Survival, Morbidity, and Quality-of-Life Outcomes for Sinonasal and Ventral Skull Base Malignancies

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KEYWORDS

• Sinonasal malignancy • Sinonasal cancer • Nasal cavity • Paranasal sinus • Ventral skull base malignancy • Anterior skull base malignancy • Survival • Outcomes

KEY POINTS

- Sinonasal and ventral skull base malignancies are rare and this has made it difficult to conduct randomized controlled trials. Much knowledge of the clinical outcomes for these malignancies is based on retrospective chart review studies.
- Overall survival for sinonasal and ventral skull base malignancies remains poor.
- For most histologies, primary treatment with surgical resection with or without adjuvant radiotherapy provides the best survival outcome.

INTRODUCTION

Sinonasal and ventral skull base malignancies are uncommon, and this has made it difficult to conduct randomized controlled trials. Much of what is known about the outcomes of these malignancies is based on retrospective, single-institution, or

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Abbreviations	
AC	Adenocarcinoma
ACC	Adenoid cystic carcinoma
DLBCL	Diffuse large B-cell lymphoma
DSS	Disease-specific survival
ENKTL	Extranodal natural killer/T-cell lymphoma
EP	Extramedullary plasmacytoma
LRC	Locoregional control
MM	Mucosal melanoma
NC	Neuroendocrine carcinoma
ON	Olfactory neuroblastoma
OS	Overall survival
PFS	Progression-free survival
QOL	Quality-of-life
RFS	Recurrence-free survival
RS	Relative survival
SCC	Squamous cell carcinoma

population-based database studies. Population-based databases, such as the Surveillance, Epidemiology, and End Results (SEER) and National Cancer Database (NCDB), allow researchers to pool cases from many institutions to study the behavior of these malignancies. They have significantly expanded the knowledge base on sinonasal and ventral skull base malignancies. However, with regard to outcomes research, these population-database studies have some inherent limitations that necessitate cautious interpretation of their findings.

SEER and NCDB capture approximately 26% and 70% of new cancer diagnoses in the United States, respectively. Therefore, a certain degree of selection bias may exist because cases reported in surveyed areas may not be representative of the entire population. For example, the SEER database collects information primarily from urban areas, where there may be a higher proportion of patients with lower socioeconomic status. Although single-institutional retrospective studies are also susceptible to this bias and many other types of selection bias, population-based studies have additional disadvantages that make it difficult to generalize some of their findings. The information in the databases is derived from the work of many different clinicians and pathologists, and the information is coded into the database by many different people, which may lead to inconsistencies in reporting. In particular, SEER lacks certain details of treatment, such as chemotherapy, the dose of radiotherapy, type of surgical treatment, tumor margins, and complications of treatment. Additionally, the databases do not contain information on the clinical reasoning that may be associated with treatment decisions. For example, in SEER, the intent of radiotherapy is not specified; radiotherapy with curative intent is indistinguishable from palliative radiotherapy. Retrospective chart reviews allow researchers to be able to take such nuances into consideration. Furthermore, death is not the only outcome of significance in oncology. For many of the sinonasal malignancies, recurrence is a key event, causing substantial morbidity even in the absence of mortality. In fact, morbidity is neglected altogether in the SEER database. This may result in studies underestimating the burden of disease for insidious malignancies with devastating local effects.

With regard to survival, the use of these databases presents additional challenges. At tertiary referral centers, the source of most studies not from databases, academic physicians are usually aware of the value of reporting results for rare malignancies and there may be a greater incentive to follow patients for a long period of time. In many population-based survival analyses, a large portion of patients are censored after a