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New trick for 'old' drug brings hope for pancreatic cancer patients

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Cancer Research UK scientists have found a new use for an old drug by showing that it shrinks a particular type of pancreatic cancer tumour and stops it spreading, according to research published in *Gut*.

"It's a crucial step forward in developing new treatments for this devastating disease..." - Dr Jennifer Morton, study author

The scientists, at the Cancer Research UK Beatson Institute and the University of Glasgow, treated mice with pancreatic cancers caused by known genetic faults with the drug rapamycin. (The drug was either given alone or in combination with the standard treatment for the disease, gemcitabine)

Previous clinical trials did not find this drug to be effective as a treatment for pancreatic cancers when it was given to all patients with different forms of the disease.

But the team's findings show that a particular type of pancreatic tumour – caused by a fault in the gene PTEN, which is involved in cell growth – may be responsive to the drug after all.

They found that giving rapamycin to mice with faulty PTEN pancreatic tumours stopped the cancer cells from spreading. In some cases the drug also caused the tumour to shrink.

The drug blocks a protein called 'mammalian target of rapamycin'

(mTOR), which also controls cell growth. The research suggests that tumours caused by the faulty PTEN gene may be dependent on mTOR to keep growing.

And in an analysis of a sample of human pancreatic tumours the team found that around one in five carried a faulty PTEN gene, giving hope that a substantial number of patients could benefit from treatment with rapamycin.

Study author, Dr Jennifer Morton, a scientist at the Cancer Research UK Beatson Institute, University of Glasgow, said: "This is incredibly important research showing for the first time that there's potential to tailor treatment to pancreatic cancer patients based on differences in their tumour's genetic fingerprint.

"Although it's at a very early stage, it's the first time we've been able to pinpoint a genetic fault in pancreatic cancers and match it up with a specific drug.

"While more research is needed to see if this approach could benefit patients, it's a crucial step forward in developing new treatments for this devastating disease which has seen no survival improvements since the 70s."

The scientists also used a new type of imaging to help them see if the drug was working early on in the treatment, which may help doctors in the future monitor if the patient is responding.

Every year 8,800 people are diagnosed with pancreatic cancer in the UK. Just over three per cent of people diagnosed with the disease will survive for five years or more.

Dr Kat Arney, science communications manager at Cancer Research

UK, said: "This is a promising step towards being able to understand how pancreatic tumours differ from each other and how we can personalise treatments to them. It's a challenging disease where little progress has been made and that's why Cancer Research UK is making pancreatic cancer a research priority.

"Over the next few years we plan to more than double the amount we spend on pancreatic cancer research to accelerate research into understanding the biology of this disease and change the odds for patients."

More information: Morran DC et al. Targeting mTOR dependency in pancreatic cancer (2014) *Gut*. DOI: 10.1136/gutjnl-2013-306202

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