Assessing MASCC guideline adherence: Radiation-induced nausea and vomiting prophylaxis in patients undergoing craniospinal radiation

Oregon Health & Science University

Sarah Lowry, DNP[1], Andy Kaempf, MS[2], Jeong Youn Lim, PhD[2], Cameron Chalker[1], MD, Erynn Beeson[3], MD, Aryana Abtin[1], Eric J. Roeland, MD[1]

[1]Knight Cancer Institute, OHSU; [2]Biostatistics Shared Resource, Knight Cancer Institute, OHSU; [3]School of Medicine, OHSU

LOWRYS@OHSU.EDU

BACKGROUND

- RINV is undertreated, risking worse quality of life, increased health care utilization, and early treatment discontinuation which could negatively impact treatment efficacy.[1]
- A dated but well cited single institution study found that only 12% of patients receive guideline concordant RINV prophylaxis.[2]
- Since 2017, craniospinal radiation has been recategorized as a moderate risk (30-90%) regimen.[3]
- No literature describing use of guideline concordant RINV prophylaxis since reclassification of craniospinal RT risk.
- Site of RT has been proposed as greatest risk factor for RINV (upper abdomen), based on expert opinion and experience of emesis in trials.[4]
- RT field size >400 cm^2, concomitant chemotherapy and prior CINV are additional proposed risk factors

METHODS

- Single-institution retrospective study
- Adult patients receiving craniospinal RT from June 2020 to October 2023
- Excluded if receiving concurrent parenteral chemotherapy
- Only the first eligible RT regimen was included for analysis
- Multivariable (MVA) logistic regression analysis

AIMS & ENDPOINTS

Aims	Endpoints
Primary	
To determine the proportion of patients receiving craniospinal radiation with guideline-concordant antiemetic prophylaxis available.	Proportion of patient records with prescription for 5HT3-RA prior to the start of craniospinal RT **and** documented instruction on prophylactic dosing.
Secondary	
• To explore association between RINV prophylaxis and reported RINV • To define experience of RINV • To describe RINV management • To explore associations of patient and disease related variables as risk factors for RINV	• Proportion of patients receiving RINV prophylaxis reporting RINV • Proportion of all patients reporting RINV • Antiemetics utilized in the treatment of breakthrough RINV • Patient and disease-related variables as adjusted risk factors for RINV

Table 1. Baseline Demographics

VARIABLES	TOTAL N(%) N=212
Patient	
Sex	
Male	133 (63)
Female	79 (37)
Age, years #	
< 55	42 (20)
≥ 55	170 (80)
Disease	
Primary Cancer Type	
Prostate	58 (27)
Breast	30 (14)
Lung	23 (11)
Myeloma	19 (9)
RCC	9 (4)
DLBCL	7 (3)
Other	66 (31)
Treatment	
Prior Chemotherapy Exposure	
No	124 (58)
Yes	88 (42)
Documented Hx CINV	
No	179 (84)
Yes	33 (16)
Number of RT Fractions	
1-3	54 (25)
4-10	150 (71)
>10	8 (4)
Dose per Fraction	
< 500 cGy	137 (65)
≥ 500 cGy	75 (35)
Location of RT*	
C-Spine	38 (18)
T-Spine	120 (57)
L-Spine	103 (49)
Sacral	24 (11)
Unspecified	8 (4)

RESULTS

- **Only 9% of patients had guideline-concordant RINV prophylaxis available**
- **Less than half of patients (45%) had access to a 5HT3-RA for breakthrough treatment**
- **39% of patients reported RINV during and up to 10 days after completion of RT**
- **We found no significant associates between the report of RINV and**
  - **Documented prophylaxis education**
  - **Access to a 5HT3-RA**
  - **Sex**
- **We found significant associations between RINV and**
  - **Age**
  - **Documented history of CINV**
  - **Radiation to the sacrum**

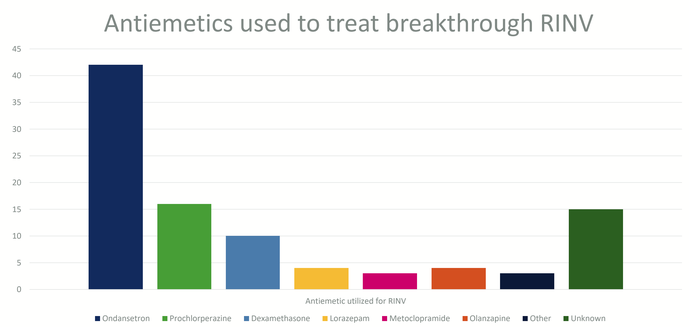

Table 2. Associations between variables and RINV

	RINV Reported (n=82)	No RINV Reported (N=130)	OR* (95% CI); p-value	Adj. OR* (95% CI); p-value
Patient Variables				
Sex				
Male^	47 (57.3)	86 (66.2)		
Female	35 (42.7)	44 (33.8)	1.46 (0.82-2.57); 0.196	
Age, years				
< 55	23 (28)	19 (14.6)	**2.28 (1.15-4.56); 0.018**	**2.27 (1.09-4.76); 0.028**
Disease Variables				
Primary Cancer				
Prostate	14 (17.1)	44 (33.8)	**0.40 (0.20-0.78); 0.009**	**0.47 (0.22-0.97); 0.046**
Breast	10 (12.2)	20 (15.4)	0.76 (0.33-1.69); 0.517	
Lung	8 (9.8)	15 (11.5)		
Myeloma	11 (13.4)	8 (6.2)		
RCC	4 (4.9)	5 (3.8)		
DLBCL	3 (3.7)	4 (3.1)		
Other	32 (39.0)	34 (26.2)		
Treatment Variables				
5HT3-RA at RT Start				
No^	39 (47.6)	77 (59.2)		
Yes	43 (52.4)	53 (40.8)	1.60 (0.92-2.81); 0.097	
Prophy 5HT3-RA Recommended				
No^	73 (89.0)	117 (90)		
Yes	9 (11.0)	13 (10)	1.11 (0.44-2.70); 0.821	
Dex at start of RT				
No^	51 (62.2)	72 (55.4)		
Yes	31 (37.8)	58 (44.6)	0.75 (0.43-1.32); 0.328	
Prior Chemotherapy Exposure				
No^	47 (57.3)	77 (59.2)		
Yes	35 (42.7)	53 (40.8)	1.08 (0.62-1.89); 0.783	
Documented Hx CINV				
No^	63 (76.8)	116 (89.2)		
Yes	19 (23.2)	14 (10.8)	**2.50 (1.18-5.41); 0.017**	**2.35 (1.06-5.32); 0.037**
Number of RT Fractions				
1-3^	18 (22.0)	36 (27.7)		
4-10	59 (72.0)	91 (70.0)	1.30 (0.68-2.53); 0.436	
>10	5 (6.1)	3 (2.3)	3.33 (0.74-17.76); 0.125	
Dose per Fraction				
< 500 cGy^	61 (74.4)	76 (58.5)		
≥ 500 cGy	21 (25.6)	54 (41.5)	**0.48 (0.26-0.88); 0.019**	
Location of RT*				
C-Spine	13 (15.9)	25 (19.2)	0.79 (0.37-1.63); 0.527	
T-Spine	42 (51.2)	78 (60.0)	0.68 (0.39-1.21); 0.192	
L-Spine	45 (54.9)	58 (44.6)	1.53 (0.87-2.71); 0.142	
Sacral	14 (17.1)	10 (7.7)	**2.48 (1.05-6.05); 0.040**	**2.49 (0.99-6.47); 0.054**
Unspecified	NA			

^ reference group for ORs. * odds of experiencing RINV.

CONCLUSIONS

RINV guidelines appear to be under utilized.
Nausea and vomiting remain common and undertreated toxicities of radiotherapy.
Prospective interventional studies are needed to reduce the burden of RINV.
Additional work is needed to define RINV risk and risk factors.

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