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**Faculty of Basic Medical Science**

**Oral bacteria may signal risk for pancreatic cancer**

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**Abstract:**

The amount of oral bacteria in the mouth may be associated with the risk of pancreatic cancer . Previous studies have shown that indicators of poor oral health, including a history of periodontal disease and lots of missing teeth, are associated with an increased risk of pancreatic cancer , and some researchers found that high antibody levels for certain oral bacteria risk to pancreatic cancer {2}

This presentation aims to demonstrate that pancreatic cancer may occur with oral bacteria.

**Introduction:**

A lot of studies confirm that oral bacteria may increase risk for pancreatic cancer .

the pancreatic cancer are very dangerous , occurring in association with many diseases and by many different mechanisms . which is difficult to detect and kills most patients within six months of diagnosis . {6}

the pancreatic cancer defined isa malignant tumor of the pancreas. Pancreatic cancer has been called a 'silent' disease because early pancreatic cancer usually does not cause symptoms.

the major risk factors that causes pancreatic cancer are : smoking , less consumption of fruit and vegetables , obesity , diabetes , certain oral bacteria , genetic , age or other causes . {6}

The environment present in the human mouth allows the growth of characteristic microorganisms found there. It provides a source of water and nutrients, as well as a moderate temperature. Resident microbes of the mouth adhere to the teeth and gums to resist mechanical flushing from the mouth to stomach where acid-sensitive microbes are destroyed by hydrochloric acid. {5}

This report confirms that pancreatic cancers are a result of oral bacteria in 3 published studies .

**Discussion:**

In 2012 Dr. Dominique Michaud et al measured antibodies to oral bacteria in prediagnosis blood samples from 405 pancreatic cancer cases and 416 matched controls, nested within the European Prospective Investigation into Cancer and Nutrition study. Analyses were conducted using conditional logistic regression and additionally adjusted for smoking status and body mass index. In the study Individuals with high levels of antibodies against Porphyromonas gingivalis ATTC 53978, a pathogenic periodontal bacteria, had a twofold higher risk of pancreatic cancer than individuals with lower levels of these antibodies (OR 2.14; 95% CI 1.05 to 4.36; >200 ng/ml vs ≤200 ng/ml). To explore the association with commensal (non-pathogenic) oral bacteria, performed a cluster analysis and identified two groups of individuals, based on their antibody profiles. A cluster with overall higher levels of antibodies had a 45% lower risk of pancreatic cancer than a cluster with overall lower levels of antibodies (OR 0.55; 95% CI 0.36 to 0.83). {1}

In 2011 James J Farrell et al measured variations of salivary microbiota and evaluated their potential associations with pancreatic cancer and chronic pancreatitis in large study , This study was divided into three phases: (1) microbial profiling using the Human Oral Microbe Identification Microarray to investigate salivary microbiota variation between 10 resectable patients with pancreatic cancer and 10 matched healthy controls, (2) identification and verification of bacterial candidates by real-time quantitative PCR (qPCR) and (3) validation of bacterial candidates by qPCR on an independent cohort of 28 resectable pancreatic cancer, 28 matched healthy control and 27 chronic pancreatitis samples , Comprehensive comparison of the salivary microbiota between patients with pancreatic cancer and healthy control subjects revealed a significant variation of salivary microflora. Thirty-one bacterial species/clusters were increased in the saliva of patients with pancreatic cancer (n=10) in comparison to those of the healthy controls (n=10), whereas 25 bacterial species/clusters were decreased. Two out of six bacterial candidates (Neisseria elongata and Streptococcus mitis) were validated using the independent samples, showing significant variation (p<0.05, qPCR) between patients with pancreatic cancer and controls (n=56). Additionally, two bacteria (Granulicatella adiacens and S mitis) showed significant variation (p<0.05, qPCR) between chronic pancreatitis samples and controls (n=55). The combination of two bacterial biomarkers (N elongata and S mitis) yielded a receiver operating characteristic plot area under the curve value of 0.90 (95% CI 0.78 to 0.96, p<0.0001) with a 96.4% sensitivity and 82.1% specificity in distinguishing patients with pancreatic cancer from healthy subjects. {3}

In 2016 Ahn and her colleagues found that Porphyromonas gingivalis and Aggregatibacter actinomycetemcomitans, two species of bacteria linked to periodontal disease, were associated with a more than 50 percent increased risk of pancreatic cancer , Ahn’s Pancreatic Cancer Action Network research grant was among the funding sources that allowed this important work to be conducted. {4}

**Conclusion:**

Certain oral bacteria and Periodontal disease might increase the risk for pancreatic cancer. Moreover, increased levels of antibodies against specific commensal oral bacteria, which can inhibit growth of pathogenic bacteria, might reduce the risk of pancreatic cancer. {1}

**Recommendation:**

Studies are needed to determine whether oral bacteria have direct effects on pancreatic cancer pathogenesis or serve as markers of the immune response .

**References:**

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