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Oral Cancer An Endemic Disease In India: It's Prevalence, Risk Factors And Treatment: A Review.

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ABSTRACT

Oral cancer is a malignant disease contributing to one-third of the total cancer burden in India and is one among the four most basic tumors.This chronic disease is a public health problem both in developing as well as developed countries. Around India about 274,300 new cases of oral malignant growth happen in every year of which almost 66% are from developing countries.Oral malignancy will remain a noteworthy medical issue and the occurrence will increase by 2020 and 2030 in both genders, anyway early discovery and counteractive action will diminish this trouble.Oral malignancy is a preventable disease, where smoking and alcohol is considered as major risk factors which are present in 90% of cases, having them both a synergic effect.Educating the people about the risk factors, its prevention and what needs to be done when one has already got a premalignant lesion can only be accomplished through public awareness programs.

Keywords: Oral cancer, socioeconomic inequalities, risk factors, palliative care, prevention and awareness

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INTRODUCTION

Oral cancer is a malignant disease contributing to one-third of the total cancer burden in India and is one among the four most basic tumors.[1]Its aggressiveness to spread locally including encompassing structures causesdistortion, influences capacity and prompts physical and mental uneasiness at last influencing personal satisfaction.[2] This chronic disease is a public health problem both in developing as well as developed countries. Around India about 274,300 new cases of oral malignant growth happen in every year of which almost 66% are from developing countries.[3]

Oral malignant growth is mostly related with tobacco and alcohol use and to a great extent it is preventable.[4]In India around 66% of the population lives in rural area where lower educational attainment coincides with a higher prevalence of tobacco and liquor use, it is because of absence of education and knowledge about the potential harmful impacts of tobacco and alcohol which complicate the scenario.[5] Since the introduction of pan masala and gutkha (mixes of tobacco, areca nut, lime and catechu) during the 1970s in India, the epidemic of oral malignancy has increased. Moreover, it is noted that socio-demographiccorrelates exist for oral malignant growth and its risk factors.[6-8] Individuals at a higher risk of creating oral malignant growth are those living in low financial conditions.[9,10]Screening for oral cancer include a thorough history and physical examination of the patient. The clinician should visually examine and palpate the head, neck, oral and pharyngeal regions.[11] This procedure involves digital palpation of neck node regions, bimanual palpation of the floor of mouth and tongue and examination with palpation and observation of the oral and pharyngeal mucosa with an adequate light source; mouth mirrors are essential for the examination.[12]The clinician should collect the social, familial and medical history and should document risk behaviors (tobacco and alcohol usage), a history of head and neck radiotherapy, familial history of head and neck cancer, and a personal history of cancer. [13,14]

ORAL MALIGNANCY

Cancer is a malignant neoplastic disease where unlimited and uncoordinated growth of a group of cells occurs within a tissue and invades the surrounding tissues causing destruction and has the potential to spread to other parts of the body. Malignant neoplasms of the oral cavity or oropharynx predominately begin from epithelial tissue, despite the fact that mesenchymal neoplasms can occur from bone, fibrous tissue and endothelial cells. Epithelial-derived neoplasms are classified as carcinomas and can emerge from the epithelium of the oral cavity, oropharynx and salivary glands, as well as or less commonly residual odontogenic epithelium within the jaw.[15] Among them, squamous cell carcinoma (SCC) is the most common type. Oral malignant growth is a quiet ailment in the underlying stages, when the side effects are either absent or very vague and exceptionally insignificant clinical findings are evident from physical examination. Oral disease may sometimes develop subsequent to other conditions in the mouth, referred to as oral potentially malignant disorders (OPMD). In most cases, the oral malignant growth lesion would be in advanced stages at the time of examinition to health care professionals. The signs and side effects include a quickly developing tumor mass with or without ulceration, a chronic non- healing ulcer, trouble in talking, trismus, dysphagia, terrible breath and mobile teeth. There might be pain when the injury is contaminated or when there is auxiliary inclusion of nerves, and occasionally spontaneous bleeding.[16]

SOCIOECONOMIC INEQUALITIES IN ORALCANCER

A social gradient exists for health. Social imbalances in different wellbeing results have been seen in both developed and developing countries. There are contrasts in the frequency; mortality and survival explicit to oral disease.[17] Individuals of low SEC have higher mortality and lower five-year survival post-treatment than their counterparts. This difference could be related to a delay in examination of a person's characteristics for example, nutrition, diet, awareness about the diseaseas well as the uptake of screening programs that have a socioeconomic component.[18] Oral malignant growth is more frequently seen among those from the low financial status and those living in deprived areas.[19.20] Low pay, low dimensions of training and occupation are connected to oral malignancy in developing and developed countries.[21-24]It is trusted that the social imbalance in oral disease might be clarified by the risk factors.[21,23] All things were considered, but still there is some degree of risk among individuals of low SEC that isn't clarified.[9]

Some studies have been done to understand the relationship between SEC and oral cancer which is

reviewed and found that unskilled workers had higher chance for developing oral cancer [25], low education was associated with oral cancer when adjusted with age [26], there was no relation between income and oral cancer [27] and those who worked in vehicle maintenance shops had higher chance for oral/oropharyngeal cancer than other occupational groups after adjusting for age, alcohol and smoking.[28]

PREVALENCE

In India, 20 per 100000 populations are affected by oral cancer which accounts for about 30% of all types of cancer. According to statistics in 2012, 53842 in males and 23161 in females were reported with oral cancer but in 2018 1,19,992 cases were registered in India both in males and females.Oral malignancy will remain a noteworthy medical issue and the occurrence will increment by 2020 and 2030 in both genders, anyway early discovery and counteractive action will diminish this trouble.[29,30]The prevalence is high in South Asian countries such as India, Bangladesh, Sri Lanka, and Pakistan and in some countries of West Asia (Yemen) and Melanesia (PNG) among them the prevalence in India is North:Delhi, Patiala, South: Bangalore, Chennai, Kollam, ThiruvananthapuramCentral: Bhopal, East: Kolkata, Northeast: Cachar district, Kamrup urban, Manipur, Mizoram, Nagaland, Meghalaya, Sikkim and Tripura,West: Mumbai, Nagpur, Pune, Ahemedabad and Barshi extendedRural west: Barshi (rural) and Ahemedabad (rural).[31] When compared to men, females are more prone to oral cancer.

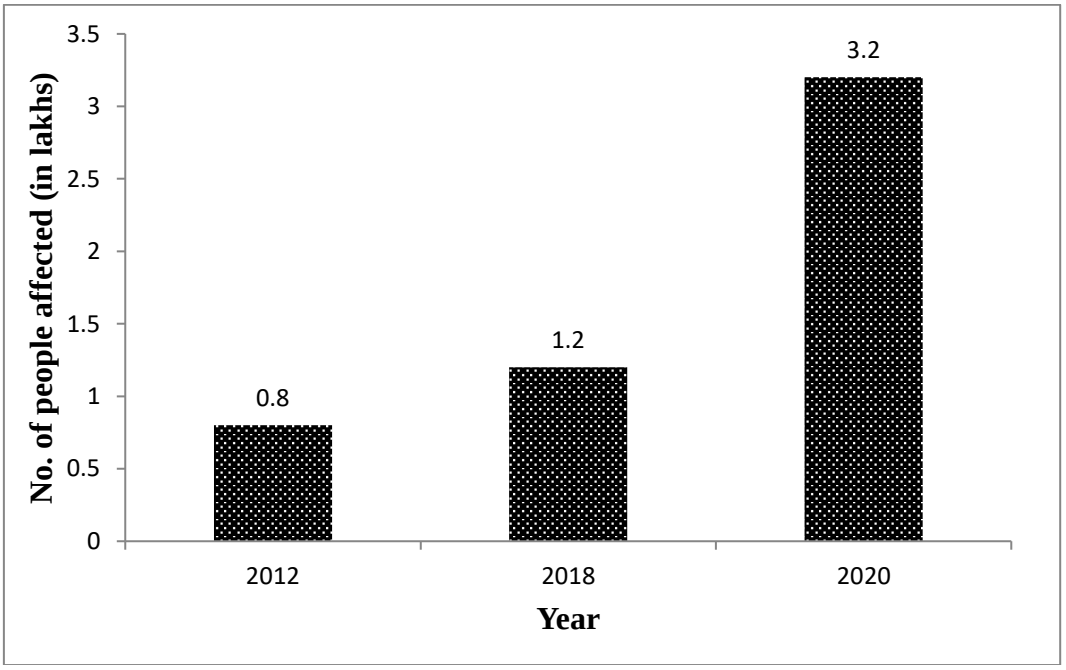

Figure 1: Prevalence of oral cancer

RISK FACTORS

Oral malignancy is a preventable disease, where smoking and alcohol is considered as major risk factors which are present in 90% of cases, having them both a synergic effect.

Tobacco and alcohol

Tobacco and alcohol use are the most preventable reasons for oral disease. About 75% of oral malignancy can be assigned to tobacco in either smoking or smokeless structures. Smokeless tobacco (SLT) use is reported in both men and women in developed and developing countries.[32,33] Besides this SLTs are utilized more commonly by children and youth.[34,35] It is available as finely chopped tobacco leaves, powder and furthermore industrially stuffed enhanced tobacco in Southeast Asian nations but in developed countries like the United States of America, Sweden and the United Kingdom. SLT is accessible as dry and clammy snuff

(dissolvable or insoluble). The health implications of SLT in the American and European population might be definitely broader than recently accepted.[36-38]Inmany case, SLT has been set up as a cancer-causing agent. Additionally, the SLT in America and Europe might be not quite the same as that of Asian nations. Asians and a portion of the Asian migrants in America and Europe use SLT alongside areca nut, lime and betel leaves that are increasingly cancer-causing.[39]

Tobacco smoking is in various forms such as cigars, cigarettes, bidis and pipes which are prevalent across the world. There is extensive proof that smoking plays an aetiological role in oral malignancy. Smoking has an independent effect and it interacts with SLT and alcohol to exert a joint effect which increases the risk for oral cancer.[40]

Drinking liquor is a vital hazard factor for oral disease. Oral cancer risk is increased with number of beverages expanded in India. A study has found that liquor utilization increase the rate by 49% among current users and 90% in past drinkers.[41]This could be due to residual effect of alcohol consumption or having quit the habit due to serious illness. Utilization of mixed drinks was related with increased risk for oral malignant growth in men yet it was not seen in women because very few women consumed alcohol.[42]There is evidence that alcohol is associated with oral cancer contributing to 7-30% of the oral cancer. Alcohol's independent effect is less but it has a synergistic effect on the carcinogenic potential of tobacco.[43]In a recent study details regarding patient's habits, age, gender, and site with OC were recorded in which majority of patients were tobacco chewers followed by alcoholic and smoking,only smokers and only alcoholic.[44]

Diet

Diet has been investigated for risk enhancement and risk reduction for oral cancer. Dietary intake of animal protein and fat is independently associated with oral malignant growth.[45] Consumption of processed meat increases the risk of oral malignancy more than the intake of red/white meat. Processed meat is frequently contaminated with nitroso compounds, which are known cancer-causing agents. Conversely a standard utilization of fish and dairy items decreases the risk.[46] The dietary utilization of legumes, vegetables and organic products is observed to be defensive against oral malignant growth.[47] In Brazil, reduced intake of fruits and vegetables increased the risk for oral disease but rice and beans are prevention for oral malignant growth. In some study, the garlic and onion intakehas been found to be protective agent against oral malignancy.[48]Among the Southern European population, such 'allium' vegetables were related with lower risk. Curcumin, a chief polyphenol compound present in turmeric, has been proposed to be anti- carcinogenic, with support for the anti-cancer property of curcumin mostly from laboratory studies.[49]

Poor oralhealth/hygiene

Poor oral hygiene has been related with malignant growth, and expanded mortality from disease, because of oral contamination. Tooth loss and poor oral hygiene reflecting poor oral wellbeing have been analyzed for a relationship with oral disease.[50] An Italian study demonstrated that oral hygiene and general oral condition were imperceptibly more regrettable among cases than controls found those individuals with missing teeth and those announcing not brushing their teeth higher chances for oral disease.[51] The recommended pathways connecting poor oral wellbeing and oral disease are through human papillomavirus (HPV) contamination is promoted by the presence of inflammatory sites in the mouth. The association is more attached to the site in the oropharynx than the oral hole.[52] Other than HPV disease; other guessed clarification could be that oral malignant growth conclusion is related with unpredictable dental visits, which is additionally connected with missing teeth. The genetic studies support an association among alcohol and poor oral cleanliness.[53]Among those with moderate alcohol utilizing genotype (ADH1B), salivary ethanol fixation stays higher and for a more extended span which could be used by gigantic smaller scale life forms in those with poor oral cleanliness, in this way expanding the danger of oral malignant growth. Additional proof is required to comprehend the connection between poor oral wellbeing and oral disease.[54]

Body massindex

Body mass index has been connected to oral and pharyngeal malignancies. Lean body mass has been appeared to upgrade the smoking-and drinking-related chances proportion (OR) for oral/pharyngeal disease, however no association was seen with oral/pharyngeal malignant growth among never consumers and never

smokers.[55] On the other hand, overweight and weight was related with a lower risk for oral disease. The connection between weight and oral disease is additionally upheld by the information from a study demonstrating lower chance with an increase in weight between the age of 30 years and two years before the meeting.[57]There could be a potential bias from residual confounding or reverse causation. However, the underlying mechanism is yet unclear.[56]

TREATMENTS [57]

Surgery

Tumor resection involves an operation to remove the entire tumor from the mouth. Depending on the location of the tumor a little cut might be made in the neck or jawbone for simpler expulsion.At the point when a tumor is precisely expelled, it might be important to reproduce some portion of the mouth. In these cases, our specialists may perform pedicle or free fold reproduction. Different forms of surgery for oral cancer fluorescence visualization guided surgery, sentinel node mapping, laser microsurgery, reconstructive surgery, TORS, cyber knife robotic radiosurgery system, osseo-integrated implant surgery.[58]

Radiation therapy

Today's radiation therapy technology innovation treats malignant tissues of the mouth with more precision utilizing gear intended to save sound tissue and shorten strategy times. External beam radiation therapy (EBRT) and brachytherapy are the two most normal radiation treatments used to treat mouth malignancy.

Recent studies have demonstrated that the capacity to reduce parotid organ exposure altogether diminishes consequent xerostomia and improves quality-of-life scores. A continuous Radiation Therapy Oncology Group (RTOG)study is analyzing whether the utilization of pilocarpineduring radiation treatment, just as in the post radiation time frame, will preventxerostomia. Likewise, amifostine (a radioprotectant) has decreased the seriousness of xerostomia after radiation and chemoradiation treatment. Different endeavors to improve tumor kill by means of radiation treatment have incorporated the utilization of hyper-fractionation and quickened fractionation regimens (that is, higher portions or more continuous dosages than regular radiation treatment). Although these methods have shown increased local control, they have increased acute toxicity.

Chemotherapy

In prospective randomized trials of chemotherapy found that there was no evidence of increased survival when chemotherapy alone was used.In this way, chemotherapy generally is combined with radiation treatment. Currently used agents includecisplatin, carboplatin, 5-fluorouracil and the taxanes (paclitaxel and docetaxel). 5-fluorouracil and the taxanes likewise are radiation sensitizers. Recent interest has been shown in intra-blood vessel delivery of chemotherapy, which increases the medication dose to the tumor and decreases systemic toxicity.

Targeted drug therapy

Targeted drug therapy works by interfering with cancer cell growth on a molecular level. It might be combined with chemotherapy and additionally radiation treatment as a feature of a customized treatment plan for mouth malignant growth. Targeted agents have added a new dimension to potential treatment, particularly the EGFR inhibitors and the VEGF inhibitor bevacizumab. The recently reported Cetuximab (Erbitux) in Combination with Cisplatin or Carboplatin and 5-Fluorouracil in the First Line Treatment of Subjects With Recurrent and/or Metastatic Squamous Cell Carcinoma of the Head and Neck cancer.

Immunotherapy

These medications work by helping the body's insusceptible framework distinguish and execute malignant growth cells.The latest improvement in the treatment of head and neck disease is immunotherapy. Significant advancement has been made in the use of resistant checkpoint inhibitors, for example, nivolumab,

pembrolizumab, durvalumab, atezolizumab, and avelumab. The checkpoint inhibitors pembrolizumab and nivolumab are FDA endorsed in the repetitive and metastatic setting and have anestablished paradigm for use. Most of current examinations are surveying drugs at last stage setting and furthermore utilizing a blend of treatments. Be that as it may, there are as of now 16 preliminaries investigating the utilization of these medications in the essential setting with therapeutics aim.[59]

PALLIATIVE CARE

According to WHO, Palliative care is, "The study and management of patients with active, progressive, far advanced disease in whom the oral cavity has been compromised either by disease directly or by its treatment, the focus of care is quality of life".[60]It is well understood that palliative care is not complete without the participation of best oral physician. Oral physicians are better trained to interact with patients at their terminal stage of life as they can contribute with utmost care. They are certainly at a forefront in providing an appropriate palliative care for cancer patients through operative, preventive and emotional care. In palliative care patients require special dental attention, pain management and an oral physician plays a leading role in improving the quality of life of oral cancer patients.[61] Patients receiving chemotherapy and radiation, the pain are uncommon but the oral pain needs a palliative care which is managed by doxepin.[62] This protocol has to be followed at least every four hours for the palliating patients, if Denture is present it must be removed and brushed thoroughly with a denture brush, a soft bristled toothbrush has to be used for brushing in a sweeping motion towards the occlusal surfaces and rinsing of the mouth to be done, with any alcohol free product.[63]

PREVENTION AND AWARENESS

Oral cavity is accessible for visual examination and oral malignant growths and pre-malignant injuries have well defined clinical indicative highlights however oral malignant growths are ordinarily identified in their advanced stages. Oral malignant growth can be analyzed earlier by self mouth examination, increaseawareness in high-hazard communities. Early identification has better relieving rates and it will also decrease the expense for the treatment.[64] In India, the occurrence of oral cavity malignancies is as yet one of the most noteworthy on the planet since tobacco items are effectively accessible and the absence of mindfulness in the community. Oral malignant growth can be forestalled by activity against hazard factors, particularly tobacco which is the key factor the implementation of laws on youth access to tobacco and liquor; the denial of all promoting and limited time exercises by the tobacco business, the noticeable incorporation of solid pictorial admonitions in existing composed alerts on the marks of tobacco and liquor products, more multi focus randomized controlled preliminaries of dietary supplementation for people with precancerous injuries are required to evaluate the viability of nutrients, retinoids and carotenoids[65], the job of HPV ought to be handled in socially satisfactory wellbeing programs advancing safe sexual practices, education crusades are expected to raise open mindfulness about oral malignant growth and its connections with tobacco and liquor utilization and facilities for precise organizing, including progressed imaging, and experienced multidisciplinary groups can improve long term survival and nature of life.

CONCLUSION

Oral cancer continues to be deadly disease that is diagnosed every year this is because the most cases are diagnosed at advanced stage. Various studies have shown that there is a lack of awareness about the oral cancer, its signs and symptoms and risk factors among the general population. Educating the people about the risk factors, its prevention and what needs to be done when one has already got a premalignant lesion can only be accomplished through public awareness programs. Thus by education and awareness program we can reduce the oral malignant morbidity and mortality in India.

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