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Localization of the stem cell markers LRG5 and Nanog and the oncogenic c-kit suggests a new approach to the treatment of pancreatic cancer

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Pancreatic adenocarcinoma (PDAC) is among the most aggressive cancers with less than 5% survival rate within 5 years. We used specific antibodies to cancer stem cells markers; LRG5, Nanog and c-kit and high resolution immunocytochemistry in order to localize the cancer stem cells. We analyzed over 100 tissue samples from different patients, formaldehyde fixed and paraffin embedded, obtained from normal patients and cancer patients at the stages of I to IV. First specific antibodies were either polyclonal, affinity purified or monoclonal, and the second antibodies against the first ones were conjugated to peroxidase. Surprisingly, LGR5 and Nanog were located exclusively in the pancreatic β cells in Langerhans islands with no labeling of the exocrine cells and the duct cells of the normal pancreas. In addition, LRG5, Nanog and the c-kit appeared in early stage of PDAC development, first in β insulin containing cells and later they were spread to remnant of exocrine tissue and to the cancerous ducts. Hypothesis is that targeting of the β cells in PDAC with specific antibodies, especially to LGR5 and c-kit, located on the surface of cancerous tissue and β stem cells, may destroy the β cells by inducing apoptosis. Nevertheless, insulin therapy, provided through post treatment with the specific antibodies may facilitate in rescuing the survival of the patients suffering from PDAC, after eliminating or reducing the number of the cancerous pancreatic stem cells.

Biography

Abraham Amsterdam has published more than hundreds of papers in prestigious international journals and books. He spent Postdoctoral periods at the Rockefeller University, NY, and several sabbatical periods in NIH, Bethesda, MD; Max Plank Institute, Munich and John Hopkins Medical Center, Baltimore, MD.

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