Biomarkers for Oral Tongue Cancer Metastasis and Extracapsular Spread (ECS)

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SUMMARY

Investigators at UCLA have identified biomarkers that will significantly improve the clinical diagnosis of patients for oral tongue cancer metastasis and extracapsular spread that are independent of histopathological evaluation. These biomarkers have been tested on patient tissue samples and successfully discriminates between metastasis vs non-metastasis and ECS vs non-ECS oral tongue cancers.

BACKGROUND

Head and neck squamous cell carcinomas (HNSCCs) are a heterogeneous group of tumors that make up the 6th most common malignancy in humans. Despite improvements in treatments over the last decade, the prognosis for patients with HNSCC has more or less been unchanged. This is because patients continue to die from metastatic disease at regional and distant sites. Currently, the detection of nodal metastasis and extracapsular spread (ECS) is based on routine histopathological evaluation of the lymph nodes in the neck. Histopathological evaluation involves surgical neck dissection procedures that seriously impact patients quality of life. Also, the detection methods are not accurate. In 10-20% of individuals who have been clinically diagnosed with metastasis-positive lymph nodes (N+ individuals) and have undergone surgical procedures, find that they are metastasis-free (N0 status). Clinical diagnosis of N0 individuals is even less accurate. One-third of clinically diagnosed N0 individuals have metastasis-positive lymph nodes in the neck. Due to the lack of accuracy in clinical diagnosis, there is a need for molecular biomarkers to be available and included in clinical work-up strategies for patients.

INNOVATION

UCLA researchers have identified biomarkers that can discriminate metastasis vs non-metastasis and ECS vs non-ECS oral tongue cancers. Using multiplex real-time quantitative RT-PCR based on the RNA isolated from surgically removed primary oral tongue cancer tissues, specific combinations of these biomarkers can achieve 100% specificity and 100% sensitivity for classifying metastasis status as well as ECS status. Now, there is better accuracy in clinically diagnosing patients for oral cancer metastasis or ECS just through a simple surgical removal of the primary tumor in the oral cavity. This also saves patients from unnecessary neck dissection procedures.

APPLICATIONS

- Provide molecular diagnostic measures for tongue cancer metastasis and ECS that are independent of histopathological evaluation

ADVANTAGES

- Improved accuracy in clinical diagnosis of tongue cancer metastasis and ECS (combination of biomarkers achieve 100% specificity and sensitivity for classifying metastasis status)
- Independent of histopathological evaluation, which requires neck dissection surgery that impacts patients quality of life

STATE OF DEVELOPMENT

Specificity and sensitivity of these molecular diagnostic measures have been successfully tested on patients with and without oral tongue cancer metastasis and ECS.

RELATED MATERIALS

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OTHER INFORMATION

KEYWORDS

diagnostic, biomarker, oral tongue cancer, metastasis, extracapsular spread, ECS, lymph nodes, head and neck cancer, HNSCC

CATEGORIZED AS

- **Medical**
  - Diagnostics
  - Disease: Cancer

RELATED CASES

2006-242-0

▶ Global Expression-Based Classification of Lymph Node Metastasis and Extracapsular Spread of Oral Tongue Squamous Cell Carcinoma. *Neoplasia* (2006)

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	7,588,895	09/15/2009	2006-242

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