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We Have Yet to Cure Cancer of the Oral Cavity; Challenges and Future Directions

The dentist plays a vital role in the screening and detection of oral cancer and often are the cornerstone providers in the management of this disease. With early detection, survival rates and outcome improve dramatically.

The current science of oral cancer and oncogenesis suggests many oral cancers may be overshadowed by HPV related oropharynx cancer. Current rates for HPV related oropharynx cancer are 85-90% and current vaccination strategies may eliminate 90% in the future. The Current "cure" rate for oral cavity cancer is 38-78% and treatment has not changed in the last 30 years.

A challenge is the underlying variety of genetic mutations that may occur. Tobacco and alcohol may have many chemicals contribute to alterations in DNA with about 20,000 to 50,000 DNA mutation identified. Oral cancer is driven by DNA mutation and less affected by tobacco directly as observed by Kolokythas , et al. Their study implies that there may be great similarity in the mutational pattern of non-smokers and smokers.

There may be an association of risk with dietary factors; 18,207 subjects given beta carotene equivalents show an 18% reduction in the rate of oral cancer. In addition, low beta carotene intake with a high smoking frequency increases the risk for oral cancer substantially.

The association between periodontal disease and oral cancer risk is about 2.63%. Interestingly, infrequent tooth brushing increased the risk of head and neck cancer about 2.08 times. Regular oral cancer screenings for patients at the dentist allows for a better chance of an early diagnosis and survival. In one study 72% of patients did not know that they are routinely screened for oral cancer when they see the dentist and 92% of patients would prefer that their dentist tell them they are being screened.

What kind of progress is being made? Currently, surgery, radiation and chemotherapy are the mainstays of treatment with surgery most frequent. However, surgery is functionally devastating, can impair speech and swallowing, and negatively impact appearance and well-being. Recurrence may occur. Margins are not identified by molecular changes within the cell but rather by histological changes. Margins may not be accurate as molecular and genetic changes within cells occur before the exhibit of morphologic and biologic characteristics of malignant cells.

IF we might image the cancer to be resected from a molecular and genetic perspective might that be a parameter to guide the resection? The future of oral cancer detection in future imaging strategies include laser spectroscopy, gene analysis, vibrational molecular imaging and targeted contrast agents.