Evaluating the Response of Chemoradiation Combined with Immunotherapy in Treating Locally Advanced Cervical Cancer

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Background

- Worldwide infection rates for HPV are estimated to range from 9% to 13%, equaling 20 million women affected in the US alone [1].
- Global estimate for cervical cancer cases in 2030 is projected to be 770,000 cases [2].
- Human papillomavirus (HPV) cancers are uniquely antigenic with ubiquitous and essential expression of viral proteins E6 and E7 [3].
- Standard-of-care treatment for patients with locally advanced cervical cancer is concurrent cisplatin chemotherapy with pelvic radiation (chemoRT).
- We hypothesize that adding immunotherapy to chemoRT may improve oncologic outcomes in patients with locally advanced cervical cancer

Objective

- We are investigating the effect of PDS0101, an E6/7 HPV16 T-cell activating immunotherapy delivered subcutaneously, combined with the standard of care chemoradiation for patients with locally advanced squamous cell cervical cancer.
- Assess oncologic outcomes in patients with locally advanced cervical cancer treated with PDS0101 in combination with chemoRT
- Compare with oncologic outcomes from patients in Collection and Analysis of Biospecimens and Clinical Data Across HPV-Related Cancer and Pre-Malignancies (CoACH)

Methods

- This project is a part of the IMMUNOCERV trial (PDS). The criteria of inclusion of this trial are patients with locally advanced squamous cell cervical cancer with either lymph node metastasis or tumors of >5 cm.
- 14 patients to date have completed treatment and have been evaluated with post-treatment MRI (Magnetic Resonance Imaging) and PET (Positron Emission Tomography) scan to evaluate response.
- Patients from CoACH B2 cohort (patients with newly diagnosed HPV cancer receiving definitive RT or chemoRT) were used as comparison. CoACH patients were filtered using the PDS inclusion criteria.

Methods (Cont.)

- 20 patients from CoACH B2 who meet the eligibility criteria for PDS have completed treatment and have undergone clinical evaluation to assess their response

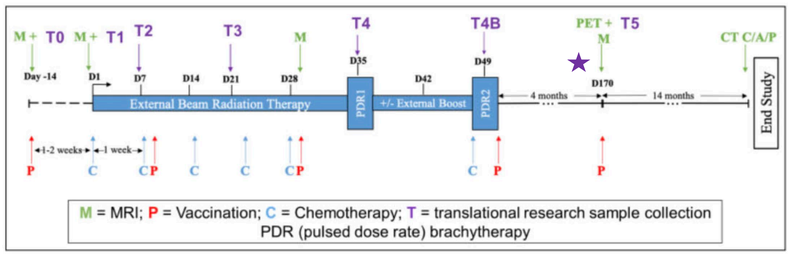

Figure 1: Schema for IMMUNOCERV trial delivering PDS0101 with standard CRT. ★Indicates T5.

- Cervical Swabs are collected at each timepoint (T) shown in Figure 1.
- MRI and PET were taken after completion of treatment at T5. Follow-up period ranged from 3-5 months

Results

Patient Characteristics

	COACH N	COACH %	PDS N	PDS %
N	20		16	
Age at Diagnosis*	48.5 (38-51)		42 (36-52)	
BMI at Diagnosis*	28.5 (24-34)		27 (22-32)	
Tumor Size*	5.6 (5-6.3)		6 (5-6.7)	
Stage at Diagnosis				
Stage IB3	0	0%	1	6%
Stage IIB	4	20%	3	19%
Stage IIIB	3	15%	1	6%
Stage IIIC	2	10%	0	0%
Stage IIIC1	9	45%	8	50%
Stage IIIC2	3	15%	1	6%
Stage IVA	0	0%	2	13%
HPV Status				
HPV 16	7	35%	4	25%
Other-HPV	10	50%	4	25%
Negative	3	15%	1	6%
Unknown	0	0%	5	31%
Race†				
American Indian or Alaskan Native	0	0%	0	0%
Asian	0	0%	1	6%
Black or African American	3	15%	2	13%
Native Hawaiian or Other Pacific Islander	0	0%	1	6%
White or Caucasian	13	65%	10	63%
Other	4	20%	1	6%
Unknown	0	0%	1	6%
Ethnicity†				
Hispanic or Latino	9	45%	2	13%
Not Hispanic or Latino	11	55%	13	81%
Unknown	0	0%	1	6%

*Median (interquartile range)
†Patient-reported
Abbreviations: BMI, body mass index

Figure 2. Patient characteristics of PDS and CoACH patients. Patients in both cohorts had similar demographics and oncologic characteristics.

Table 1. Patient response to PDS and CoACH treatment.

	Treatment Response		
	Poor*	Standard^	Excellent†
PDS	14.29%	78.57%	7.14%
COACH	20.00%	65.00%	10.00%

*Poor response: residual tumor at 3-month follow-up (FU) PET/CT scan.
^Standard response: no tumor at 3-month FU PET/CT scan.
†Excellent response: no tumor on MRI and FU PET/CT scan .

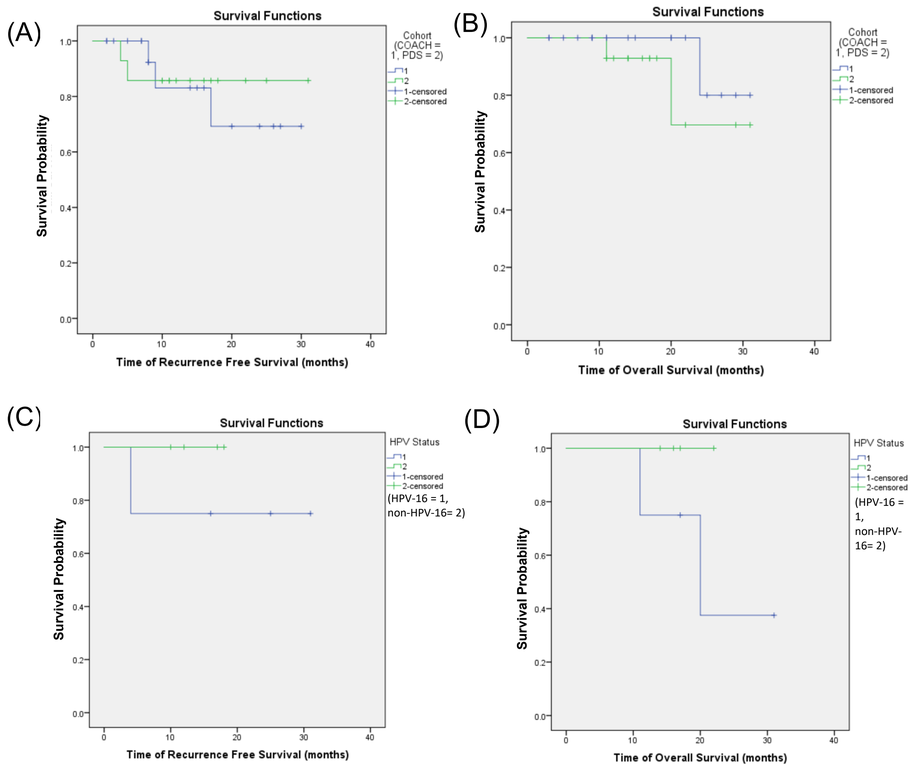

Figure 3. PDS treatment increases progression free survival. (A) Recurrence-free survival (RFS), (B) Overall survival (OS) in months for CoACH (blue) and PDS (green) cohorts. (C) RFS, (D) OS for PDS patients in the HPV-16 group (blue) and non-HPV-16 group (green).

Conclusion

- In this study, we analyzed oncologic outcomes in patients treated with PDS0101 in combination with chemoRT and evaluated treatment response
- PDS immunotherapy may improve RFS. The Kaplan-Meier estimated time of recurrence-free survival was 27.2 months in PDS and 24.5 months in CoACH.
- PDS patients with HPV-16 cervical cancer have poor outcomes regarding RFS and OS.
- Suggests that PDS vaccines may have a positive effect on tumor antigenicity and could help prevent recurrence.
- Further analysis with larger patient cohorts will be needed to determine the efficacy of cervical cancer immune responses and combination therapy.

References

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Ethics Approval

All patients were enrolled under protocol approval by the UT M.D. Anderson Cancer Center Institutional Review Board (MDACC 2019-1260, MDACC 2019-1059) and written informed consent were obtained from all patients.

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