

Up in Smoke: Uncovering the Risks of E-Cigarette Use during Radiation Therapy

Eimear Herlihy, Emma Connolly, Guhan Rangaswamy, Alex Boychak

St. Luke's Radiation Oncology Network, Dublin

Background:

Tobacco smoking causes oral mucositis. Studies have demonstrated inferior oncological outcomes and higher toxicity rates in patients who continue to smoke during cancer. Electronic-cigarette (e-cigarette) use, the “healthier” alternative, has dramatically increased in the past decade. However, there is limited research on their acute and long term effects.

Methods:

A 68-year-old female was referred for adjuvant radiotherapy (66Gy/33 #) for a pT2N0R1 floor of mouth polymorphous adenocarcinoma. She was an ex-tobacco smoker but active e-cigarette smoker. Within 3 weeks of treatment, the patient developed grade 3 mucositis unresponsive to conventional management. A year later, she developed osteoradionecrosis of the jaw. She underwent urgent Hyperbaric Oxygen Therapy and management with maxillary facial surgeon.

Results:

New evidence is emerging on the negative effects of e-cigarettes. Their use causes biological alternations in the oral mucosa and release of pro-inflammatory cytokines. This patient developed severe acute and late toxicities despite a small treatment volume, standard radiation dose and acceptable dose volume constraint to the mandible. E-cigarette use may be a contributing factor to severe radiation-associated injury.

Conclusion:

Whilst further research is needed to determine the negative impact of e-cigarettes, particularly their effect on radiation-associated toxicities, this case potentially highlights a hidden danger associated with its use.