

Blood vessel 'inflator' could be 'game-changer' for pancreatic cancer treatment

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(Medical Xpress) -- Cancer Research UK scientists have shown that an enzyme can re-expand the insides of blood vessels allowing more drugs and large antibody molecules to reach pancreatic tumors, according to research published in [GUT](#) today.

The team at Cancer Research UK's Cambridge Research Institute showed that an enzyme called PEGPH20 stretched open the insides of blood vessels in mice. This allowed greater amounts of two different chemotherapy drugs - gemcitabine and doxorubicin - to reach tumours.

At the moment, it is difficult to deliver drugs to tumours because the blood vessels are tightly compressed. And there are large amounts of structural 'cement-like' molecules surrounding the blood vessels in [pancreatic tumors](#). This limits the transport of drugs to the tumor and prevents drugs from diffusing across the tumour to kill the cancer cells.

The main 'cement' surrounding blood vessels consists of a bulky molecule called hyaluronan.

The scientists found that PEGPH20 removed hyaluronan and caused blood vessels to rapidly expand in pancreatic tumors, allowing free-flow of drugs to tumors.

They showed that combining PEGPH20 with chemotherapy [drug](#) gemcitabine blocked tumor growth and increased survival.

Study author, Professor David Tuveson, group leader at Cancer Research UK's Cambridge Research Institute, said: "Adding this enzyme to treatments could be a game-changer for treatment of pancreatic cancer if clinical trials show it can be used to treat patients safely.

"It made the shape of blood vessels wider and rounder – essentially it's the difference between changing the shape of blood vessels from a flat bicycle tyre to a pumped up one. This allowed drugs to easily travel to the tumor and destroy it, when previously this was incredibly difficult. Also, the expanded [blood vessels](#) now have holes that allow the drugs to reach the tumour more effectively."

Pancreatic cancer is the fifth most common cause of cancer death in the UK - around 8,000 people are diagnosed with the disease each year in the UK.

Survival from the disease is still low although the one-year survival rate for pancreatic cancer has more than doubled since the 1970s. Fewer than one in five patients survive their disease for more than a year after diagnosis.

Dr. Julie Sharp, Cancer Research UK's senior science information manager, said: "Pancreatic cancer can be difficult to treat successfully because the disease is often diagnosed at a late stage, when it has already spread. This is why it is incredibly important to find ways to make treatments more effective.

"Developing new ways to treat this disease, and other cancers where survival's still low, is a priority for the charity.

"Cancer Research UK funded the largest ever trial for people with pancreatic cancer that can be operated on – which changed the global treatment for the disease, helping to improve survival. But there is much

more to be done.

“Although it’s too early to say whether this enzyme can be used to treat patients with [pancreatic cancer](#) in the future, this research will help our understanding of the disease. The next stage is to test whether it is an effective and safe way to treat patients with the disease in clinical trials.”

More information: Hyaluronan impairs vascular function and drug delivery in a mouse model of pancreatic cancer. *Gut*. Jacobetz et al.

Provided by Cancer Research UK

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