

Cell free DNA levels are associated with tumor size and decreased survival in patients with oral cavity cancer

Dan Yaniv, Aviram Mizrachi, Eyal Yosef, Sharon Tzelnick, Adva Levi-Barda, Mahua Bacharia, Milana Frenkel-Morgenstern, Gideon Bachar

*ENT, and Head and Neck Surgery Department, Rabin Medical Center, Israel
Azrieli Faculty of Medicine, Bar-Ilan University & Data Science Institute, Israel*

Background: When diagnosed in advanced stages, head and neck cancers usually carry a dismal prognosis. "Cell free" DNA (cfDNA), was shown in different types of cancer to derive from necrotic cancer cells and circulate in patients' plasma. cfDNA may be used for early detection and prognostication.

Objective: To test a "proof of concept" for cfDNA, to be used for head and neck cancer diagnosis and prognostication

Methods: All patients diagnosed with oral cavity cancer, undergoing surgery at Rabin Medical Center who signed informed consent to have tissue and plasma taken to the institutional tissue biobank between the years 2017-2020. Plasma was obtained from blood samples collected shortly before surgery, and cfDNA levels were measured.

Results: 30 patients were included. Thirteen (43.3%) were pathologically staged 1-3 and 17 (56.7%) were stage 4. When comparing patients whose plasma cfDNA level was 0.3 ng/ul or lower to those whose level was higher, overall survival (OS) and disease specific survival (DSS) were significantly better for patients in the lower cfDNA plasma level group. (Kaplan-meier survival curve, log rank=0.015). However, we found no correlation between cfDNA level and tumor size and stage.

Conclusions: Our results suggest that cfDNA may be an independent prognosticator of patients' OS and DSS in oral cavity cancer, as although no correlation was found between its plasma level and tumor size or stage, we did find a significant correlation between cfDNA level and OS and DSS.

