

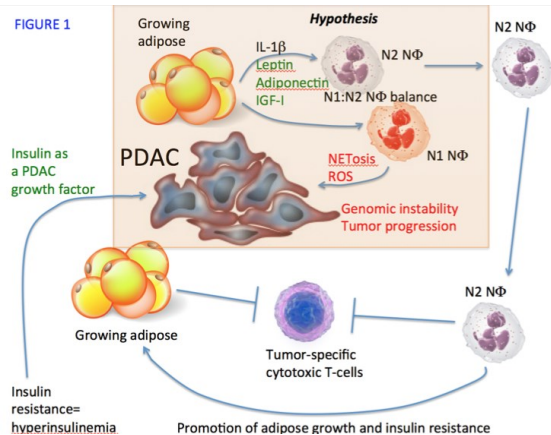
Significant lipid and neutrophil accumulation and active inflammasome in high BMI tumor regions of human pancreatic ductal adenocarcinoma

Ahmed Khattab MD¹, Sunita Patruni MD², Yesica Garciafigueroa PhD³, Brett Phillips PhD³, Carl Engman PhD³, Nazia Khatoon MD⁴, Karthik Shankar DO⁵, Ali Rizvi DO⁵, Stacey Miller MD⁴, Lei Zheng MD PhD⁶, Nick Giannoukakis PhD³, Dulabh K. Monga MD¹

¹Allegheny Health Network Dept. of Medical Oncology and Hematology; ²Northwell Health Dept of Medical Oncology and Hematology; ³Allegheny Health Network Institute of Cellular Therapeutics; ⁴Allegheny Health Network Dept. of Pathology; ⁵Allegheny Health Network Dept. of Internal Medicine; ⁶Johns Hopkins University School of Medicine Dept. of Oncology

BACKGROUND

- Obesity is an established risk factor for cancer and cancer-related mortality. Adipocytes may act as a “damage” signal resulting in the accumulation of innate immune cells, or tumor-associated neutrophils (TANs), which fuel an inflammatory micro-environment.
- Obesity-driven adipose may fuel the progression of PDAC in a TAN and inflammasome-facilitated manner via several mechanisms, including genomic instability of aggressive PDAC clonal populations.



METHODS

- Tissue from resected tumors of PDAC patients (n=44) with a body-mass index (BMI) > 27 (obese [n=21]) and BMI < 22 (normal [n=23]) were incubated with anti-human CD66b and LipidTox antibodies and detected using standard immunofluorescent microscopy techniques

- There is a significantly greater density of adipocytes in the tumor environment, suggesting that these cells are acting as a damage signal
- High BMI results in a significantly higher neutrophil count in tumor specific tissue, suggesting an association between BMI and inflammasome accumulation in the tumor environment

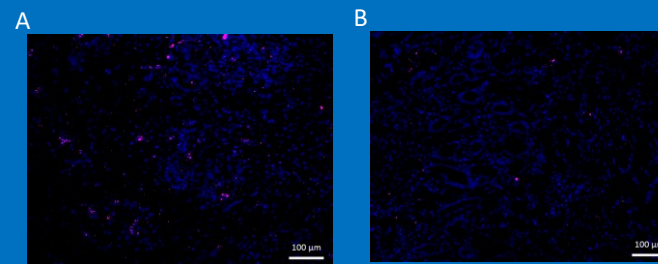
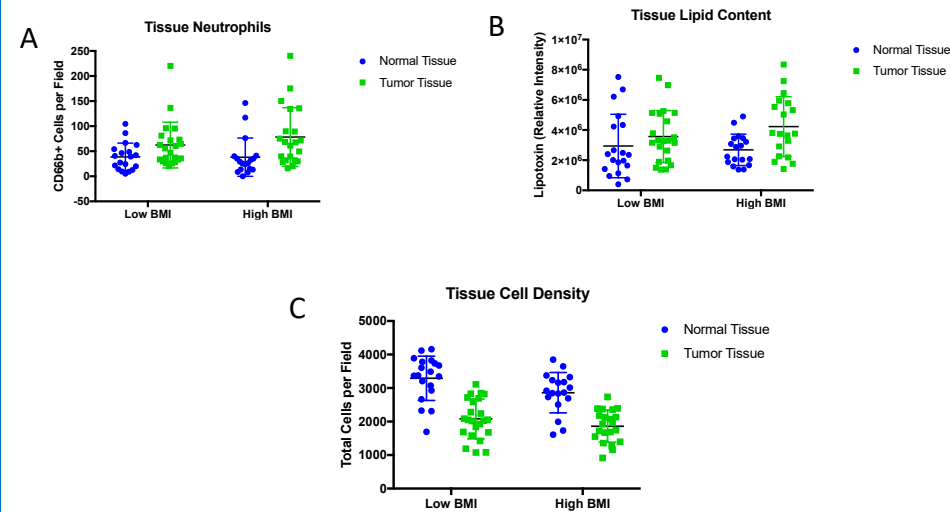


Fig 1: CD66b in Tumor (A) and Control (B) tissue

This study was made possible through a Johns Hopkins AHN Grant

RESULTS



A: Comparison of neutrophil accumulation by tissue type (p=0.0020)

B: Comparison of lipid accumulation by tissue type (p=0.0086)

C: Comparison of total cell count by tissue type (p=0.0001)

FUTURE DIRECTIONS FOR RESEARCH

- We are currently obtaining tissue from a novel PDAC mouse model to decipher the mechanism by which obesity-driven adipose tissue inside PDAC modulates the neutrophil phenotype to potentially drive tumor progression