Expression of cKIT and CK 19 in pancreatic neuroendocrine tumors

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Introduction:
Pancreatic neuroendocrine tumors (pNETs) are rare and account for approximately 1–2% of all pancreatic neoplasms. The molecular mechanism and progression of these tumors remains unclear. Recently, CK19 and cKIT have been found to be able to predict the outcomes of various diseases like gastrointestinal stromal tumors and seminomas. cKIT activation helps in cell survival, proliferation and migration. Recently cKIT was reported to have prognostic significance in pancreatic NETs. CK19 expressed in all epithelial cells of the fetal pancreas including pancreatic islet cells. After that, its expression disappears from most mature islet cells, whereas it remains expressed in exocrine cells of the pancreas. Therefore, the aim of the study is to analyze the role of cKIT and CK19 in pancreatic neuroendocrine tumors.

Materials and methods:
A total of 14 pancreatic tissues were collected from GI Surgery Department, AIIMS, New Delhi and four were normal pancreatic tissue. Clinical history and pathological findings were observed. Tissues were fixed in 4% paraformaldehyde and paraffin blocks were made. 5µm thick sections were cut and processed for immunohistochemistry. Rabbit monoclonal antibodies were used to see the expression of cKIT and CK19 using streptavidin biotin complex method. Images were captured using Nikon Ti-S microscope and intensity was calculated on a scale of 0: no stain, +: weak staining, ++: moderate staining, +++: strong staining, ++++: very strong staining

Results:
Grading of pNET was done according to WHO guidelines and Ki67 index was calculated. cKIT and CK19 expression were observed in cytoplasm. The intensity of cKIT expression was weak (+) in grade I tumors whereas it was moderate (++) in grade II tumors. Similarly the intensity of CK19 expression was weak in grade I tumors whereas it was moderate in grade II tumors. Ki-67 index was significantly higher in the cKIT and CK19 pNETs than in the cKIT and CK19 normal pancreatic tissue.

Key words:
cKIT, CK19, pNETs, IHC, Ki67 index

Conclusion:
cKIT and CK19 expression correlates very well with WHO grading and Ki67 index. cKIT and CK19 may play a role in tumor progression and metastases

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Photomicrographs of well differentiated grade II pNET showing cytoplasmic expression of cKIT by immunohistochemistry (representative images)

[A] : Yellow arrow : Cytoplasmic expression of CK19 in the tumor tissue
[B] : Normal tissue adjacent to tumor
[C] : Red arrow : Cytoplasmic expression of cKIT
[D] : Normal tissue adjacent to tumor