Assessing the Carcinogenic Potential of Non-\textit{Candida albicans} in Cancer Therapy-induced Oral Mucositis

1A Thirumal Raj, 2Shankargouda Patil, 3Kamran H Awan


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Established risk factors for oral cancer including tobacco (smoking, chewing), alcohol, etc., have shown to cause an increase in the salivary acetaldehyde (ACH) levels.\(^1\) The ACH has shown carcinogenic potential in animal models and the International Agency for the Research on Cancer considers ACH to be a possible carcinogen in humans.\(^2\) The ACH can cause mutagenic deoxyribonucleic acid adduct formations at levels > 40 µM.\(^3,4\) Studies have shown the ability of several microorganisms to increase ACH to carcinogenic levels in saliva. The most extensively studied organism is \textit{Candida albicans}. Although the mere presence of \textit{C. albicans} does not indicate a high-risk state, the ACH salivary levels of patients with chronic candidal infections could be a risk factor for oral cancer.\(^5\) \textit{In vitro} studies have shown that even non-\textit{C. albicans} species can form carcinogenic ACH levels in saliva. \textit{Candida glabrata} and \textit{Candida tropicalis} were shown to be the most potential carcinogenic non-\textit{C. albicans} species for their ability to form carcinogenic levels of ACH from glucose and ethanol respectively.\(^1\) Patients treated for oral cancer are prone to develop oral candidal mucositis due to change in the tissue microenvironment. These patients are often treated with azoles which eliminate \textit{C. albicans}, but are largely ineffective againstazole-resistant non-\textit{C. albicans} species. Such patients have shown to develop new primary carcinoma in areas of chronic oral candidal mucositis.\(^1,6\)

To conclude, it is of utmost importance that treatment-resistant chronic oral candidal mucositis especially in susceptible patients (postchemo and radiotherapy) is closely followed up and periodically analyzed for salivary ACH levels. Further large-scale multicenter prospective studies are necessary to substantiate the results from the \textit{in vitro} studies.

REFERENCES