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Associations between sarcopenia and gut microbiota in patients (pts) with metastatic renal cell carcinoma (mRCC) and breast cancer (BC)

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Background

Sarcopenia, or the loss of skeletal muscle mass, is associated with poor outcomes in cancer patients (Shachar et al. *Eur J Cancer*, 2016). We aimed to explore the association between stool microbiome and sarcopenia status in pts with mRCC and BC.

Methods

Pts with mRCC and BC, who had stool microbiome analysis by shotgun metagenome sequencing as part of institutional research studies, were retrospectively identified. Muscle mass area (MMA) was calculated by using computed tomography 3rd lumbar vertebral axial segment images with sliceOmatic software (TomoVision, Canada). Skeletal muscle index (SMI) was determined as MMA/height^2. Gender and body mass index (BMI) based SMI cut offs were used to determine sarcopenia: SMI <43 cm^2/m^2 (BMI <25 kg/m^2), or <53 cm^2/m^2 (BMI ≥25 kg/m^2) in males, and <41 cm^2/m^2 in females. LDA effect size analysis was performed to identify differentially abundant taxa between sarcopenic and nonsarcopenic patients.

Results

A total of 82 pts (45:37, M:F) were included. Median age was 68 (range 28-91); 62 (75.6%) pts and 20 (24.3%) pts had mRCC and BC, respectively. Twenty-seven (32.9%) pts in the mRCC cohort and 10 (12.2%) pts in the BC cohort were sarcopenic. Species that are differentially abundant with an LDA score above 3 were *Alistipes putredinis* and *Dialister sp CAG 357* in pts with sarcopenia and *Collinsella aerofaciens* in pts without sarcopenia. In patients with mRCC, the most prominent species with an LDA score above 3 were *Parabacteroides distasonis, Dialister sp CAG 357,* and *Campylobacter gracilis* among sarcopenic pts, whereas *Bacteroides vulgatus* and *Monoglobus pectinilyticus* were more commonly seen in nonsarcopenic pts.

Conclusions

These are the first data to associate sarcopenia with composition of the gut microbiome in pts with cancer. Mechanistic studies are needed to determine if there is a causal interplay.

Legal entity responsible for the study

The authors.

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Disclosure

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