Diet and Exercise Delays Time to Systemic Secondary Intervention Post Robotic Assisted Radical Prostatectomy

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1. Introduction and Objective

Approximately 20-30% of prostate cancer (PC) patients experience a biochemical recurrence (BCR), requiring secondary **systemic interventions (SI) – ADT, ADT+RT, RT**

To **delay time to SI**, the present study seeks **to evaluate the impact of intent to treat with a heart-healthy diet and exercise (DE) on time to SI for patients with BCR.**

3. Results

At entry, DE and MHC groups were the same in particular time to BCR (p=0.318) and PSAdt (p=0.542, Table 1).

Intervention occurred in all MHC patients, with adverse DT kinetics (decreasing DT, DT <12 mos) versus 44% (14/32) of DE patients at median 3.7 years versus 8.9 years, respectively (p<0.001).

At the end of study, DT was significantly longer in the DE (22.2±12.5 mo) versus the MHC (9.4±4.7 mo, p<0.001). Furthermore, end of study comparisons between DES versus DEF, and DEF versus MHC confirmed benefits of intent to treat with DE.

DT was significantly longer in the DES (26.7±11.7 mo) versus DEF group (17.3±13.7 mo) groups (p=0.045).

When DEF was compared to MHC, DT patterns (p=0.001), DT (p=0.008), and time to SI (p<0.001) differed significantly from the MHC group.

Figure 1. Tree Diagram

Figure 1: Tree Diagram of patient groups. P-values are t-test comparisons for time to BCR (MHC vs DE), and time to treatment (MHC vs DEF).

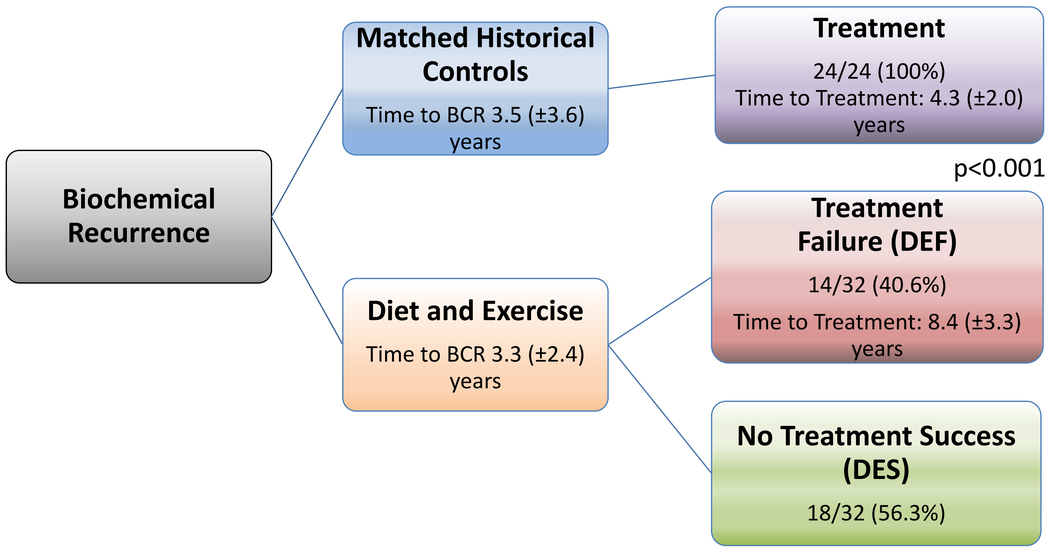

Table 2: End of Study Patient Demographics

Table 2. Demographic Table At End of Study of MHC vs DE (stratified by DES and DEF).

At End Of Study	Matched Historical Controls (MHC) Mean	Diet and Exercise ALL (DE) Mean	MHC vs DE p-value
DT Patterns			0.004
Increasing	16 (66.7%)	18 (56.3%)	
Decreasing	6 (25.0%)	13 (40.6%)	
NA *	2 (8.3%)	1 (3.1%)	
PSAdt (months)	9.4 (4.7)	22.2 (12.5)	< 0.001
Time to treatment (years)	4.3 (2.0)	8.4 (3.3) **	< 0.001

* no established DT pattern prior to treatment

** only DEF patients (n=14)

At End Of Study	Diet and Exercise Success (DES) Mean	Diet and Exercise Fail (DEF) Mean	DES vs DEF p-value
DT Patterns			0.011
Increasing	11 (61.1%)	11 (78.6%)	
Decreasing	7 (38.9%)	2 (14.3%)	
NA *	0 (0.0%)	1 (7.1%)	
PSAdt (months)	26.7 (11.7)	17.3 (12.7)	0.045
Time to treatment (years)	***	8.4 (3.3)	--

* no established DT pattern prior to treatment

*** DES: follow-up: 26.7 (±11.7) months

2. Materials and Methods

32 DE patients with BCR (PSA >0.2 ng/mL), doubling times (DTs) >12 months were included in the study.

The DE group was stratified into DE success (DES, n=18) with increasing DT or DE fail (DEF, n=14) based on rapidly decreasing DTs and need for SI.

24 Matched Historic BCR Controls (MHC) who predated DE were selected based on age, oncologic factors, DTs, and BMI.

PSA, PSAdt increasing/decreasing pattern, and time to SI were evaluated.

Table 1: Time of Entry Patient Demographics

Table 1. Demographic Table At Time of Entry of MHC vs DE (stratified by DES and DEF).

	Matched Historical Controls (MHC) Count	Diet and Exercise ALL (DE) Count (%)	MHC vs DE
N, All Patients	24	32	
At Enrollment	Mean (SD)	Mean (SD)	p-value
Age (years)	63.2 (6.5)	63.2 (6.2)	0.565
BMI (kg/m^2)	27.4 (2.8)	27.5 (12.8)	0.976
Preoperative PSA (ng/mL)	6.2 (1.7)	7.5 (4.0)	0.255
PSAdt (months)	18.4 (22.2)	21.9 (16.1)	0.542
Time to BCR (years)	3.5 (3.6)	3.3 (2.4)	0.318
	Count (%)	Count (%)	p-value
Gleason Grade			0.672
1 – 3	18 (75.0%)	29 (90.6%)	
4 – 5	6 (25.0%)	3 (9.4%)	
Tumor Stage			0.628
pT2	14 (58.3%)	20 (62.5%)	
pT3/4	10 (41.7%)	12 (37.5%)	
Surgical Margins			0.138
Positive	8 (33.3%)	4 (12.5%)	
Negative	16 (66.7)	28 (87.5%)	

	Diet and Exercise Success (DES) Count	Diet and Exercise Fail (DEF) Count	DES vs DEF
N, All Patients	18	14	
At Enrollment	Mean (SD)	Mean (SD)	p-value
Age (years)	64.3 (7.2)	61.9 (4.4)	0.277
BMI (kg/m^2)	27.5 (3.4)	27.6 (3.5)	0.883
Preoperative PSA (ng/mL)	7.2 (4.4)	8 (3.6)	0.561
PSAdt (months)	19.2 (12.2)	25.2 (10.0)	0.302
Time to BCR (years)	2.6 (1.5)	4.3 (2.9)	0.048
	Count (%)	Count (%)	p-value
Gleason Grade			0.796
1 – 3	16 (88.9%)	13 (92.9%)	
4 – 5	2 (11.2%)	1 (7.1%)	
Tumor Stage			0.358
pT2	10 (55.6%)	7 (50.0%)	
pT3/4	8 (44.4%)	7 (50.0%)	
Surgical Margins			0.419
Positive	3 (16.7%)	1 (7.1%)	
Negative	15 (83.3%	13 (92.3%)	

4. Conclusion

- **DE patients, 56% have avoided Sys. Intervention mean 8 yrs.**
- **Even DE failures significantly delayed time to systemic intervention by 3.8 years (increased DT to 17.3 mos) compared to MHC (10.0 mos).**
- **We hypothesize that this benefit is due to improved metabolic syndrome.**