

COMBINATION OF SMOKING AND ALCOHOLISM HAS HIGH RISK ON ORAL CANCER

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Abstract: To do a systematic review on the effect of smoking and alcoholism on oral cancer. To analyse the addictive effect of smoking and alcoholism. Cancer of oral cavity is the commonest cancer in men and women. Most prevalently in men who have adverse oral habits like smoking and alcoholism. Alcohol when associated with smoking has been recognised as an important risk factor for oral cancer. Despite this, alcohol is strongly associated with development of oral cancer [1]. Oral cancer is a disease whose principle etiological factors are smoking, smokeless chewing tobacco and alcohol consumption which if controlled could avoid many tumours. Oral cancer has become a most common cancer particularly when associated with smoking and alcoholism.

Keywords: Smoking, Alcohol, oral cancer, high risk, tobacco

INTRODUCTION:

Oral cancer or mouth cancer, a type of head and neck cancer is any cancerous tissue located in oral cavity. It may occur on the floor of the mouth, cheek lining, gingiva, lips and palate. In 2013 oral cancer resulted in 135,000 deaths up from 84,000 deaths in 1990. Smoking and alcoholism are the major causes of alcoholism. It has been difficult to distinguish the separate effects of these agents, however, since drinkers of alcoholic beverages tend to be smokers, and vice versa. Therefore, large epidemiological investigations are required to evaluate risks among persons exposed to only one of the two, precisely quantify the risk of one substance while adjusting for the other, and contrast effects according to the type of product and level of exposure. Most prominently smoking. Smoking and other tobacco use was associated with about 75% of oral cancer cases are caused by irritation of mucous membranes of mouth from heat of cigarettes. It contains about 64 known carcinogens, and combustion of it and by products from this is primary mode of involvement. [2]. Tobacco use inform by itself and even more so in combination with heavy alcohol consumption, continues to be an important risk factor for oral cancer. In this review we are going to see the effects of smoking, effects of alcoholism and the joint effect of smoking and alcoholism which is a high risk for oral cancer. [3] Oral cancers (OC) represent the majority of head and neck cancers with more than half million patients being affected each year worldwide [1]. More than 90% are squamous cell carcinomas, which are mostly attributed to exogenous factors such as tobacco smoking and heavy alcohol consumption [2]. Advances in cancer research have provided new information on the cellular and molecular processes in carcinogenesis. This has also led to the identification of biological markers and effective treatment options. The long-term survival rates for late stages, however, remain low. The aim of the present review is to that the combined risk of smoking and alcoholism has high risk on oral cancer.

SMOKING AND ORAL CANCER:

The risk of oral cancer is about 5 to 10 times greater among smokers compared to people who never smoked. Smokers are at higher risk of dying from oral cancer than those who have never smoked. The risk of dying from oral cancer increases with the amount smoked per day. y-seven percent (37%) of people diagnosed with oral cancer are expected to die within 5 years after diagnosis. Researches have also shown that in 2002, about half of oral cancer deaths were due to smoking. Some of the chemicals contained in tobacco smoke cause, initiate or promote cancer. These chemicals cause genetic changes in cells of the mouth cavity which can lead to the development of oral cancer. Tobacco use increases the risk of oral cancer by exposing the mouth to these carcinogenic chemicals, either during inhalation while smoking or through direct contact while chewing tobacco products. [4] Smokers have a much higher risk of lung cancer than non-smokers, whatever type of cigarette they smoke. There's no such thing as a safe way to use tobacco.

Filters and low-tar cigarettes make little difference – your lung cancer risk is not lower compared to smokers of average cigarettes. This may be because smokers tend to change the way they smoke in order to satisfy their nicotine craving, for example by taking bigger puffs or smoking more cigarettes. [5]

The more cigarettes you smoke a day, the higher your risk of cancer. If you aren't able to quit completely, cutting down the number of cigarettes you smoke a day can be a good first step. Even light or social smoking can harm your health so keep trying to stop entirely.

Scientists have found that the number of years you spend smoking affects your cancer risk even more strongly than the number of cigarettes you smoke a day. For example, smoking one pack a day for 40 years is even more dangerous than smoking two packs a day for 20 years.[6]

The serious damaging effects of smoking cannot be cancelled out by leading an otherwise healthy lifestyle, like keeping fit and eating healthily.

Tobacco and alcohol are the most important oral cavity and oropharyngeal cancer risk factors. Mouth cancer is largely a lifestyle disease, meaning that the majority of cases are related to tobacco and alcohol use. Approximately 90% of people with mouth cancer are tobacco users. Smokers are 6 times more likely than nonsmokers to develop mouth cancer. Users of smokeless tobacco have a 50 times more likely chance of developing mouth cancer. Statistics show only 6% of head and neck cancer recurrence in patients who stop smoking in contrast to 37% of head and neck cancer patients who continue smoking developing a second cancer. People who stop using tobacco, even after many years of use, can greatly reduce their risk of all smoking related illnesses, including mouth cancer.

Smoking-icon The health implications of smoking are well documented, but mouth cancer often gets overlooked. The majority of mouth cancer cases continue to be as result of smoking and tobacco use. Around one in five people in the UK currently smoke, which accounts for roughly two in every three mouth cancer cases.

There are thousands of chemicals contained in a single cigarette, and their point of entry is the mouth. Smoking helps to transforms saliva into a deadly cocktail that damages cells in the mouth and can turn them cancerous.

The danger is that smokers are three time more likely than non-smokers to develop mouth cancer and seven times more likely to be diagnosed with throat cancer, while a morning cigarette has been shown to double those chances further. But it is never too late to make a difference.

Research has shown that ex-smokers reduce their risk of mouth cancer by more than a third. And with around two thirds of smokers admitting they would like to kick the habit, Mouth Cancer Action Month is the perfect time to do just that.

SMOKING AND NICOTINE:

Through the use of cigarettes, cigars and chewing tobacco, nicotine is one of the most heavily used addictive drugs. Nicotine is primary component of tobacco, and is the primary reason that is addictive. Nicotine is the drug that causes addiction. Nicotine provides an almost immediate "kick" because it causes discharge of epinephrine from the adrenal cortex. This stimulates the central nervous system and endocrine glands which causes a sudden release of glucose. Stimulation is then followed by depression and fatigue, leading the uses to seek more nicotine. [7]

LOCAL EFFECTS OF ALCOHOL:

Alcohol acts as a solvent that enhances the penetration of carcinogenic compounds into the mucosa. Ethanol may facilitate the uptake of environmental carcinogens, especially from tobacco smoke, through cell membranes that are damaged and changed in their molecular composition by the direct effect of alcohol. Furthermore, chronic alcoholism leads to atrophy and lipomatous metamorphosis of the parenchyma of the parotid and submaxillary gland and this alteration results in a functional impairment of saliva flow and its increased viscosity. Thus, the mucosal surface will be insufficiently rinsed and is, therefore, exposed to higher concentrations of locally acting carcinogens in addition to a prolongation of the contact time of the substances with the mucosa. Other local mechanisms include the direct toxic effect of highly concentrated alcoholic beverages on the epithelium, the altered motility of the oesophagus due to alcohol and the enhanced gastro-oesophageal reflux, which may lead to oesophagitis and metaplasia. In the past, various alcoholic beverages contained carcinogenic compounds such as polycyclic hydrocarbons, asbestos fibres and nitrosamines, which have now almost been completely eliminated.(8)

EFFECTS OF ALCOHOL ON ORAL CANCER:

The less alcohol you drink, the lower the risk of cancer. No type of alcohol is better or worse than another, it is the alcohol itself that leads to the damage, regardless of whether it is in wine, beer or spirits. And drinking and smoking together are even worse for you.

Not everyone who drinks alcohol will develop cancer. But on the whole, scientists have found that some cancers are more common in people who drink more alcohol than others. There is a lot of evidence that drinking alcohol increases the risk of several cancers.

When you use tobacco products, nicotine quickly absorbed into your blood stream. Within 10 seconds of entering your body, the nicotine reaches your brain. It causes the Brain to release adrenalin, creating a buzz of pleasure and energy. The buzz fades quickly though and leaves you feeling tired, a little down and wanting the buzz again. This feeling is what makes you light up the next cigarette. Since your body is able to build up a high tolerance to nicotine, you will need to smoke more and more cigarettes in order to get the nicotine's pleasurable effects and prevent withdrawal symptoms. [9]

Indeed, alcohol drinking is considered as a potential risk factor for Oral cancer, but when it is consumed along with tobacco increases the risk because of synergistic interaction [8,9]. However precise role of alcohol in the development of oral cancer is not completely understood. Not all the people who drink alcoholic beverages develop oral cancer, while not all the oral cancer patients consume alcohol. Role of alcohol in oral cancer causation is challenging to understand, mainly because alcohol consumption histories are difficult to confirm, vary over time, both with respect to type and amount of beverage and are frequently consumed along with tobacco. However, certain mechanisms have been proposed which explain carcinogenic effects of alcohol in pathogenesis of oral cancer, which are [10]

- * Dehydrating effect of alcohol on cell walls enhances mucosal permeability to other toxins and carcinogens.
- * Change in mucosal morphology with a reduction in epithelial thickness.
- * Metabolism of ethanol produces acetaldehyde which causes damages DNA of oral epithelial cells and oncogene expression of oral keratinocytes.
- * Ethanol disrupts salivary gland function by reducing secretion of epidermal growth factor which protects oral mucosa from injuries caused due to acids which results in increase in the risk of oral mucosal ulcerations.
- * Nutritional deficiencies associated with heavy drinking can lower the body's natural ability to use antioxidants to prevent the formation of cancers.

COMBINED ACTION OF ALCOHOL AND SMOKING:

The combined action of alcohol and smoking has high risk of oral cancer. People who use tobacco as well as who consume alcohol are at higher risks for oral cancers. People who smoke and drink multiply the risk for certain cancers, because tobacco and alcohol work together to damage the cells of the body. Alcohol makes it easier for the oral cavity to absorb the carcinogenic chemicals in tobacco. This is one reason why people who drink and smoke multiply the damage they receive and have especially high risks of cancer. Epidemiological research shows that people who have the habit of both alcohol and tobacco have much greater risks of developing cancers of oral-cavity than people who either use alcohol or tobacco alone. In fact for oral cancers the risks associated with using both alcohol and tobacco are multiplicative; that is, they are greater than would be expected from adding individual risks associated with alcohol and tobacco together.

Although the use of tobacco has been proven to increase the risk of oral cancer, but people who use both alcohol and tobacco together are at a very high risk of developing oral cancer disease. Scientists now believe that these substances synergistically interact, increasing each other's harmful effects. Alcohol abuse is already the second largest risk factor for the development of oral cancer. Alcohol's effect on the mouth may be the key to understand how it works with tobacco to increase the risk of developing cancer. The dehydrating effect of alcohol on cell walls enhances the ability of tobacco carcinogens to permeate mouth tissues; additionally, nutritional deficiencies associated with heavy drinking can lower the body's natural ability to use antioxidants to prevent the formation of cancers. (11)

Although tobacco use has been proven to increase the risk of oral cancer, people who use both alcohol and tobacco are at an especially high risk of contracting the disease. Scientists now believe that these substances synergistically interact, increasing each other's harmful effects.

Alcohol abuse (when defined as more than 21 standard drinks in one week) is already the second largest risk factor for the development of oral cancer. More than 30 years ago, a study focusing on heavy alcohol consumption as a significant factor in the development of cancer also found that in Utah, a state whose population is approximately two-thirds Mormon, incidences of oral cancer were less than that of other western states. In fact, the rate was less than the nation as a whole. This is likely due to the Mormons' religious beliefs requiring them to abstain completely from alcohol and tobacco.

Alcohol's effect on the mouth may be the key to understanding how it works with tobacco to increase the risk of developing cancer. The dehydrating effect of alcohol on cell walls enhances the ability of tobacco carcinogens to permeate mouth tissues; additionally, nutritional deficiencies associated with heavy drinking can lower the body's natural ability to use antioxidants to prevent the formation of cancers. (12)

. Some studies have even indicated that cirrhosis of the liver due to alcohol intake, may be associated with an increased risk for oral cancer. Patients with cirrhosis often develop a smooth, glossy appearance to the oral mucosae (tissues of the throat and mouth) that may be caused by liver-induced cellular changes such as increased cytoplasmic acetaldehyde content. The actual mechanism for this occurrence, and the relationship to the development of a cancer, is still poorly understood, but warrants further investigation.

A major difficulty in the study of tobacco and alcohol as risk factors is that most oral cancer patients have used both products. Further research is necessary to determine the relationship between oral cancer, alcohol use and tobacco use. However, it is widely accepted that eliminating the use of oral tobacco, and reducing or eliminating your intake of alcohol, will immediately reduce your risk of developing oral cancer. In fact, within 10 years your risk for oral cancer should be as low as any other non-drinker/non-smoker.

Both alcohol and tobacco use are associated with numerous adverse health consequences, including an increased risk of certain types of cancer. For example, epidemiological studies found that alcohol consumption can increase the risk for cancers of the upper aero-digestive tract, stomach, large bowel (i.e., colon and rectum), liver, and breast, with higher levels of consumption leading to greater increases in risk (Bagnardi et al. 2001). Similarly, tobacco use is associated with an elevated risk of lung cancer, as well as of cancers of the upper

aero-digestive tract, bladder, kidney, pancreas, stomach, and cervix and a certain type of leukemia (International Agency for Research on Cancer [IARC] 2004).

Many people use and abuse both alcohol and tobacco, and their combined effects on cancer risk also have been widely investigated. This article summarizes those findings, focusing on cancers at sites that are most directly exposed during alcohol and tobacco consumption—that is, the upper aero-digestive tract (i.e., the oral cavity, throat [pharynx], voice box [larynx], and esophagus) and the liver.(13,14)

The effect of combined exposure to alcohol and tobacco on risk of oral and pharyngeal cancer appears to be multiplicative—that is, the risk of combined exposure is the product of the increases in risk associated with exposure to either habit. Some studies found even greater (i.e., supra-multiplicative) increases in risk associated with combined exposure to alcohol and tobacco.(15)

CONCLUSION:

High consumption of alcohol manifests in severe impact on oral health. Some of the systemic diseases associated with alcohol consumption may indirectly affect oral health. Some of them are cases of missing teeth due to periodontitis associated with alcohol consumption, tooth erosion due to occurring due to gastric reflux, stomatitis caused by deficiency of several micro-nutrients, etc. Harmful impact of alcohol on oral cavity includes formation of dental caries, oral cancer, etc. The high concentration of organic and inorganic acids in alcohol and the practice of keeping the alcohol in the mouth can result in chronic inflammations of the soft tissues and can increase the negative side effects from metals of crowns, bridges, orthodontic devices and various metal restorations.(16,17) Smoking causes cancer is a well known fact of all of us. Alcohol consumption also causes cancer. But the combined action of both alcohol and smoking has a very high risk for oral cancer.

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