MedicalXpress

Study identifies 5 risk factors for late-stage head and neck cancer

October 28 2010

Developing a molecular fingerprint for head and neck cancer tumors could help improve diagnosis and treatment for this deadly and often-times disfiguring form of cancer, according to researchers at Henry Ford Hospital in Detroit.

Their new study has taken the first step toward doing that by identifying five risk factors for late-stage head and neck cancer – two genes, tumor grade, and vascular invasion and location of the tumor.

Race, however, was not an independent predictor for late-stage disease, contrary to other research findings. In fact, 88 percent of the African American patients in the study had some form of insurance.

"We were able to look at the many intertwined variables influencing health and disease to understand the contribution of tumor genetic alterations, pathologic, and patient factors in head and neck cancer diagnosis and outcomes," explains study lead author Maria J. Worsham, Ph.D., director of research in the Department of Otolaryngology at Henry Ford Hospital.

"We then used comprehensive modeling that accounted for the different variables, which no other study has done. By taking into account so many different factors, we were able to look at what rises to the top as a predictor for late-stage disease."

These initial findings, part of a five-year National Institutes of Health-

funded study, will be presented by Dr. Worsham Oct. 28 during a panel discussion at the American Head and Neck Society 2010 Research Workshop in Arlington, VA. She also is chairing the session.

In 2009, there were an estimated 35,720 new cases of head and neck squamous cell carcinoma (HNSCC) and approximately 7,600 deaths.

Despite considerable efforts in medical diagnosis and treatment, the five-year survival rate for HNSCC has not significantly improved. In addition, African Americans tend to have later-stage cancer and poorer survival than Caucasians.

In an effort to learn more about what factors influence HNSCC stage and survival, Dr. Worsham and her colleagues went beyond looking at patient demographic and tumor pathology factors, like so many previous studies have done.

Instead, they took a more holistic approach with a very diverse patient population to better understand how a wide array of risk factors – the killer aspects of the tumor and patient factors like smoking and alcohol use – interact with disease stage, diagnosis and survival.

The study looked 689 Henry Ford patients from 1986 to 2005 with a primary diagnosis of HNSCC. Most notably, 42 percent of the study group was African American.

It examined 23 non-genetic patient risk factors including race, martial status and family history, and also looked at patients' tumor biology by examining tumor DNA for 113 genes from 2,166 tissue blocks.

All of these factors were placed into statistical models to determine both individual (univariate) and commingling independent variables (multivariate) that influence late-stage disease.

While previous studies have suggested African Americans are more likely to have late-stage disease with worse survival, the Henry Ford multivariate analysis found that race is not a risk factor for late-stage HNSCC.

Dr. Worsham suspects her team's study was not able to support that for two reasons: Unlike previous studies, their study included a large African American population and of those patients, 88 percent had some form of insurance.

"A large proportion of our study group, both African American and Caucasian, had insurance," notes Dr. Worsham. "This finding really shows the impact of insurance and access to care on overall patient care. Removing barriers does make a difference."

The study also found that the site of the tumor in head and neck cancer had an impact on disease stage. Patients with cancer in the oropharynx, which lies behind the oral cavity, and those with cancer in the hypopharynx, located at the bottom part of the pharynx, are more likely to have late-stage disease.

Poor tumor grade also placed patient at greater risk for late-stage disease. The researchers also identified two genes that signaled late-stage HNSCC.

"Ultimately, the more clues we have about what influences head and neck cancer diagnosis and survival, the more we can put toward understanding how to treat patients and counteracting its effects through designing special drugs," says Dr. Worsham.

Provided by Henry Ford Health System