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Editorial

Long term Swallowing Dysfunction Post Chemoradiotherapy in Head and Neck Cancer Patients

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Background

Head and neck Squamous cell carcinomas (HNSCC) are common in India and the survival rate has significantly increased over the past several decades as a result of increased public knowledge of health issues and the application of therapeutic techniques like radiotherapy, Chemotherapy or surgery [1]. Surgery is the primary treatment modality in all resectable oral cavity cancers, with radiotherapy/chemotherapy being used as an adjuvant therapy. Whereas tumors involving the pharynx and larynx are treated with organ preservation chemoradiotherapy (CTRT). This has given a false belief that we have conquered head and neck cancer but any treatment modality (surgery or chemoradiotherapy) for HNSCC requires special consideration for vital functions such as speech, swallowing followed by cosmesis. Although CTRT has significant survival benefit, the incidence of acute and long-term toxicities is higher as well. Important swallowing related structures, including the tongue, larynx, cricopharyngeus muscle, superior, middle and inferior constrictor muscles are susceptible to significant radiation doses with this treatment approach [2].

Problem statement

Radiation therapy is known to cause neuropathy, lymphedema (internal and external) and fibrosis, all of which compromise the swallowing mechanism and raise the risk of dysphagia. Therefore, swallowing dysfunction is seen at all stages of swallowing, including the oral preparation, oropharyngeal, and esophageal phases. There is a decrease in pharyngeal peristalsis, defective posterior inversion of the base of the tongue, incomplete closure of the larynx, decreased inversion of the epiglottis, and delayed opening of the upper esophageal sphincter. These side effects start to manifest four to five weeks following radiation-based therapy. Patients start to experience acute dysphagia as a result of mucositis, soft tissue edema, excessive mucous secretion, xerostomia, and tissue swelling. The late effects of dysphagia are caused by fibrosis, internal lymphedema, and injury to neural structures later on [3,4]. Following CTRT with altered fractionated three-dimensional conformal radiotherapy (3D-CRT) or intensity-modulated radiotherapy (IMRT) techniques, the incidence of acute and late swallowing dysfunction varies from 15% to 63% and 3% to 21%, respectively [2]. It is recognised that the radiosensitive impact of chemotherapy may cause immediate toxicity and long-term problems. Dysphasia can result from an inflammatory response and the release of reactive oxygen species after concurrent CTRT [3]. The most significant side effect of dysphagia is aspiration, which causes aspiration pneumonia. Aspiration pneumonia is a serious and fatal condition. Aspiration is thought to occur in 36% - 94% of cases, while silent aspiration caused by a weakening of the cough reflex occurs in 22% - 67% of cases. Radiation induced dysphagia causes a modification in diet type and a lengthening of mealtime contributing to anorexia and malnutrition [3,4]. Tube feedings are used as a result of late and persistent dysphagia, which may limit the nutritional demand of patients. Dysphagia that is persistent and late-onset lowers the patient's quality of life and degrades their general health. Dietary restrictions and malnutrition make lifetime

reliance on a gastrostomy tube necessary in extreme cases of late dysphagia [5].

There are several methods for evaluating dysphagia. A variety of subjective assessment techniques using designed and validated questionnaires are available. Functional endoscopic evaluation of swallowing (FEES), modified barium swallow study (MBSS), and video fluoroscopy study of swallowing (VFSS) can all be used to assess dysphagia objectively.

Swallowing dysfunction is an under reported late complication of CTRT in 60 to 75% of patients affecting all quality of life domains like general, mental and social health [6]. It leads to anorexia, malnutrition and pulmonary complications due to aspiration, laryngeal penetration, food residue after swallow, reflux problems and increased rate of hospital admissions. By using alternative feeding methods and swallowing rehabilitation exercises, dysphagia can be identified early on and major side effects of aspiration prevented. Prophylactic swallowing therapies that are carried out throughout and just after therapy may be beneficial in lowering dysphagia. Delayed referrals to speech pathology services result in more severe dysphagia, which makes swallowing therapy challenging [7]. The rate of chronic feeding tube dependence is viewed as a surrogate measure of dysphagia, but chronic feeding tube rates may not sufficiently identify all these cases. Many patients are unaware of their swallowing dysfunction and may end up with complications like silent aspiration and pneumonia. A thorough evaluation of swallowing function in all these patients undergoing treatment for HNSCC with subjective scales and objective parameters allows early identification of such patients and helps in their rehabilitation.

Conclusion

Almost all HNSCC patients receiving curative intent CTRT develop swallowing dysfunction which may increase or decrease with time. However, subjective perception of dysphagia does not necessarily correlate with objective parameters and underlines the necessity of objective assessments for swallowing outcomes. Screening tests are not very helpful and only through a detailed comprehensive evaluation and dedicated rehabilitation can swallowing dysfunction be improved. Late CTRT effects can go unrecognized and may only be identified when patients present with complications. So, for long term follow up of HNSCC survivors, reliable, accurate and repeatable screening tests are required to monitor late CTRT effects on swallowing.

Disclosure

This material has never been published and is not currently under evaluation in any other peer-reviewed publication.

Ethical Approval

Not applicable as this is an editorial article with no patients involved.

Informed Consent

Not applicable as this is an editorial article with no patients involved.

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