Prediction of mucositis risk secondary to cancer therapy: a systematic review of current evidence and call to action

Citation


Abstract

Purpose: Despite advances in personalizing the efficacy of cancer therapy, our ability to identify patients at risk of severe treatment side effects and provide individualized supportive care is limited. This is particularly the case for mucositis (oral and gastrointestinal), with no comprehensive risk evaluation strategies to identify high-risk patients. We, the Multinational Association for Supportive Care in Cancer/International Society for Oral Oncology (MASCC/ISOO) Mucositis Study Group, therefore aimed to systematically review current evidence on that factors that influence mucositis risk to provide a foundation upon which future risk prediction studies can be based.
Methods: We identified 11,018 papers from PubMed and Web of Science, with 197 records extracted for full review and 113 meeting final eligibility criteria. Data were then synthesized into tables to highlight the level of evidence for each risk predictor.

Results: The strongest level of evidence supported dosimetric parameters as key predictors of mucositis risk. Genetic variants in drug-metabolizing pathways, immune signaling, and cell injury/repair mechanisms were also identified to impact mucositis risk. Factors relating to the individual were variably linked to mucositis outcomes, although female sex and smoking status showed some association with mucositis risk.

Conclusion: Mucositis risk reflects the complex interplay between the host, tumor microenvironment, and treatment specifications, yet the large majority of studies rely on hypothesis-driven, single-candidate approaches. For significant advances in the provision of personalized supportive care, coordinated research efforts with robust multiplexed approaches are strongly advised.