Recent Developments in the Pancreatic Cancer Chemoprevention: Challenges and Opportunities

Aims & Scope:

Pancreatic cancer is a highly aggressive cancer usually diagnosed at an advanced stage, has the worst prognosis of any cancer malignancy, with a 5-year survival rate of <7%. It is the seventh most common cause of cancer deaths worldwide. Lack of early detection and effective interventions are major factors contributing to the poor prognosis and dismal survival rates of pancreatic cancer patients. Recent developments demonstrate that pre-invasive precursors, such as PanINs, IPMNs, and cystadenomas, progress slowly over many years to decades (15-20 years) to develop into invasive pancreatic cancers. This slow progression is highlighted by recent data showing that PanIN progression, from the initiating mutations to the emergence of the parental founder cells of the invasive carcinoma within the high-grade PanIN lesion, takes several years to acquire metastatic capacity. Thus, there is a time frame of several years for effective chemoprevention and intervention strategies. PanIN lesions are the most common precursors, followed by IPMNs and cystadenomas; all of these lesions have the potential to progress to invasive PDAC, rendering them promising targets for chemoprevention intervention. Despite molecular genetics advances in human pancreatic cancers, targeted therapies have not yet translated to improved overall survival. Hence, developing chemoprevention strategies that delay/inhibit/prevent progression of each subtype of pre-invasive lesions to pancreatic cancer is of utmost importance. Several genetically engineered mouse models (GEMs) of pancreatic cancer that recapitulate human disease progression have recently been developed. The KrasG12D-dependent GEM model that mimics the therapeutic response of human pancreatic cancer offers novel treatment development opportunities.

The biggest challenges are to elucidate the regulatory mechanisms controlling the progression of pancreatic precursor lesions to pancreatic cancer, and to develop strategies that provide effective chemoprevention.

Keywords: Pancreatic Cancer, Chemoprevention, Mouse models, Molecular Targets, Drug Development, Immuno-chemoprevention.

Sub topics:

• Regulatory mechanisms controlling pancreatic cancer progression
• Pancreatic Cancer Chemoprevention targets
• Mouse models and early detection
• Immuno-chemoprevention of pancreatic cancer
• Drug candidates for pancreatic cancer chemoprevention
• Combination chemoprevention strategies
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