

Dentistry and the Prevention, Diagnosis, and Treatment of Oral Cancer in North Carolina

Valerie A. Murrah, DMD, MS

The American Cancer Society estimates that in 2008 there will be 35 310 cases of oral cancer in the United States, resulting in 7590 deaths. The 5-year survival rate for localized disease is estimated at 82% and the 5-year relative survival rate for all stages combined is estimated at 59%.¹ The 5-year survival rate for metastatic disease has changed very little in the past 50 years. An analysis of state-specific trends in oral cancer epidemiology in the US has revealed the disturbing statistic that our state is 1 of 8 that have exhibited increasing rates of oral cancer deaths, according to NCI SEER data for the period from 1999-2003.² Over that time period we outrank all 50 states, except Nevada, in increased annual percent change in mortality rates for oral cancer at +4.0% (Nevada: +4.6%), the overall rate for the US being -1.1%. Analysis of increased mortality rate changes according to race and gender in North Carolina revealed the change to be occurring primarily in African American males between ages 50 and 65.²

The greatest risk factor for oral cancer is tobacco use, with the risk of developing this cancer increasing with the amount chewed and the duration of the habit. Smokers are 6 times more likely to develop oral cancer than nonsmokers. With North Carolina being the leading producer of tobacco in the nation, it is not surprising that the state ranks high in increased annual percent change in mortality rates for oral cancer. Ninety percent of patients with oral cancers use tobacco and 75% - 80% engage in frequent alcohol consumption.¹ Other risk factors include sunlight (lip cancer) and the human papillomavirus.

The fields of medicine and dentistry have differed somewhat

in their views concerning screening and early detection of oral cancer over the years. The US Preventive Task Force (USPSTF) summarized this differing view in its 2004 updated recommendations:

[There is] no new good quality evidence that screening for oral cancer leads to improved health outcomes for either high-risk adults (ie, those over the age of 50 who use tobacco) or for average-risk adults in the general population. It is unlikely that controlled trials of screening for oral cancer will ever be conducted in the general population because of the very low incidence of oral cancer in the United States compared to other malignancies. There is also no new evidence for the harm of screening. As a result, the USPSTF could not determine the balance between the benefits and harms of screening for oral cancer.^{3,4}

Interestingly, no dentists were listed among the numerous task force members. On the other hand, it may be the case that the lack of "good quality evidence" reflects a need for more extensive analysis of the issue, because the USPSTF previously had recommended in 1996 that clinical health care providers perform oral examinations for cancerous lesions in patients who use tobacco or excessive amounts of alcohol.⁵ Further evidence of the ambivalence of the medical community concerning screening was apparent in the Healthy People 2000 guidelines which advocated the goal of increasing to at least 40% the number of people age 50 or older who received an oral

"Perhaps because the dentist is always looking at small details in the mouth, dentistry has always strongly advocated oral cancer screening examinations as a part of routine dental examinations..."

Valerie A. Murrah, DMD, MS, is professor and chair of the Department of Diagnostic Sciences and General Dentistry at the University of North Carolina School of Dentistry and professor of Pathology and Laboratory Medicine at the University of North Carolina School of Medicine. She can be reached at valerie_murrah (at) dentistry.unc.edu.

examination while visiting a primary care provider during the preceding year (objective 16.14).⁶

Perhaps because the dentist is always looking at small details in the mouth, dentistry has always strongly advocated oral cancer screening examinations as a part of routine dental examinations, believing in the ability of the practitioner to detect even minute incipient lesions. Many hours of the curriculum of dental schools have been devoted not only to teaching thorough head and neck and intraoral examination techniques, but also to the minute details of mucosal and intrabony abnormalities. As many as 90 curricular hours in oral and maxillofacial pathology and oral medicine courses of the general dentistry curriculum are devoted to detecting and diagnosing conditions that could prove to be malignant. Despite this fact and despite the ease with which this exam can be performed, data from the 1992 National Health Interview Survey-Cancer Control report showed that only 14.3% of respondents reported that they had ever been examined for oral cancer.⁶ Two explanations were proposed for these findings. First, clinical health care providers may not have received appropriate training beyond what is needed to conduct a simple oral inspection and thus do not examine or palpate for early clinical signs of oral cancer. Second, the prevalence of oral cancer examinations may be underestimated because some persons made primary care visits for reasons unlikely to prompt an examination for oral cancer and because some patients may not recall receiving an oral cancer examination, despite a prompting question. A third explanation may be that an oral cancer screening exam was done, but the patient was not informed that it had been performed.

Direct inspection and palpation of the lips, tongue, floor of mouth, buccal and alveolar mucosae, oropharynx, and tonsils are the most commonly recommended means of oral cancer screening. Palpation of lymph nodes in the head and neck should also be included. Interestingly, however, there are little data on the sensitivity and specificity of these methods.⁴ Within the past decade, a number of adjunctive techniques for oral examination have been marketed, primarily to dentists and otolaryngologists. These have claimed to increase the likelihood of identification of premalignant or malignant lesions by the clinician by either illumination techniques coupled with tissue pretreatment or by the harvesting of epithelial cells with a noninvasive brush technique. Excellent systematic reviews have recently been reported for these techniques.^{6,7} These are well-summarized by Lingen et al,⁷ who state that the tantalizing implication that such technologies may improve detection of oral cancers and precancers beyond conventional oral examination alone has yet to be rigorously confirmed.

Patton et al⁸ addressed the educational preparedness of 4 health care provider groups in North Carolina to reduce the burden of oropharyngeal cancer through effective cancer control strategies such as reducing tobacco consumption, suggesting

healthy lifestyle and diet, and performing early detection through screening examinations and appropriate follow up. Pretested surveys were mailed to random samples of licensed health care professionals. Nearly all providers agreed that early detection improves 5-year survival rates. Dental providers (584 dentists and 651 hygienists) were less likely to feel adequately trained in tobacco and alcohol cessation and the palpation of lymph nodes but were significantly more likely to perform oral cancer examinations than medical providers (273 family physicians and 294 nurse practitioners). Dental health care providers who felt adequately trained in addressing smoking and alcohol cessation were more likely to address these questions on their medical histories.

Without an adequate diagnosis of oral/pharyngeal cancer, there clearly cannot be an effective treatment plan. The gold standard for determining a diagnosis of a suspicious lesion remains the tissue biopsy and histopathological examination. In North Carolina, general dentists, oral and maxillofacial surgeons, and other surgical specialists of dentistry and medicine frequently utilize the diagnostic services of the University of North Carolina oral and maxillofacial biopsy service for tissues removed in their offices in the outpatient setting. Tissues are read by oral and maxillofacial pathologists—dentists trained in anatomic pathology—who are diplomates of the American Board of Oral and Maxillofacial Pathology and have practices that are exclusively devoted to the surgical pathology of the head and neck region. The UNC laboratory is the only CLIA-certified^a oral pathology laboratory in North Carolina and accessions over 6800 specimens per year from the head and neck regions. The number of oral cancers and precancers accessioned annually by this lab is greatest from the Triad region of the state.

Following diagnosis, precancerous lesions and localized cancers are frequently managed by the oral and maxillofacial surgeon or other surgical specialist in dentistry. Laser surgery is a frequent modality for managing dysplastic or precancerous oral lesions. The advanced stage oral cancers are referred to otolaryngologists for final treatment. Subsequent to excision of an oral cancer, a patient may need to be referred to a maxillofacial prosthodontist. This dentist specializes in the restoration of esthetic and functional rehabilitation of the late stage oral cancer patient who may be faced with a significant surgical defect in his normal anatomic structures. Finally, the hospital dentist will be involved with the oncologist in the management of all oral cancer patients who must undergo radiation and/or chemotherapy. Carious and periodontally compromised teeth must be restored or extracted prior to the initiation of these treatment modalities.

All health care providers have the potential to reduce the morbidity and mortality from oral cancer by examination and early detection of oral precancer and cancer and subsequent timely and appropriate treatment. However, perhaps the most

a The Centers for Medicare and Medicaid Services (CMS) regulates all laboratory testing (except research) performed on humans in the US through the Clinical Laboratory Improvement Amendments (CLIA).

ground in the fight against oral cancer can be gained in our state by a commitment from all health care providers to provide patient education and counseling that will promote the ability of the patient to quit using the most powerful etiologic factor for oral cancer—tobacco. The state has stepped up to the plate in this regard by promoting QuitlineNC.^b The Quitline offers trained cessation coaches who will initiate calls to patients who have been referred, and a new fax referral option has been implemented to speed up the process. Educational materials about this service have recently been mailed to North Carolina practitioners. This initiative will allow the clinician who is reticent to undertake tobacco cessation initiatives on his/her own to turn over the educational effort to a well-trained, dedicated, and focused workforce. With greater efforts in education and prevention in both dentistry and medicine, perhaps the day will come when we will no longer have to say that 4 people per hour are diagnosed with head and neck cancer and that one person dies every hour from oral cancer. **NCMJ**

^b The QuitlineNC phone number is 1-800-QUIT-NOW. Cessation coaches are available 7 days per week, from 8 am to midnight. The Web site is www.QuitlineNC.com

“I had a lump appear between my breasts and it turned into cancer. It was a turning point in my life, financially, emotionally, and physically. I was devastated. After I came to the understanding of how desperate this can be I decided to form a support group to help others get through. Frontline Cancer Support Group was birthed on March 22, 2007.”

**— Bertha
Breast Cancer**

REFERENCES

- 1 Oral cancer. American Cancer Society Web site. www.cancer.org/docroot/PRO_1_1x_oral_cancer.pdf. Accessed July 18, 2008.
- 2 Kingsley K, O'Malley S, Ditmyer M, Chino M. Analysis of oral cancer epidemiology in the US reveals state-specific trends: implications for oral cancer prevention. *BMC Public Health*. 2008;8:87.
- 3 US Preventive Services Task Force. Screening for oral cancer: a brief evidence update. Agency for Healthcare Research and Quality. <http://www.preventiveservices.ahrq.gov>. Published 2004. Accessed July 18, 2008.
- 4 US Preventive Services Task Force. *Guide to Clinical Preventive Services: An Assessment of the Effectiveness of 169 Interventions*. Baltimore, MD: Williams and Wilkins; 1989.
- 5 Current trends: examinations for oral cancer—United States, 1992. Centers for Disease Control and Prevention Web site. <http://www.cdc.gov/mmwr/preview/mmwrhtml/0025826.htm>. Accessed July 17, 2008.
- 6 Patton L, Epstein J, Kerr R. Adjunctive techniques for oral cancer examination and lesion diagnosis—a systematic review of the literature. *JADA*. 2008;139(7):896-905.
- 7 Lingen MW, Kalmar JR, Karrison T, Speight PM. Critical evaluation of diagnostic aids for the detection of oral cancer. *Oral Oncol*. 2008 ;44(1):10-22.
- 8 Patton LL, Ashe TE, Elter JR, Southerland JH, Strauss RP. Adequacy of training in oral cancer prevention and screening as self-assessed by physicians, nurse practitioners, and dental health professionals. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2006;102(6):758-764.

Eat Smart, Move More Health Tip



Choose to Move More Every Day

For tips on how to move more every day where you live, learn, earn, play and pray, visit



www.EatSmartMoveMoreNC.com