Current developments in oral cancer

Head and neck cancer in India is an established health problem. Worldwide oral cancer ranks sixth in the overall incidence for the 10 most common cancer sites and 3rd in the developing countries. Head and neck cancer in India accounts for 30% of all cancers. Patients present with advanced disease in up to 60-80% of the times. The estimated cases are over 200,000 every year out of which 80,000 cases are of oral cancer.[1] It is diagnosed at advanced stages resulting in poor treatment outcomes and considerable financial burden to the patient.

The risk factors for oral cancer include smoking, excess alcohol consumption, smokeless tobacco products, and human papilloma virus (HPV). Tobacco tops the list of risk factors; however, there is a rise in the incidence of oral cancer related to HPv. The presence of HPV in oral cancer sites are considered to be a good prognostic indicator and screening methods that are specific and sensitive for HPV are yet to be developed.

Early detection of oral cancer is one of the most efficient ways to reduce the high mortality rate. This can minimize the morbidity of the disease and its treatment, which is associated with a severe loss of function, disfigurement, depression, and poor quality of life. There is an urgent need to devise critical diagnostic tools for early detection of oral dysplasia and malignancy that are practical, non-invasive, and can easily be performed. Non-invasive diagnostic tools such as vital staining (toluidine blue), oral brush biopsy, light-based detection system such as chemiluminescence (Visilite), tissue fluorescence imaging (Veloscope), tissue fluorescence spectroscopy, DNA ploidy analysis, and salivary biomarkers are used for diagnosis. Surgical biopsy remains the gold standard. A diagnostic evaluation consisting of conventional radiograph, computed tomography (CT), or magnetic resonance imaging (MRI) is also used to assess the local and regional spread, depth of invasion, and extent of lymphadenopathy. CT is superior in detecting early bone invasion and lymph node metastasis, but MRI is preferred for assessing the extent of soft tissue involvement and for providing a three-dimensional display of the tumor. The use of fluorodeoxyglucose positron emission tomography scanning in diagnosis of lymph node involvement is controversial and there is wide agreement on using ultrasound guided fine needle aspiration biopsy in the evaluation of lymph node metastasis and is considered as the most reliable technique.[2]

The key to solving this massive health epidemic is prevention, early diagnosis, and effective treatment strategies and follow-up. There is ongoing research in the field to achieve these goals. The first development that is worth a mention is HPV-induced oral cancer vaccines and determining treatment strategies and follow-up for HPV-induced oral cancer. It is estimated that there is a downward trend in oral cancer secondary to the consumption of tobacco products and up to 25% of cancers in head and neck region are independent of tobacco use.[3] Increasingly, certain sites such as posterior tongue and tonsils are positive for HPV. The current vaccines that have been marketed are bivalent and quadrivalent. This targets HPV strains 16 and 18. There are other strains HPV 11 and 33 which are also associated with oral cancer but to a lesser extent.[4] We are to yet to develop a vaccine to target many of the HPV strains that can cause cancer. If cancer is HPV-induced, it could be better news for the patient as advanced lymph node positive cancers can be effectively treated and has a better prognosis than the similarly staged oral cancer which are negative for HPV. A study published has also shown that detecting HPV DNA can have a prognostic implication. The persistence of HPV DNA in the saliva of individual post-treatment could indicate recurrence and hence poorer prognosis.[5]

The second development that needs definite mention is treatment strategies in oral cancer. The treatment of oral cancer is surgery, radiotherapy, and chemotherapy and combination depending on the stage of cancer. The surgery involves resection of the tumor at the primary site and lymphadenectomy. There is a gross variability in practice with regards to lymphadenectomy in early cancers. A study conducted in Tata Memorial Hospital has shown the effectiveness of elective neck dissection in early cancers showing survival advantage over patients without lymphadenectomy. This probably has given an answer to a long-standing question as to whether subjecting patients to additional surgery is justified when lymph nodes are negative.[6]

Finally, the technical aspects of the surgical resection and minimizing effects of surgery to achieve a better functional outcome is worth a mention. Transoral robotic surgery is increasingly in demand for cancer resections. This has been used in limited centers for oral pharyngeal cancer resections. The University of Pennsylvania published a small study and showed that tumors can be effectively resected with negative margins. Short-term studies have also shown good functional outcomes by avoiding extensive access procedures such as mandibulectomy and pharyngotomy.[7] Robotic surgery can still take a long time to be available worldwide due to expensive instruments and training requirements for the surgeons but could be an answer to disfiguring surgery for oral cancer, which is an adverse outcome in the most of the cases. There are still many more developments...
to come, and researchers and clinicians are constantly striving to find answers to control this deadly disease.

Anuradha Pai

Department of Oral Medicine & Radiology, The Oxford Dental College & Hospital, Bangalore - 560 068, Karnataka, India.
Email: bhatre_anu@hotmail.com
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