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Upfront

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Testing saliva to detect oral cancer

Scientists funded by the National Institute of Dental and Craniofacial Research (NIDCR) recently reported early success in using saliva to diagnose oral cancer. With 91% accuracy, researchers were able to use saliva samples to distinguish between healthy people and those diagnosed with oral squamous cell carcinoma, the sixth most common cancer in the United States.

According to the study published in the Dec. 15, 2004 issue of *Clinical Cancer Research*, researchers found high levels of four cancer-related molecules in the saliva of 32 patients who had been diagnosed with oral cancer but not treated. These four molecules, which are messenger RNA, serve as chemical records that an individual gene has been expressed.

To see if the messenger RNA patterns in saliva could serve to distinguish cancer patients from healthy subjects, the researchers screened saliva samples without knowing whether a healthy person or a cancer patient provided the sample. In nine out of 10 samples, researchers identified the saliva from cancer patients. In a larger study planned for the near future, the researchers hope to use saliva to distinguish between various stages of oral cancer and to improve their accuracy rate.

There are currently no biochemical or genetic diagnostic tests commercially available for oral cancer, senior study author David Wong, DMD, DMSc, said in a NICDR press release. The initial results of this early study, he said, highlight the potential clinical value of saliva as a diagnostic biofluid, and one easier to obtain than blood. "If correct, a salivary test would be quick, painless, and most likely less expensive than current diagnostic tests," Wong said. **-KR**

Study suggests new treatment for oral mucositis

Cancer patients who suffer the pain and complications of oral mucositis may find relief in a drug called palifermin (recombinant human keratinocyte growth factor), according to clinical trial results published in the Dec. 16 issue of *The New England Journal of Medicine*.

Oral mucositis, a common side effect of chemotherapy and radiation, can cause severe ulceration of the lining of the mouth, interrupting cancer treatments and increasing the risk for infection. Talking, eating, drinking, and routine oral hygiene may also become very painful or even impossible. Patients with the most severe oral mucositis, classified by the World Health Organization (WHO) as grades 3 and 4, cannot swallow solid foods.

Although oral health care professionals can recommend ways to manage oral mucositis and help prevent infection-careful oral hygiene with adapted toothbrushes, frequent hydration with baking soda and water mouthrinses, the use of topical anesthetics and saliva substitutes, and changes in diet, for example-no approved treatment yet exists to reduce or prevent the condition.

Amgen, the drug manufacturer that funded the trial, applied in June to the U.S Food and Drug Administration for approval of palifermin. The drug works by protecting keratinocytes, cells that stimulate the growth of epithelial cells in the mucosal lining, from the damage caused by chemotherapy and radiation, thus protecting the mucosal lining.

In the study, palifermin significantly reduced the incidence and severity of oral mucositis in patients undergoing intensive therapy for hematologic cancers like non-Hodgkin's lymphoma, leukemia, and multiple myeloma. For three days prior to high-dose chemotherapy and total body irradiation, half of the 212 patients in the study received palifermin and half received a placebo. Following bone marrow transplantations, patients continued to take the placebo or palifermin for another three days. The two groups were directly compared and evaluated for 28 days.

While 98% of patients taking placebo experienced severe (WHO grade 3 and 4) oral mucositis, only 63% of patients taking palifermin were similarly affected and, on average, for three fewer days. Compared with 62% of the placebo group, only 20% of the palifermin group experienced the worst form, grade 4. Furthermore, the palifermin group experienced 60% less mouth and throat soreness, took lower doses of painkillers over a shorter period, and had higher white blood cell counts than patients taking the placebo. The most common side effect of the drug was a mild skin rash.

On a related note, the National Cancer Institute (NCI) is seeking pediatric participants for a two-year clinical trial to test the ability of a homeopathic preparation to treat chemotherapy-induced oral mucositis. Traumeel S, a mouthrinse containing minerals and extracts from 12 plants, was shown in an earlier study to reduce mucositis in young patients undergoing stem cell transplantation. Researchers now plan to test the efficacy of this treatment in 180 patients aged 3 to 25. For more information, please visit <http://cancer.gov/clinicaltrials/COG-ACCL0331>. **-KR**

Plaque a culprit in hospital-induced pneumonia

A new study emphasizes the importance of access to oral health services and daily oral hygiene for elderly residents of long-term care facilities. Results published in the November 2004 issue of the journal *Chest* suggest that dental plaque can be a reservoir for the respiratory pathogens that cause hospital-acquired pneumonia (HAP) in institutionalized, critically ill elderly patients. The researchers state that their study is the first to confirm the link between bacterial colonization of dental plaque and lower respiratory infection in institutionalized patients using molecular genotyping.

In the prospective study, researchers assessed the oral health status of 49 nursing home residents who were critically ill and required mechanical ventilation. Upon admission to the intensive care unit, each patient was given a plaque index score, and bacterial cultures were taken from tooth surfaces and the buccal mucosa. Fourteen of the patients developed HAP after an average of 11.6 days on a ventilator. In patients who developed pneumonia, respiratory pathogens in oral samples were compared to those in lower respiratory tract samples. Researchers found that *S aureus* and Gram-negative enteric bacilli accounted for the majority of the respiratory pathogens found in dental plaque.

For institutionalized elders, poor oral hygiene, decreased activity levels, and medication-induced xerostomia can create favorable conditions for the pathogens that cause lower respiratory tract infection. The authors of this study call for further studies to investigate the relationship between oral disease and respiratory illness, and they advocate active programs to improve the oral health status of nursing home residents. **-KR**

Dental x-rays could be first step in osteoporosis screening

Panoramic dental x-rays can help identify postmenopausal women at risk for skeletal osteoporosis, a new study suggests. In a study published in the December 2004 issue of the *American Journal of Roentgenology*, researchers looked at the panoramic dental x-rays of 316 postmenopausal women and analyzed their cortical shapes and jaw widths. Women with eroded cortical shapes were identified as needing further BMD testing.

Questionnaires are widely used as the first step in determining which women need to have further BMD testing. In this study, however, dental x-rays were just as sensitive as or more sensitive than questionnaires were in identifying these

women. However, dental x-rays are not as specific as questionnaires and have the potential for false positives and negatives, study author Akira Taguchi, DDS, PhD, said in an American Roentgenology and Ray Society press release.

But, "because dental panoramic x-rays are taken for the diagnosis of conditions affecting the teeth and jaws in clinical practice worldwide," Taguchi said, "the dentist could also look at the mandibular cortical shape and width and refer the appropriate women for further BMD testing." **-KR**