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FAST FACTS AND CONCEPTS #121

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Background The term mucositis refers to the inflammatory response of the oral-pharyngeal mucosa resulting from systemic chemotherapy or from radiotherapy that includes the oral-pharyngeal mucosa within the radiation field. The term stomatotoxicity is specific to mucositis effecting the oral mucosa. Mucositis results from the destruction of rapidly dividing epithelial cells of the oral-pharyngeal mucosal epithelium and the secondary release of inflammatory mediators such as TNF-alpha and interleukin-1 beta. This Fast Fact discusses the diagnosis and assessment of mucositis; Fast Fact #130 discusses its prevention and treatment.

The Radiation Therapy Oncology Group (RTOG) describes five grades of acute mucositis

Grade 1: Injection; may experience mild pain not requiring analgesics.
Grade 2: Patchy mucositis which may produce an inflammatory serosanguinitis discharge; may experience moderate pain requiring analgesia.
Grade 3: Confluent fibrinous mucositis; may include severe pain requiring opioid analgesics.
Grade 4: Ulceration, hemorrhage or necrosis.
Grade 5: Death resulting from mucositis.

Causes Both patient-related factors and treatment-related factors influence the severity of mucositis. Increased total dose of radiation, fraction size, and volume of normal tissue in the irradiated field all increase the risk of mucositis. Not all chemotherapy agents produce the same risk of mucositis; 5-fluoruracil, doxorubicin and methotrexate commonly cause mucositis while vincristine does not. The simultaneous combination of radiation and chemotherapy used in head and neck cancer will cause more intense mucositis than single-modality therapy. Patient-related factors such as the overall condition of the oral mucosa prior to therapy, pre-existing xerostomia, pre-existing collagen-vascular disorders, the underlying nutritional status, and the development of neutropenia during therapy all impact the development and severity of mucositis.

In head and neck cancer, virtually all patients undergoing radiation, with or without chemotherapy, will develop grade 1 and 2 mucositis. More severe mucositis (grade 3 or higher) develops in approximately 41% of patients receiving combined radiation and chemotherapy to the head and neck and in 21% of patients receiving radiation therapy alone.

Clinical Findings & Natural History Clinical signs of mucosal damage and cell death appear after the first 1 to 2 weeks of radiation therapy and as early as 3 days after chemotherapy. Initial mucosal damage results in patchy erythema, edema, atrophy and whitening of the mucosal tissue with increased sensitivity—patients report a burning sensation in the mouth. Further loss of mucosal epithelium becomes most prominent in the fourth or fifth week of standard fractionation radiation resulting in fibrinous exudation, confluent inflammation, and ulceration (see Fast Facts # 66, 67). The mouth sores and swelling can lead to significant oral pain, pain with swallowing, weight loss and dehydration. Mucosal damage predisposes the patient to oral superinfection leading to further pain and alterations in taste and appetite and decreased quality of life. Resolution of oral mucositis occurs several weeks after the completion of RT and chemotherapy.

Assessment A thorough assessment of the patient with mucositis should include:

- Pain assessment to include thorough review of analgesics used, effect and toxicities.
- Nutritional assessment.

- Quality of life assessment including screening for depression.
- Complete oral examination; assessment for local fungal (see Fast Fact #147), bacterial, or viral infections.

References

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