Recurrent head and neck tumors have gene mutations that could be vulnerable to cancer drug

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An examination of the genetic landscape of head and neck cancers indicates that while metastatic and primary tumor cells share similar mutations, recurrent disease is associated with gene alterations that could be exquisitely sensitive to an existing cancer drug. Researchers from the University of Pittsburgh Cancer Institute (UPCI) and Yale University School of Medicine will share their findings during a mini-symposium Sunday at the American Association for Cancer Research Annual Meeting 2014.

About 50 percent of patients diagnosed with head and neck squamous cell cancers already have disease that has spread, or metastasized, to the lymph nodes, explained Jennifer Grandis, M.D., distinguished professor and vice chair of research, Department of Otolaryngology, Pitt School of Medicine, and director of the Head and Neck Program at UPCI, partner with UPMC CancerCenter. About 20 to 30 percent of patients thought to be cured of the disease go on to develop recurrent cancer, which typically doesn't respond to standard treatments.

"We decided to compare the genetic signatures of tumor cells from primary tumors with those from disease that had spread and cancers that were thought cured but then came back in the hopes of getting some clues about how best to guide therapy in these different settings," Dr. Grandis said. "We found that recurrent cancers might have an Achilles' heel we can exploit to kill them."

The team conducted the first whole-exome genetic sequencing study on what Dr. Grandis called its "treasure trove" of frozen patient samples and found similar mutations both in primary tumors and in the lymph nodes to which their cancers had already spread. But there were different mutations in tumors that had recurred after a period of remission that were not found in their original cancers.

"The recurrent tumors carried mutations in a gene area that encodes for DDR2 cell receptors," Dr. Grandis said. "Other studies have shown that DDR2 mutations can confer sensitivity to the cancer drug dasatinib, which could mean that drug has promise in the treatment of recurrent head and neck cancers."

The researchers suggest that further investigation of dasatinib treatment is warranted.

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