Table 1: Logistic regression results for patients/cancer characteristics and selected dosimetric parameters associated with lymphopenia ≥ G3

Lymphopenia ≥ G3		Univariate Logistic Regression		Multivariate Logistic Regression	
	n (%/median (range))	OR	P value	OR	P value
Patients parameters	562				
Gender					
Female	257 (46%)	ref			
Male	305 (54%)	1.04	0.800		
Age (yr)	64 (22-93)	1.00	0.800		
Baseline lymphocytes ($x10^9$/L)	1.7 (0.5-12.4)	0.70	**<0.001**	0.40	**<0.001**
log(PTV)	2.6 (1.4-3.2)	7.90	**<0.001**		
PS					
0	135 (24%)	ref			
1	316 (56%)	1.00	0.900		
2	83 (15%)	0.60	0.070		
3	19 (3%)	0.80	0.600		
Histology					
LUAD	127 (22%)	ref			
LUSQ	168 (30%)	1.20	0.400		
SCLC	189 (34%)	0.50	**0.003**		
NoS	78 (14%)	1.10	0.600		
N Stage					
0	122 (22%)	ref			
1	51 (9%)	1.10	1.000		
2	275 (49%)	1.80	**0.005**		
3	75 (13%)	1.40	0.200		
Therapeutic parameters					
Chemotherapy status					
RT only	88 (16%)	ref			
pre Sequential RT	148 (26%)	0.80	0.400		
Concurrent	326 (58%)	1.50	0.100		
RT dose parameters					
RT duration (days)	28 (17- 57)	1.11	**<0.001**	1.13	**<0.001**
Lung mean (EQD2 Gy)	14.7 (2.4-29.1)	1.15	**<0.001**		
Heart mean (EQD2 Gy)	10.2 (1.1-32.7)	1.06	**<0.001**	1.04	**0.010**
Thoracic Vertebrae $V_{20\ (EQD2)}$	31.7 (0.02-81.3)	1.03	**<0.001**	1.02	**0.030**

OR: odds ratio; PTV: planning target volume; LUAD: lung adenocarcinoma; LUSQ: lung squamus carcinoma; SCLC: small cell lung cancer; NoS: not otherwise specified; RT: radiotherapy; EQD2: equivalent dose at 2 Gy/fraction (α/β=10)

Conclusion

Lymphopenia ≥ G3 during RT is a significant risk factor for survival in lung cancer patients and careful management is thus required e.g. by minimizing vertebrae V_{20} and mean heart dose in order to limit irradiation of stem cells and blood pool. If dose constraints cannot be met, more frequent monitoring of lymphocyte counts during therapy and use of prophylactic antibiotics are recommended.

OC-0633 Single dose high dose-rate (HDR) brachytherapy as monotherapy for localised prostate cancer

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Purpose or Objective

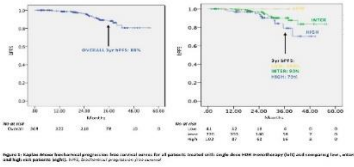
Several series have confirmed the safety and efficacy of multi-fraction high-dose rate (HDR) brachytherapy (BT) as monotherapy for localised prostate cancer. The role of a more cost-effective and convenient single fraction regime is developing with some conflicting efficacy results to date. We report early tumour control and toxicity outcomes from a national UK database of patients treated in a unifying protocol with a single 19Gy dose of HDR brachytherapy as monotherapy for localised disease.

Material and Methods

From 2013 to 2018, 369 patients with D'Amico classified low (n = 41), intermediate (n = 226) and high-risk (n = 102) prostate cancer were treated in a UK national protocol with HDR monotherapy to a dose of 19Gy delivered in a single treatment exposure; corresponding biologic equivalent prostate dose to 2Gy per fraction of 111Gy (α/β = 1.5). Brachytherapy planning objectives were rectum D2cc <15Gy and maximum <19Gy, urethra D10 <22Gy, D30 <20.8Gy and maximum <28.5Gy. Androgen deprivation therapy (ADT) was given to 36.9% of patients with duration ranging from 6-36 months. Biochemical failure was defined as prostate-specific antigen (PSA) rise of ≥2ng/ml above nadir post-BT. Acute and late genitourinary (GU) and gastrointestinal (GI) toxicities were evaluated using the Common Terminology Criteria for Adverse Events, version 4.0 guidelines. Late toxicity was defined as that originating ≥90 days after implant.

Results

Median follow-up was 26 months. The 2-year biochemical progression-free survival (bPFS) rate was 96% for all patients and 100%, 97% and 95% for low-, intermediate- and high-risk patients respectively. 3-year bPFS rates were 88% (overall), 100% (low-risk), 90% (intermediate-risk) and 79% (high-risk) (p=0.1) (Figure 1). Sites of relapse were radiologically identified in 21 of the 27 biochemical failures (Table 1). Of these, 14 had a local prostate recurrence. Acute grade 2 GU and GI toxicity peaked at 1 month post-implant; prevalence rates of 12% and 3% respectively. No grade 3 or 4 acute toxicity was reported. Two patients developed late grade 3 GU toxicity, both surgically-managed urethral strictures. Two patients developed late grade 3 GI toxicity, both rectal fistulae requiring colostomy.



Recurrences	n
Biochemical – imaging negative[1]	2
Biochemical – no imaging	4
Local relapse (prostate only)	11
Loco-regional (prostate + pelvic nodes)	1
Local + distant	2
Isolated pelvic nodal relapse	1
Regional + distant	3
Distant alone	3
Total	27

[1]Imaging comprised pelvic MR or Abdominopelvic CT and bone scan

Table 1: Sites of relapse for patients with biochemical failure

Conclusion

HDR monotherapy delivered in a single dose of 19Gy is a safe and effective treatment for localised prostate cancer that is well-tolerated over the first two years with very good early biochemical control. Further data on long-term efficacy and late toxicity are required. Where biochemical failure occurred in intermediate and high-risk patients, isolated local relapse predominated supporting the rationale for further focal dose escalation to the dominant nodule which should be feasible given the low toxicity of the regime.

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OC-0634 Implementation of plan of the day adaptive radiotherapy: Compliance to guidelines

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