

Significance of Comorbidity in Cancers of the Head and Neck Region

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Comorbidities refer to medical conditions or disorders that exist in addition to an index disease. In the case of head and neck cancer (HNC), comorbidities are diseases that already exist in an individual at the time of diagnosis of HNC, and can vary from patient to patient as a result of genetic and environmental influences.

The significant association of tobacco and alcohol as risk factors for the development of HNC, combined with the advanced age of patients at the time of HNC diagnosis, predispose HNC patients to increased risks for comorbidities. Comorbidities are present in 21–35% of patients with HNC and have been shown to be disproportionately higher in this group of patients than in other cancer patient groups (except for lung cancer, which ranks first with a 40% prevalence).¹ The most frequently encountered comorbidities in HNC patients tend to be those that affect the pulmonary and cardiovascular systems, which is not surprising given the substantial use of tobacco and alcohol by this group of patients. Datema et al² identified ailments most commonly found in the cardiovascular system (32%), respiratory system (6.9%), gastrointestinal system (7.2%), neurological system (4.2%) and endocrine systems (3.9%) in 500 HNC patients in their retrospective cohort study in the Netherlands. Piccirillo et al³ also found pulmonary disease (17.9%), diabetes (7.9%), and myocardial infarct (6.7%) to be the 3 most common comorbidities in their cohort of 1,094 patients with squamous cell carcinoma of the head and neck.

With a significant incidence of comorbidities in HNC patients already established, why is it important to be cognizant of these comorbidities?

First, and most importantly, comorbidities have been shown to significantly affect survival. A prospective study by Piccirillo et al⁴ showed that survival was affected

by the severity of comorbidity as measured by the Adult Comorbidity Evaluation-27 index (ACE-27; an index for assessing comorbidity where comorbidity is rated as mild, moderate or severe). They found that risks of 5-year mortality increased from 1.21 (95% confidence interval, 1.13–1.30) for mild comorbidity to 2.56 (95% confidence interval, 2.35–2.81) for severe comorbidity. Furthermore, a recent retrospective cohort study by Homma et al⁵ on 156 patients diagnosed with squamous cell carcinoma of the hypopharynx at a teaching hospital in Japan found a significant difference in 10-year survival ($p=0.0073$) between patients with “none” or “mild” comorbidity (45.1%) compared with patients with “moderate” or “severe” comorbidity (27.7%) as measured by the ACE-27.

Second, comorbidities have been shown to have an impact on the quality of life (QoL) of HNC patients. HNC patients are already predisposed to a poor QoL due to the extent of surgical interventions (resulting in speech, swallowing and cosmetic deficiencies that usually tend to have psychosocial consequences) and nonsurgical interventions. With the added burden of comorbidities, it logically follows that QoL will be further affected. This has been well corroborated by many studies, with a recent study by Terrell et al⁶ showing comorbidity to be one of the 2 strongest predictors of QoL as measured by the Medical Outcomes Study 36-Item Short-Form Health Survey⁷ (the other was the presence of gastrostomy tubes).

Third, the severity of comorbidity has been shown to significantly impact on the financial costs of HNC management. With the presence of more medical conditions increasing the number of required diagnostic and therapeutic interventions, it is not surprising that Hollenbeak et al⁸ found an increase in 5-year



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costs by \$2,837 when a 1-point increase in severe comorbidity (as measured by the Washington University Head and Neck Cancer Index) occurred.

While these findings indicate the significant role that comorbidity plays in the course of HNC, what could account for the infrequent and non-standardized collection of comorbidity information in HNC patients? One major reason could be the plethora of comorbidity-assessing instruments that are currently available for use, and therefore, the choice of instrument becomes a dilemma for the health practitioner or registrar attempting to collect comorbidity information. For example, there are currently over 10 different types of comorbidity indexes.⁹ These include the earlier-developed indexes such as the Kaplan-Feinstein Index, the Charlson Comorbidity Index and more recent indexes such as the ACE-27 Index and the Elixhauser Comorbidity Index, which are modifications of the earlier-developed indexes.

This issue is further complicated by the different sources of comorbidity information (insurance claims-based or chart-based) utilized by each of the instruments. While some comorbidity indexes rely on the International Classification of Disease codes (utilized with insurance claims) for identifying the types of comorbid ailments that may be present in a particular patient, other indexes only require information that can be gathered from elements (such as physician notes and discharge summaries) of the medical chart.

Another problem is the unavailability of a standardized registry for collecting longitudinal information on HNC patients from the time of diagnosis up to survivorship. The absence of such a registry not only impedes the type of foundational work that could serve as an impetus for standardizing the collection of comorbidity (and other cancer-related) information, but it also limits advances that could be made in the management of HNC patients due to the wealth of information such a registry could provide.

Our research group has recently completed the development of a validated online training module for the collection of comorbidity information using the ACE-27 Index,¹⁰ a validated instrument that uses a chart-based approach to capture the existence and severity (0 = none, 1 = mild, 2 = moderate, 3 = severe) of comorbid ailments. We have found that the use of this online module demonstrates the ease and adaptability of the ACE-27 to being used routinely for collecting comorbidity information. The module can be found at

<http://oto2.wustl.edu/clinepi/comorbid.html> under “Comorbidity Coding Course”. The ACE-27 is just one of the many indexes that may be adapted to routine use, but the important point to note is that comorbidity information should begin to be collected routinely.¹¹

The challenges surrounding the efficient measurement and collection of comorbidity information in HNC patients are probably not limited to those discussed here. However, it is important for health care teams to recognize these challenges. It is also important to take steps in eliminating some of these challenges, and this can initially be achieved by actively beginning to collect comorbidity information. With the many indexes available, the instrument of choice will of course depend on site preference as well as the ease of utilizing the index.

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