Medical Xpress

New way to kill cancer found using body's immune system

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(PhysOrg.com) -- Scientists have discovered a new way of killing cancer cells in a breakthrough that could eventually lead to new treatments for a range of different cancers.

Researchers at The University of Manchester, working with colleagues at the University of Southampton, investigated how antibody treatments make cancer cells kill themselves and found a previously undiscovered mechanism that could, in future, be even more effective in causing their death.

When antibodies bind to cells, including cancer cells, they can 'flag' those targets for destruction by the body's immune system but this latest study has shown that antibodies can kill cancer cells directly. When the antibody binds, it causes lysosomes - small acid-containing sacs - inside the cell to swell and burst, rapidly releasing their toxic contents with fatal results for the cancer cell.

The study, published in the Journal of Clinical Investigation, offers hope of more alternative approaches to killing cancer cells that may have become resistant to the traditional chemotherapy treatments.

"A number of antibody treatments for cancer have been developed over the last decade and some of them are a huge step forward in treatment," said Professor Tim Illidge, in Manchester's School of Cancer and Imaging Sciences at the Paterson Institute for Cancer Research.

“Our research focused on several antibodies that bind to a molecule found on many leukaemia and lymphoma cells called CD20. Until now scientists did not understand exactly how these antibodies work as treatments for these blood cancers but our research not only identifies how they kill the cancer cells but also provides exciting insights into how other antibodies that use this mechanism might be developed.”

Dr Mark Cragg, from the University of Southampton, added: “Our findings are significant and open up the possibility of applying the knowledge of how antibodies can be developed to trigger cell death and may enable us to design treatments for other cancers.”

The large study was funded by the Association for International Cancer Research (AICR), Leukaemia Research, Cancer Research UK and Tenovus. Dr Mark Matfield of AICR, said: “The discovery of a new mechanism by which cancer cells kill themselves is an important step forward in cancer research. Killing the cancer cells is the basis of all successful cancer treatments.”

Dr David Grant, of Leukaemia Research, said: "The discovery of the unique pathway used by antibody therapies to kill cancer cells has, for the first time, revealed why they are more effective than chemotherapy. This may lead to new treatments for patients with blood cancers who cannot be cured using conventional chemotherapy.”

Dr Lesley Walker, Cancer Research UK’s Director of Cancer Information, said: “Although it’s at an early stage, this research provides valuable clues as to how monoclonal antibodies kill cancer cells, and could lead to more effective treatments for cancer in the future.”

Dr Ian Lewis, Research Manager of Tenovus, added: “The beauty of this research is that it shows how the body’s own immune system can be mobilised to selectively destroy a patient’s own cancer. Normally the

immune system struggles to tell the difference between a cancer cell and a healthy cell, but thanks to this research we now know how successful antibody treatments work and therefore how to apply it to the whole area of antibody therapy for cancer."

Provided by University of Manchester (news : web)