing is already sure - Alfred Nobel would be deeply proud of nitroglycerin's latest noble cause.

More information: "Repurposing Drugs in Oncology (ReDO)—nitroglycerin as an anti-cancer agent." *ecancer* 9 568 DOI: 10.3332/ecancer.2015.568

Provided by ecancer