Bacteriolytic therapy may be a promising treatment strategy for advanced pancreatic cancer patients

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Pancreatic carcinoma is only rarely curable. A German research group investigated an alternative treatment using spores of the bacterium Clostridium novyi in an animal model. Tumors of a defined medium size were successfully treated. Small tumors remained unaffected and the treatment was toxic for animals with very large tumors. Successful treatment was due to the induction of an immune response predominantly the innate arm of the immune system.

The aim of cancer immunotherapy is the stimulation of immune mechanisms to recognize malignant cells and may be a useful complementary therapy to conventional anticancer therapy. Immunotherapy was initiated over 100 years ago when New York surgeon William B. Coley inoculated a bacterial vaccine consisting of *Streptococcus pyogenes* and *Serratia marcescens*. Several patients experienced a beneficial effect on malignancy and were finally cured of their tumours by the development of a potent immune response.

A research article to be published on July 28,2010 in the World Journal of Gastroenterology worked on this old idea. The research team led by Dr. Michael Linnebacher from the University of Rostock treated pancreatic carcinoma with *Clostridium novyi*-spores. In their experimental model they analyzed animals with tumours of different sizes. Treatment success depended on tumour size. Small tumours were completely unaffected whereas the treatment was toxic in cases of very

large tumours. Most interestingly, tumours of a defined medium size completely disappeared and animals remained free of tumour recurrence. The authors showed that immune mechanisms were responsible for this success.

The bacterial spores germinate and grow in the oxygen-free tumour centres where they damage surrounding tumour cells. This together with an infection-driven infiltration of tumours by cells of the innate immune system leads to significant damage to tumours.

These data indicate that the application of bacteria may be a promising treatment strategy for patients with advanced pancreatic cancer and warrants further investigation.

More information: Maletzki C, Gock M, Klier U, Klar E, Linnebacher M. Bacteriolytic therapy of experimental pancreatic carcinoma. World J Gastroenterol 2010; 16(28): 3546-3552 www.wjgnet.com/1007-9327/full/v16/i28/3546.htm

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