Facile Detection of Mitochondrial DNA Mutations in Tumors and bodily Fluids

Reviewers: Li Liu, MD

Précis: Bodily fluid testing may detect some cancers

Introduction

Any non-invasive techniques that would aid early detection of cancers would clearly be welcomed. Some studies have demonstrated that high levels of mitochondrial DNA (mtDNA) are ubiquitous in human cells and most copies of mtDNA are identical at birth. Even slight alterations in DNA sequences could have profound effects, including cancer formation. In this study, the researchers evaluated the mtDNA in tumor samples and bodily fluids of cancer patients.

Method

A total of 14 bladder, 13 head and neck, and 14 lung cancer samples were evaluated for mtDNA mutations and the results were compared with mtDNA from patients' bodily fluids.

Results

- 292 mtDNA sequence variations were detected in cancer samples.
- Mutant mtDNA derived from tumor tissues was found in all urine samples obtained from patients with bladder cancer, in two third of the saliva samples from patients with head and neck cancer, and in 80% bronchoalveolar lavage samples from patients with lung cancer.

Discussion

Mutated mitochondrial DNA can be found in bodily fluids and may lead to simpler diagnosis of some cancers. Additional investigation in broader patient population is needed before it can be used as a reliable clinical test for cancer diagnosis.