Oral cancer: Early detection saves lives

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By Arlene Guagliano, RDH, MS

Cancer of the mouth or oral cavity is one of the most prevalent cancers in the United States today. According to the Journal of the National Cancer Institute, more than 55,000 Americans are diagnosed with oral or pharyngeal cancer this year.

It will cause more than 8,000 deaths, killing roughly one person per hour, 24 hours a day. Of those 55,000 newly diagnosed individuals, only half will be alive in five years. This is a number that has not significantly improved in decades.

Although the overall incidence of oral cancer has remained stable with numbers only slightly increasing each year, currently this is the second year in a row in which there has been an increase in the rate of occurrence, about 11 percent over last year.

The death rate for oral cancer is higher than that of other cancers. The death rate is highest, but is highest for the non-smoking, oral cancer patient. This is because oral cancer is less treatable than most cancers such as thyroid or skin cancer (malignant melanoma).1

Oral squamous-cell carcinomas (OSCCs) are the eighth most common cancer among men and the 14th most common among women in the United States.2

It includes many parts of the mouth: the lips, the buccal mucosa of the lips and cheeks, the gingiva and the area behind the wisdom teeth, the floor of the mouth, the hard palate, the soft palate and the uvula, the tonsils and the tongue.4

The ratio of men to women diagnosed with oral cancer is 2:1 overall, although the ratio comes closer to 1:1 with advancing age. Approximately 96 percent of oral cancers are occurring in persons older than 40, and the average age of diagnosis is 65 years.5

However, recent evidence has emerged indicating that oral cancers are occurring more frequently in younger persons, those under 40 years old.2

Common symptoms of oral cancer include:

- A sore or lesion in the mouth that does not heal within two weeks.
- A lump or thickening in the cheek.
- A white or red patch on the gingiva, tongue, tonsil or lining of the mouth.
- A sore throat or a feeling that something is caught in the throat.
- Difficulty chewing or swallowing.
- Difficulty moving the jaw or tongue.
- Numbleness of the mouth or other area of the mouth.
- Swelling in the neck or lower jaw.

Oral cancer is caused by damage to the DNA of cells in the mouth. There are two distinct pathways through which most people come to have oral cancer. Many years ago, the most prevalent pathway was through the use of tobacco and alcohol, but today the growing pathway is through exposure to the human papilloma virus (HPV), the same one that is responsible for the vast majority of cervical cancers in women.

Whichever the pathway, damage to the cells occurs and they malfunction, mutating into cancer cells. The anatomical malignancy sites associated with each pathway appear to also be different from each other.

In the broadest terms, they can be differentiated into the following areas: HPV-related appear to occur on the tonsillar area, the base of the tongue, the oropharynx while non-HPV positive tumours tend to involve the anterior tongue, floor of the mouth, the mucosa that covers the inside of the cheeks and alveolar ridges.

It is now confirmed that HPV is the most common virus group in the world today, affecting the skin and mucosal areas of the body. More than 100 different types/versions of HPV have been identified. Different types of the human papilloma virus are known to infect different parts of the body. There are certain forms of HPV that are sexually transmitted and are a serious problem.

Today, in the younger age group, including those who have never used tobacco products, there are those who have oral cancer, which is HPV-viral based.

Two types of genital tract HPV in particular, HPV 16 and HPV 18, are known to be linked to oral cancer and have been conclusively implicated in the increasing incidence of young, non-smoking, oral cancer patients. The HPV group is the fastest growing segment of the oral cancer population to date.1

Oral cancer is among the most debilitating and disfiguring disorders seen in today’s oral health environment. Treatment affecting a patient’s mouth, tongue and soft palate can prohibit proper swallowing and speech.3

In addition, the cancer can spread to other parts of the body, causing disability and even death. The survival of patients and the quality of life after treatment depend on early diagnosis. Eighty-one percent of patients with oral cancer survive at least one year after diagnosis. Early detection is the key.4

The best defense against oral cancer is early discovery. Early detection is complicated by the fact that many lesions in their earlier stages may be completely asymptomatic. Historically, unaided visual examination, palpation and radiographs were the only methods available for oral cancer screening. In recent years, screening technologies have become available to supplement the visual examination and help the clinician identify suspicious lesions that require further investigation.5

Adjunctive screening aids

ViziLight Plus. Technologically advanced optical-based detection systems increases a clinician’s ability to see tissue changes that the naked eye might miss. One such technology is ViziLight Plus, a simple screening tool that helps visualize suspect lesions in the oral cavity (Fig. 1).

Lesions that may have gone unnoticed to the naked eye will be more visible using Toluidine blue (T-Blue) tissue dye and chemiluminescent light, which marks and identifies oral lesions.5

The patient rises with a dihydrate acetate solution, and abnormal squamous epithelium tissue will appear acetowhite, when viewed under ViziLight’s diffuse low-energy wavelength light. Normal epithelium will absorb the light and appear dark.

ViziLight can assist a dentist or hygienist in identifying an abnormality in the oral cavity that may need further testing, such as a biopsy.

It has been difficult to determine which tissues in the oral cavity cause for concern. This is with continued research that technology has forged forward and developed adjuncts for the oral health care professional to intervene when early signs are unmistakable.

VELscope. The VELscope integrates four key elements: illumination, sophisticated filtering, natural tissue fluorescence and thermal imaging. The VELscope illuminates tissue with specific wavelengths that interact with and provide metabolic and biochemical information about the cell at all and just beneath the surface.

This gives clinicians the ability to see early biochemical changes before they present more obviously, therefore to detect lesions earlier in the disease process.7

Figure 5a is an image of a normal tongue in normal light, and Figure 5b is an image of a normal tongue with the use of the VELscope (images courtesy of VELscope).

Figure 4a shows a tongue with an area that appears normal under white light. However, Figure 4b shows the area as seen under the VELscope. The dark area is VEL-scope positive, which was confirmed by biopsy as carcinoma in situ (images courtesy of LED Dental).

In-office tissue test

OralCDx BrushTest. An essential tool for early detection of oral cancer is the OralCDx BrushTest, or oral brush biopsy (Fig. 5). This is the only painless test for oral dysplasia (pre-cancer) and cancer.

The BrushTest was found to be at least as sensitive as a scalpel in ruling out dysplasia and cancer in every study in which the same tissue was simultaneously tested by both OralCDx and a scalpel biopsy.8,9
normal light. the tongue in
Fig. 4a: Close-up of
DENTALTRIBUNE
by biopsy. confirmed
in situ
close-up
Tongue
Fig. 4b:
ing some pinpoint bleeding or
rotated five to 10 times, caus-
lar brush is applied to the sus-
anesthetic.
Results are very
and can be done right in the
dentist’s chair. It results in very
and requires no topical or local

This procedure is simple and can be done right in the
dentist’s chair. It results in very
and requires no topical or local

Firm pressure with a circu-
lar brush is applied to the sus-
picious area. The brush is then
rotated five to 10 times, caus-
ing some pinpoint bleeding or
light abrasion. The cellular
material picked up by the
brush is transferred to a glass
slide, preserved and dried.

The slide is then mailed to a
laboratory along with written
documentation about the pa-
tient and a detailed description
of the questionable area of the
mouth. At the laboratory, the
sample will be examined for
cells that show signs of change,
such as dysplasia or full malign-
ancy.

A pathologist examines the
cells to determine the final di-
agnosis. A lab report is then
sent to the dentist, and experts
from the pathology depart-
ment provide patient-specific
follow-up guidance by tele-
phone for every abnormal
OralCDx report.

A final word
The American Dental Asso-
ciation states that 60 percent of
the U.S. population sees a den-
tist every year.

One only has to look at the
impact of the annual PAP smear
for cervical cancer, the mam-
ogram to check for breast
cancer, or PSA and digital rec-
tal exam for prostate cancer to
shear how effectively an aware
and involved public can con-
tribute to early detection, when
耦合 with a motivated med-
tical community.

The dental community
needs to incorporate adjunc-
tive technology to the screen-
ing process and assume the
same leadership role as the
medical community if oral can-
cer is to be brought down in the
future from its undeserved high ranking as a killer.

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