Oral Cryotherapy for Oral Mucositis in Patients Receiving Busulfan: A Retrospective/Prospective Descriptive Study

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OBJECTIVES: To determine whether oral cryotherapy (OC) mitigates oral mucositis (OM) resulting from busulfan chemotherapy.

SAMPLE & SETTING: Electronic health records of patients undergoing busulfan conditioning for blood and marrow transplantation were reviewed for this descriptive study. The post-OC group received OC with busulfan, but the pre-OC group did not.

METHODS & VARIABLES: Demographic and disease characteristics for both groups were summarized using descriptive statistics. Wilcoxon rank-sum test was performed for continuous and ordinal measures, and chi-square tests were performed for categorical outcomes between the two groups.

RESULTS: This study found a decrease in the severity of OM as assessed by the World Health Organization OM scale. This study also found a reduction of total parenteral nutrition and opioid pain medication use, as well as a decrease in length of stay and airway protection–related intensive care unit transfers. An increase in day 11 methotrexate administration for graft-versus-host disease prophylaxis was observed in the post-OC group.

IMPLICATIONS FOR NURSING: OC is a safe and easily implemented intervention that can decrease OM in patients receiving busulfan chemotherapy.

KEYWORDS chemotherapy; oral mucositis; busulfan; oral cryotherapy; cryotherapy; conditioning

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Various myeloablative chemotherapy regimens are used as conditioning prior to blood and marrow transplantation (BMT). Conditioning regimens are based on patient-specific factors and frequently require combination chemotherapy. Two antineoplastic agents used in the BMT population, melphalan and busulfan, are associated with high rates of oral mucositis (OM) (Niscola et al., 2007). Busulfan has also been associated with gastrointestinal toxicity, hepatotoxicity, seizures, and acute graft-versus-host disease (GVHD) (Weil et al., 2017). OM is characterized by the inflammation of the oral and oropharyngeal cavity and most commonly occurs five to seven days after high-dose chemotherapy, persisting for at least six days and resolving with count recovery after BMT (Salvador et al., 2012). The clinical consequences of OM include dehydration, malnutrition, infection, and possibly reduced long-term survival in patients with hematologic neoplasia (Batlle et al., 2014; Riley et al., 2015).

Patients with severe OM are often at risk for more complex symptoms, potentially requiring longer hospitalization and increasing the healthcare costs of therapeutic care compared to patients with limited or no OM (Salvador et al., 2012). Reducing OM can have a positive effect on organizational and unit-based goals. Organizational goals that are affected by OM include length of stay (LOS), treatment costs, and patient satisfaction (Niscola et al., 2007). Unit-based goals that are affected include quality of life, food intake, pain, dysphagia, infections, use of total parenteral nutrition (TPN), and time in the intensive care unit (ICU) (Niscola et al., 2007).

OM presents potential risks for all patients, but there is also an increased risk of GVHD for patients