A combination of cancer immunotherapies could save more lives

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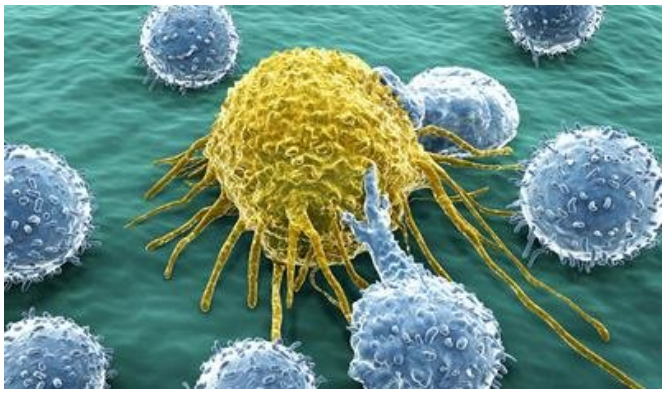

A combination of cancer immunotherapies could save more lives. Credit: University of Southampton

The pre-clinical study, published in *Clinical Cancer Research*, by Dr Sarah Buchan and colleagues, combined antibodies targeting PD-1/PD-L1, a type of immunotherapy known as checkpoint blockade that overcomes the resistance of cancer cells to the immune system, with another antibody against CD27, which kick starts the immune system to find and kill the cancer cells.

Results showed the combination treatment produced up to 60 per cent protection from the cancer compared with 10 per cent protection when only the single treatment was given.

PD-1/L1 antibodies are already given to people with cancers such as melanoma and lung cancer, but the benefit of these antibodies is only seen in a small number of patients. The Southampton scientists suggest that the combination with anti-CD27 will lead to a better response rate.

Professor Aymen Al-Shamkhani, who heads the laboratory in which the study was carried out, said: "Using checkpoint blockade has revolutionised the field of cancer immunotherapy, but it is not enough to simply stop the cancer from evading the immune system, we need to boost the immune system to fight the cancer off. By combining checkpoint blockade with an anti-CD27 antibody, we have been able to show that the two approaches can be harnessed to potentially improve current treatment options."

The study, funded by Celldex Therapeutics and Cancer Research UK, also revealed that the combination treatment activated different, yet synergistic pathways that culminated in stronger immune responses against the cancer. The research team say this pre-clinical work supports on-going clinical trials that are already testing the combination in patients.

Dr Catherine Pickworth, from Cancer Research UK, said: "Immunotherapy treatments are already showing huge promise for a number of cancer types, but they don't work for everyone. This work in mice suggests that using two types of immunotherapy could be an effective way to tackle this problem. Now we need to see if this particular approach works in patients. Cancer Research UK is funding several studies, looking at combining different types of immunotherapy so we can provide more treatment options and help more people beat their cancer."

This is the latest research paper to be published by the cancer immunotherapy team at the University of Southampton, which is just about to move into the UK's first dedicated centre to cancer immunology research.

Based at University Hospital Southampton, the Centre for Cancer Immunology will bring together world-leading cancer scientists and enable interdisciplinary teams to expand clinical trials and develop more lifesaving drugs. The £25million Centre has been funded entirely by philanthropic donations.

More information: Sarah L Buchan et al, PD-1 blockade and CD27 stimulation activate distinct transcriptional programs that synergize for CD8+ T-cell driven anti-tumor immunity, *Clinical Cancer Research* (2018). DOI: 10.1158/1078-0432.CCR-17-3057

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