Body composition and clinical outcomes in men with metastatic castration-resistant prostate cancer

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Introduction

- Obesity and steroidogenesis are associated with prostate cancer progression, resistance to therapy, and complications from androgen deprivation therapy (ADT).
- In localized prostate cancer, obesity increases the risk for disease recurrence and lethal disease.[1,2,3]
- There is a scarcity of data on the influence of obesity in metastatic prostate cancer, but in the few studies available, obesity and adiposity may improve clinical outcomes, suggesting a potential “obesity paradox.[4,5]
- Obesity defined by body mass index (BMI) reflects a metabolically heterogeneous population, and objectively measured adiposity may refine cohorts by their metabolic health
- Herein, we sought to evaluate the influence of body composition on response to chemotherapy plus maximal androgen ablation.

Methods

- Men with mCRPC uniformly treated on a prospective clinical trial with a combination of abiraterone acetate (abi), apalutamide (apa), carboplatin, and cabazitaxel (CC) were included in this post-hoc analysis (NCT02703623).
- Body composition, specifically skeletal muscle mass (SMM), visceral adipose tissue (VAT), and subcutaneous adipose tissue (SAT), was assessed at the level of L3 on baseline CT scan at trial registration using Slice-O-Matic version 5.0. Body composition indices were normalized for height (m^2).
- Associations between categorical baseline measures and objective response were tested with chi-square tests, continuous baseline measures were tested with non-parametric Kruskal-Wallis test.

Results

Table 1: Body composition and association with objective response to chemo + max androgen ablation

Patient characteristics		All n=58 (Column %)	Objective response n=12 (Row %)	No response n=46 (Row %)	P value
Age	40-59 60-69 ≥ 70	13 (22%) 26 (45%) 19 (33%)	4 (31%) 2 (8%) 6 (32%)	9 (69%) 24 (92%) 13 (68%)	0.09
ECOG PS	0 1-2	43 (74%) 15 (26%)	8 (19%) 4 (27%)	35 (81%) 11 (73%)	0.51
BMI		29.2 (25.8, 32.8)	30.4 (27.3, 34.0)	28.6 (25.8, 32.5)	0.21
SMM index		47.9 (45.2, 53.1)	46.3 (45.6, 49.8)	48.1 (45.2, 53.6)	0.36
VAT index		61.5 (44.6, 93.5)	60.3 (47.2, 95.1)	61.5 (43.8, 85.2)	0.73
SAT index		67.6 (53.4, 87.3)	87.9 (76.8, 123.0)	62.7 (46.4, 83.4)	**0.01**

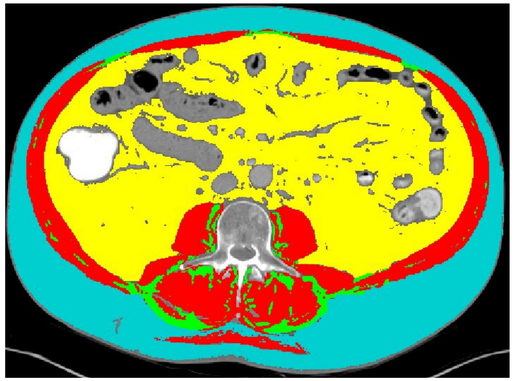
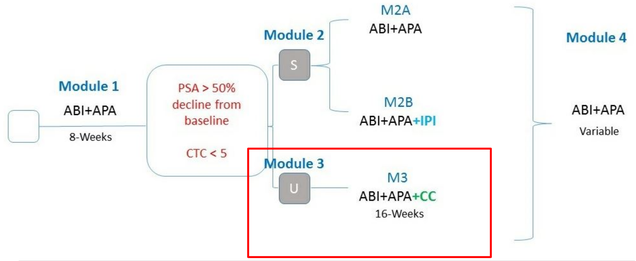


Table 2: Correlation of body composition and baseline characteristics

	SAT index	SMM index	VAT index
BMI	+ 0.79	-	+ 0.54
Age	- 0.15	- 0.12	-
ECOG PS	- 0.03	- 0.11	-

DynAMo trial schema



Conclusions/Future Directions

- *In the 58 patients evaluated, we observed that increasing subcutaneous adiposity was associated with response to chemotherapy combined with maximal androgen ablation, but did not observe a significant association between VAT, BMI, or SMM and response.*
- We will confirm the influence of adiposity on response to androgen ablation in a larger cohort with longer follow-up. Also, we will link the association to known biology of inherited host vulnerabilities and somatic alterations present in tumor.
- Conflict-of-interest: Andrew W. Hahn has no conflicts of interest to disclose.

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