Gender difference in pain and patient reported outcomes: a secondary analysis of the NCIC CTG SC.23 randomized trial

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Objective

- Explore the gender difference in pain and patient reported outcomes in cancer patients with bone metastases undergoing palliative radiotherapy

Methods

- Patients at least 18 years of age and receiving a single 8Gy dose of radiation for bone metastases at one or two locations were enrolled in a double-blind, placebo controlled study across 23 Canadian cancer centres
- Within 7 days before treatment, and at 10 and 42 days after treatment, patients completed the European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Bone Metastases Module (QLQ-BM22) and the EORTC Quality of Life Core-15-Palliative (QLQ-C15-PAL)
- Comparisons of patient demographics, performance status, analgesic consumption, BM22 and C15 were compared between the two genders
- Subgroup analysis was conducted between responders and non-responders to radiotherapy

Conclusions

- There exists limited differences
- Men and women should be considered equally in consideration for palliative radiotherapy for painful bone metastases

Results

- 298 patients (170 males, 128 females) were accrued
- Females with severe pain reported worse nausea and vomiting scores at baseline
- There were no differences between males and females in response to radiotherapy when evaluating at day 42
- No difference existed between males and females in change of QOL from baseline to day 42 except for the psychosocial aspect in the QLQ-BM22 questionnaire (higher proportion of males reported a change)

Patient demographics and baseline characteristics

	Males, N (%)	Females, N (%)	Total, N (%)
Baseline worst pain score (WPS)			
WPS 1-5	61 (35.9)	47 (36.7)	108 (36.2)
WPS 6	18 (10.6)	14 (10.9)	32 (10.7)
WPS 7-10	91 (53.5)	67 (52.3)	158 (53.0)
Karnofsky performance status			
40-60	44 (25.9)	24 (18.8)	68 (22.8)
70-80	86 (50.6)	79 (61.7)	165 (55.4)
90-100	40 (23.5)	25 (19.5)	65 (21.8)
First palliative radiotherapy treatment site			
Vertebrae	57 (33.5)	46 (35.9)	103 (34.6)
Pelvis/Hips	49 (28.8)	43 (33.6)	92 (30.9)
Others	64 (37.6)	39 (30.5)	103 (34.6)
Primary cancer site*			
Lung	45 (26.5)	39 (30.5)	84 (28.2)
Prostate	74 (43.5)	0 (0.0)	74 (24.8)
Breast	1 (0.6)	65 (50.8)	66 (22.1)
Other	50 (29.4)	24 (18.8)	74 (24.8)
Baseline total daily OME (oral morphine equivalent) (mg)			
N	165 (56.9)	125 (43.1)	290
Mean	91.2	37.9	83.8
Standard deviation	311.7	185.1	264.4
Median	20	20	20
Range	0-3750	0-1740	0-3750

*Statistically significant difference between males and females using the Chi-squared test

Baseline BM22 and C15 scores in patients with moderate or severe pain.

Moderate pain, QLQ-BM22							
Domain	**Males**			**Females**			**P-value**
	N	Mean	SD	N	Mean	SD	
Painful sites	**16**	**31.3**	**12.4**	**14**	**47.6**	**19.9**	**0.01**
Painful characteristics	16	43.1	21.4	14	57.9	23.9	0.08
Functional interference	16	58.1	16.6	14	45.8	22.6	0.10
Psychosocial aspect	16	56.6	14.9	14	44.4	17.7	0.05
Moderate pain, QLQ-C15-PAL							
Domain	**Males**			**Females**			**P-value**
	N	Mean	SD	N	Mean	SD	
Physical	16	72.2	22.6	14	69.8	25.2	0.79
Emotional	16	83.3	19.3	14	67.9	32.3	0.12
Global QOL	16	41.7	21.1	14	53.6	19.8	0.12
Pain	15	63.3	22.0	14	67.9	26.5	0.62
Fatigue	16	40.6	23.6	14	46.4	29.4	0.55
Nausea and vomiting	15	13.3	16.9	14	19.1	36.3	0.59
Dyspnea	16	18.8	32.1	14	19.1	21.5	0.98
Insomnia	16	31.3	19.1	14	54.8	40.5	0.05
Appetite	16	37.5	34.2	14	40.5	41.7	0.83
Constipation	16	31.3	35.4	14	45.2	36.1	0.29
Severe pain, QLQ-BM22							
Domain	**Males**			**Females**			**P-value**
	N	Mean	SD	N	Mean	SD	
Painful sites	87	38.5	16.6	63	41.0	18.8	0.41
Painful characteristics	87	51.5	21.3	63	54.9	20.6	0.32
Functional interference	87	43.2	21.3	63	39.0	21.5	0.24
Psychosocial aspect	87	45.8	18.1	63	45.3	19.7	0.88
Severe pain, QLQ-C15-PAL							
Domain	**Males**			**Females**			**P-value**
	N	Mean	SD	N	Mean	SD	
Physical	87	70.4	26.2	63	63.3	26.7	0.11
Emotional	87	63.2	27.6	63	65.3	25.3	0.63
Global QOL	86	42.3	21.8	63	41.5	22.2	0.84
Pain	86	73.1	23.7	63	73.8	22.5	0.85
Fatigue	87	52.9	27.5	63	51.3	27.5	0.73
Nausea and vomiting	**87**	**19.5**	**29.0**	**63**	**30.7**	**33.0**	**0.03**
Dyspnea	87	30.3	30.3	62	27.4	31.7	0.58
Insomnia	87	39.9	32.9	63	39.2	34.7	0.90
Appetite	87	37.9	37.4	63	42.9	37.1	0.43
Constipation	86	40.3	35.8	62	43.6	37.5	0.60

Baseline BM22 and QLQ-C15-PAL scores.

QLQ-BM22							
Domain	**Males**			**Females**			**P-value***
	N	Mean	SD	N	Mean	SD	
Painful sites	161	34.3	16.9	121	36.8	19.1	0.25
Painful characteristics	161	44.5	21.8	121	47.5	22.5	0.25
Functional interference	161	51.0	22.3	121	47.9	23.4	0.26
Psychosocial aspect	161	51.0	19.1	121	49.2	20.5	0.45
QLQ-C15-PAL							
Domain	**Males**			**Females**			**P-value**
	N	Mean	SD	N	Mean	SD	
Physical	161	75.0	24.9	121	70.9	25.4	0.17
Emotional	160	69.5	27.6	121	68.3	25.5	0.72
Global QOL	158	47.6	23.3	121	49.2	23.3	0.57
Pain	159	62.4	26.9	120	65.3	25.3	0.36
Fatigue	160	46.9	27.4	120	46.3	28.0	0.85
Nausea and vomiting	**160**	**15.4**	**26.1**	**121**	**22.9**	**30.4**	**0.03**
Dyspnea	161	25.5	28.8	120	22.2	28.5	0.35
Insomnia	161	36.7	31.0	121	37.5	34.3	0.83
Appetite	161	31.5	34.8	121	38.0	37.1	0.13
Constipation	160	31.3	33.6	120	36.1	36.8	0.25

*The 2-sample T-test was used to calculate P values.
Statistically significant differences are bolded.

Radiation response in males and females evaluated at 42-days post treatment.

Pain	**Males, N (%)**		**Females, N (%)**		**P-value***
	Responders	Non-responders	Responders	Non-responders	
All patients	70 (41.2)	100 (58.8)	46 (35.9)	82 (64.1)	0.36
Mild pain	26 (42.6)	35 (57.4)	23 (48.9)	24 (51.1)	0.51
Moderate pain	8 (44.4)	10 (55.6)	4 (28.6)	10 (71.4)	0.36
Severe pain	36 (39.6)	55 (60.4)	19 (28.4)	48 (71.6)	0.14

*The Chi-squared test was used to calculate P values.

Change in quality of life evaluated at 42-days post treatment.

QLQ-BM22							
Domain	**Male, N (%)**			**Female, N (%)**			**P-value***
	Improved	Stable	Worsened	Improved	Stable	Worsened	
Painful sites	48 (43.6)	42 (38.2)	20 (18.2)	47 (50.0)	32 (34.0)	15 (16.0)	0.662
Pain characteristics	70 (63.6)	20 (18.2)	20 (18).2	55 (58.5)	21 (22.3)	18 (19.1)	0.712
Functional interference	63 (57.3)	33 (30.0)	14 (12.7)	49 (52.1)	34 (36.2)	11 (11.7)	0.646
Psychosocial aspect	**46 (41.8)**	**27 (24.5)**	**37 (33.6)**	**30 (31.9)**	**45 (47.6)**	**19 (20.2)**	**0.002**
QLQ-C15-PAL							
Domain	**Male, N (%)**			**Male, N (%)**			**P-value**
	Improved	Stable	Worsened	Improved	Stable	Worsened	Improved
Physical	31 (28.4)	39 (35.8)	39 (35.8)	35 (37.2)	25 (26.6)	34 (36.2)	0.279
Emotional	42 (38.2)	34 (30.9)	34 (30.9)	40 (42.6)	33 (35.1)	21 (22.3)	0.388
Global	39 (36.1)	37 (34.3)	32 (29.6)	45 (47.9)	27 (28.7)	22 (23.4)	0.236
Pain	59 (55.1)	28 (26.2)	20 (18.7)	62 (66.7)	18 (19.4)	13 (14.0)	0.251
Fatigue	35 (32.4)	35 (32.4)	38 (35.2)	30 (31.9)	26 (27.7)	38 (40.4)	0.689
Nausea and vomiting	17 (15.5)	71 (64.5)	22 (20.0)	23 (24.5)	45 (47.9)	26 (27.7)	0.054
Dyspnea	17 (15.5)	74 (67.3)	19 (17.3)	18 (19.4)	55 (59.1)	20 (21.5)	0.487
Insomnia	35 (32.1)	51 (47.8)	23 (21.1)	24 (25.5)	54 (57.4)	16 (17.0)	0.317
Appetite	19 (17.3)	58 (52.7)	33 (30.0)	26 (27.7)	41 (43.6)	27 (28.7)	0.185
Constipation	27 (24.8)	56 (51.4)	26 (23.9)	26 (28.0)	50 (53.8)	17 (18.3)	0.612

*The Chi-squared test was used to calculate P values.

Change in quality of life among responders and non-responders.

Responders, QLQ-BM22							
Domain	**Male, N (%)**			**Female, N (%)**			**P-value***
	Improved	Stable	Worsened	Improved	Stable	Worsened	
Painful sites	33 (54.1)	23 (37.1)	5 (8.2)	26 (63.4)	13 (31.7)	2 (4.9)	0.60
Pain characteristics	43 (70.5)	10 (16.4)	8 (13.1)	31 (75.6)	7 (17.1)	3 (7.3)	0.65
Functional interference	40 (65.6)	16 (26.2)	5 (8.2)	26 (63.4)	14 (34.1)	1 (2.4)	0.38
Psychosocial aspect	**29 (47.5)**	**15 (24.6)**	**17 (27.9)**	**14 (34.1)**	**20 (48.8)**	**7 (17.1)**	**0.04**
Responders, QLQ-CP15-PAL							
Domain	**Male, N (%)**			**Female, N (%)**			**P-value***
	Improved	Stable	Worsened	Improved	Stable	Worsened	
Physical	23 (38.3)	25 (41.7)	12 (20.0)	18 (43.9)	12 (29.3)	11 (26.8)	0.43
Emotional	**28 (45.9)**	**18 (29.5)**	**15 (24.6)**	**23 (56.1)**	**16 (39.0)**	**2 (4.9)**	**0.03**
Global QOL	29 (49.2)	17 (28.8)	13 (22.0)	27 (65.9)	8 (19.5)	6 (14.3)	0.25
Pain	38 (65.5)	13 (22.4)	7 (12.1)	33 (80.5)	5 (12.2)	3 (7.3)	0.26
Fatigue	26 (42.6)	22 (36.1)	13 (21.3)	17 (41.5)	13 (31.7)	11 (26.8)	0.79
Nausea and vomiting	10 (16.4)	39 (63.9)	12 (19.7)	10 (24.4)	23 (56.1)	8 (19.5)	0.59
Dyspnea	15 (24.6)	36 (59.0)	10 (16.4)	7 (17.1)	27 (65.9)	7 (17.1)	0.66
Insomnia	22 (36.1)	30 (49.2)	9 (14.8)	14 (34.1)	20 (48.8)	7 (17.1)	0.95
Appetite	11 (18.0)	37 (60.7)	13 (21.3)	12 (29.3)	22 (53.7)	7 (17.1)	0.41
Constipation	21 (34.4)	31 (50.8)	9 (14.8)	13 (31.7)	23 (56.1)	5 (12.2)	0.86
Non-responders, QLQ-BM22							
Domain	**Male, N (%)**			**Female, N (%)**			**P-value***
	Improved	Stable	Worsened	Improved	Stable	Worsened	
Painful sites	15 (30.6)	19 (38.8)	15 (30.6)	21 (39.6)	19 (35.8)	13 (24.8)	0.61
Pain characteristics	27 (55.1)	10 (20.4)	12 (24.5)	24 (45.3)	14 (26.4)	15 (28.3)	0.60
Functional interference	23 (46.9)	17 (34.7)	9 (18.4)	23 (43.4)	20 (37.7)	10 (18.9)	0.93
Psychosocial aspect	**17 (34.7)**	**12 (24.5)**	**20 (40.8)**	**16 (30.2)**	**25 (47.2)**	**12 (22.6)**	**0.04**
Non-responders, QLQ-C15-PAL							
Domain	**Male, N (%)**			**Female, N (%)**			**P-value***
	Improved	Stable	Worsened	Improved	Stable	Worsened	
Physical	8 (16.3)	14 (28.6)	27 (55.1)	17 (32.1)	13 (24.5)	23 (43.4)	0.18
Emotional	14 (28.6)	16 (32.7)	19 (38.8)	17 (32.1)	17 (32.1)	19 (35.8)	0.92
Global QOL	10 (20.4)	20 (40.8)	19 (38.8)	18 (34.0)	19 (35.8)	16 (30.2)	0.30
Pain	21 (42.9)	15 (30.6)	13 (26.5)	29 (55.8)	13 (25.0)	10 (19.2)	0.42
Fatigue	9 (19.1)	13 (27.7)	25 (53.2)	13 (24.5)	13 (24.5)	27 (50.9)	0.80
Nausea and vomiting	7 (14.3)	32 (65.3)	10 (20.4)	13 (24.5)	22 (41.5)	18 (34.0)	0.06
Dyspnea	**2 (4.1)**	**38 (77.6)**	**9 (18.4)**	**11 (21.2)**	**28 (53.8)**	**13 (25.0)**	**0.02**
Insomnia	13 (27.1)	21 (43.8)	14 (29.2)	10 (18.9)	34 (64.2)	9 (17.0)	0.12
Appetite	8 (16.3)	21 (42.9)	20 (40.8)	14 (26.4)	19 (35.8)	20 (37.7)	0.45
Constipation	6 (12.5)	25 (52.1)	17 (35.4)	13 (25.0)	27 (51.9)	12 (23.1)	0.19

*The Chi-squared test was used to calculate P values.
Statistically significant differences are bolded.

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