Assessment of Cachexia Markers in the TCGA-LIHC Cohort of Patients with Hepatocellular Carcinoma

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Abstract:

Background: Cachexia, unintentional loss of muscle and fat, is frequent in patients with cancer. Cachexia, frequent with hepatocellular carcinoma, associates with decreased quality of life and survival. We sought to measure body composition changes in patients in the liver hepatocellular carcinoma (LIHC) cohort of The Cancer Genome Atlas (TCGA) preparatory to identifying tumor genomic characteristics associated with cachexia.

Methods: Using CT scans from The Cancer Imaging Archive (TCIA), we measured changes in muscle area (SKMA) and height normalized skeletal muscle index (SKMI) between scans. Serum biomarkers, obtained from TCGA, and extracted data were assessed versus progression free survival (PFS) and overall survival (OS) using Spearman nonparametric correlation and log rank tests.

Results: 43 patients of the LIHC cohort had two usable CT scans. 16 were female, mean age 63.4 ± 9.10 years (mean ± SD) and 27 were male, mean age 61.0 ± 15.5 years. SKMA, SKMI, and body weight were strongly correlated to male sex; conversely, platelet count was strongly correlated with female sex (r=0.400, p=0.01). We observed no correlations between change in SMA or SMKI and PFS or OS. However, variables of baseline SKMA (r=0.312, p=0.07), SKMI (r=0.312, p=0.07), patient weight (r=0.367, p=0.03), and body mass index (BMI) (r=.0404, p=0.02) correlated strongly with PFS. Serum platelet count was strongly negatively correlated with PFS (r=-0.401, p=0.02). Mutation count was strongly negatively correlated with OS (r=-0.311, p=0.04).

Conclusion: This cohort is too small to draw general conclusions about body composition, muscle size, and survival. However, observing greater survival in patients with more muscle mass is consistent with studies of patients with advanced cancer showing increased risk of mortality with low muscle mass. Observing longer survival among patients with high starting BMI is consistent with prior studies in lung cancer. These results highlight the importance of body phenotype in prognosis of patients with hepatocellular carcinoma.