Using Patient Reported Outcome Measure (PROM) to Manage Pain During Radiation Therapy

Sara Youssef, BS., Vivian Salama, MS., MD., Amy C. Moreno, MD., Clifton D. Fuller, MD., PhD.

Radiation Oncology Department, The University of Texas, MD Anderson Cancer Center, TX, Houston

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center

Introduction

Pain severity is an important symptom to assess for in head and neck cancer patients undergoing radiotherapy (RT) due to its effects on the quality of life [1]. Although radiation itself is painless, it induces an acute postradiation reaction that can cause many side effects, with the most debilitating being oral mucositis [2]. Studies have shown a correlation between severity of pain and severity of oral mucositis [3]. To help manage the pain, the World Health Organization (WHO) has a recommended escalation chain of analgesics guideline, starting with NSAIDS, then weak opioids, followed by potent opioids [4]. Due to the subjective nature of pain, which can be difficult for health systems to measure, patient reported outcome measures (PROMs) is a tool that can be used to better gauge and improve patient's health experience [5]. Significant pain signals that modifications in pain management are needed to better monitor the pain. In this study, we used an institution-based PROM, The MD Anderson Symptom Inventory (MDASI), for pain assessment. The objective of our project is to determine the efficacy of pain management during RT using PROM.

Methods

Retrospective data was obtained for 500 oral cavity and oropharyngeal (OC/OPC) cancer patients, treated with RT at theRadiation Oncology department, MD Anderson Cancer Center in Houston, TX, USA. Pain scores were collected during the weekly see visits using MDASI, which is a multi-symptom PROM used to assess the severity of symptoms and how much of that disrupts daily life [6], using a scale from 0 to 10 (0 = no pain, 10=the worst pain). Clinical data was collected using EPIC and Brocade software. Pain scores were compared to mucositis intensity (0 =none, 1 =mild, 2 =moderate, 3 =severe), assessed weekly during radiation therapy visits. Patients were divided into cohorts based on age (19-33 =1, 34-48 =2, 49-64 =3, 65-78 =4, 79-98 =5). T-test and ANOVA test were used for statistical analysis.

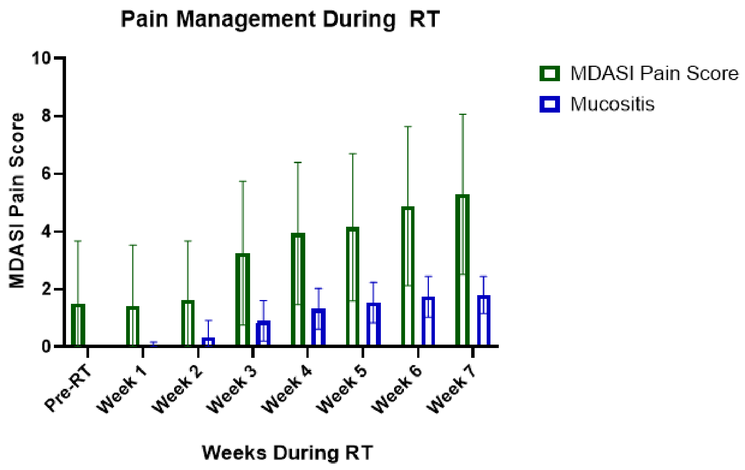

Fig. 1 Pain scores were compared to mucositis severity (0 =none, 1 =mild, 2 =moderate, 3 =severe), assessed weekly during radiation therapy visits.

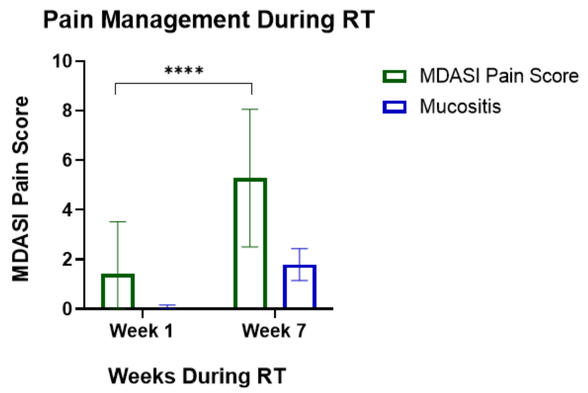

Fig. 2 MDASI pain scores and mucositis severity displayed a significant difference from week 1 to week 7 of RT. (p <0.0001).

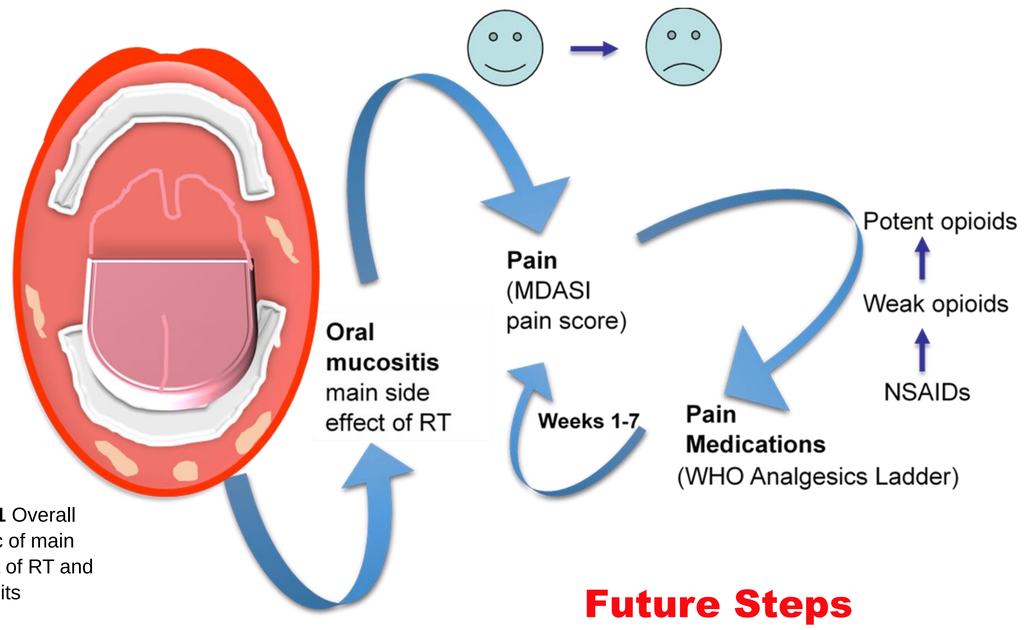

Diagram 1 Overall Schematic of main side effect of RT and weekly visits

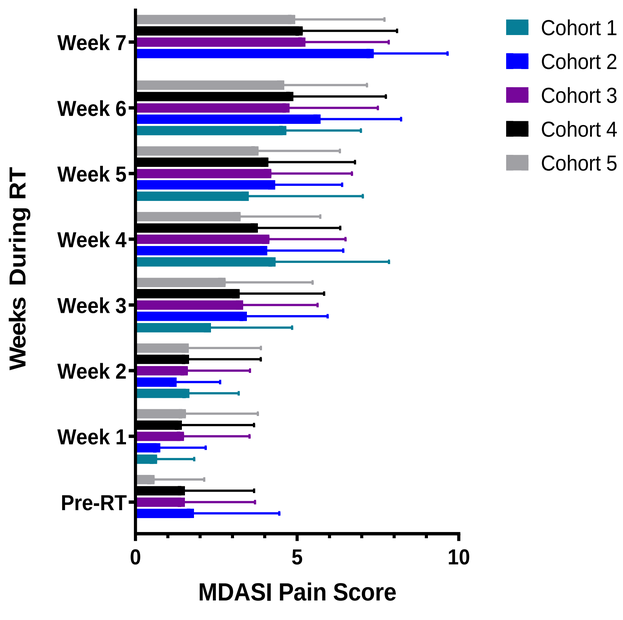

Fig. 3 MDASI pain scores measured across weeks 1 to 7 for 5 age cohorts. Patients were divided into cohorts based on age (19-33 =1, 34-48 =2, 49-64 =3, 65-78 =4, 79-98 =5).

Future Steps

Future steps to take can include analyzing which types of analgesics are given and at what point during radiation therapy. Stronger pain medications may be needed earlier during the course to prevent high levels of pain seen towards the end of radiation therapy. By analyzing pain scores alongside the type and when analgesics are administered, this opens the possibility for modification of the current pain management plan, improving the patient's overall quality of life and experience.

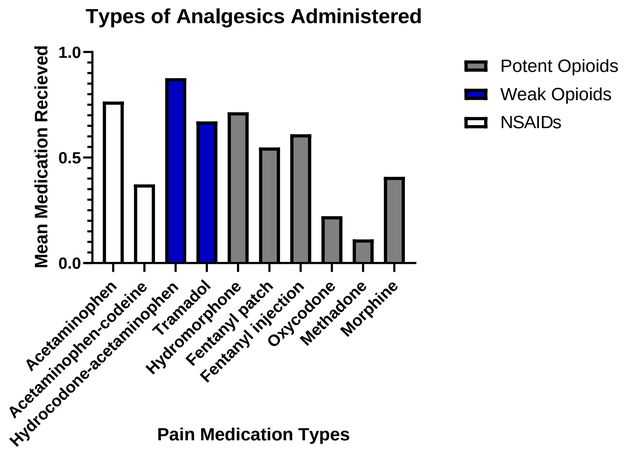

Fig. 4 Collected the types of analgesics administered (based on the WHO analgesics ladder) to 224 out of the 500 patients during the course of RT. 0=no and 1=yes. The mean values for each analgesic is displayed.

Results

MDASI pain scores reported during weekly see visits revealed a significant increase through the course of RT ($p < 0.0001$), with the highest severity of pain is experienced at the end of RT. Pain scores were tested across age groups. There were no significant differences in pain scores between age cohorts, with a similar trend in each week across the cohorts.

Conclusions

The aim of this study is to determine the efficacy of pain management during radiation therapy using PROM. Our data suggests that pain levels consistently increased during RT. This suggests the pain management currently implemented may not adequately control pain during the weeks of RT and may be in need for improvement. This is important to address due to the negative effect pain can have on the quality of life [1].

References

[1] Katz N. The impact of pain management on quality of life. J Pain Symptom Manage. 2002;24(1):S38-47. doi: 10.1016/s0885-3924(02)00411-6

[2] Epstein J.B, Elad S, Eliav E, Jurevic R, Benoliel R. Orofacial pain in cancer: part II--clinical perspectives and management. J Dent Res. 2007;86(6):506-18. doi: 10.1177/154405910708600605

[3] Harris DJ. Cancer Treatment-Induced Mucositis Pain: Strategies for Assessment and Management. Ther Clin Risk Manag. 2006;2(3):251-258. doi: 10.2147/tcrm.2006.2.3.251

[4] World Health Organization. WHO guidelines for the pharmacological and radiotherapeutic management of cancer pain in adults and adolescents. World Health Organization; 2018

[5] Weldring T, Smith S. Patient-Reported Outcomes (PROs) and Patient-Reported Outcome Measures (PROMs). Health Serv Insights. 2013;6:61-68. doi: 10.4137/HSI.S11093

[6] Cleeland CS, Mendoza TR, Wang XS, Chou C, Harle MT, Morrissey M, Engstrom MC. Assessing symptom distress in cancer patients: the M.D. Anderson Symptom Inventory. Cancer. 2000;89(7):1634-46. doi: 10.1002/1097-0142(20001001)89:7<1634::aid-cncr29>3.0.co;2-v