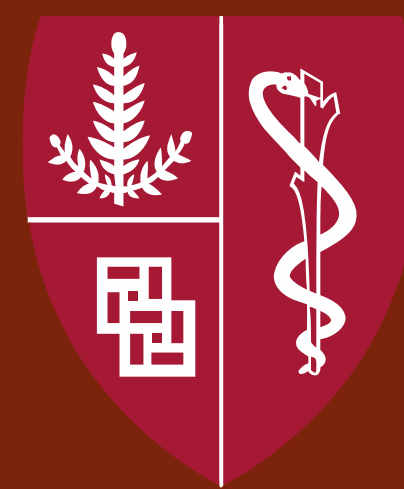




Skull Base Osteoradionecrosis: The predictive value of patient-reported symptoms in assessment and monitoring

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Objective

This study aims to assess the quality of life (QOL) in patients with skull base osteoradionecrosis (SBORN) and explore the relationship between SBORN monitoring markers and the Sinonasal Outcome Test (SNOT-22), a patient-reported measure of QOL.

Introduction

- SBORN is a serious complication arising in patients undergoing radiation therapy for head and neck cancers [1,2].
- SBORN monitoring methods include evaluating patient symptoms, endoscopic findings, imaging studies, and inflammatory serum markers [1].
- The SNOT-22, a widely used subjective questionnaire in rhinology clinics, evaluates both sinonasal-specific symptoms as well as psychological and sleep domains[3–5].

Methods and Materials

- A retrospective chart review was performed on patients diagnosed with ORN and managed at a tertiary referral center.
- Patient diagnosed with recurrence of cancer were excluded
- Patient’s data included demographics, cancer diagnosis, and treatment modalities, as well as SBORN follow-up, treatment outcomes, and mortality details.
- For each visit, records captured patient symptoms, endoscopic scores (crusting, scarring, polyps, edema, and discharge), SNOT-22 scores, ESR, and CRP levels. The mean and highest SNOT22 score for each patient were calculated.
- Correlation coefficients (CC) and partial rank correlation coefficients (PCC) were calculated to assess the relationship between SNOT-22 scores and other SBORN monitoring parameters, adjusting for the number of visits.
- SBORN was classified as stable if patients demonstrated clinical improvement without requiring additional systemic or surgical interventions during the remainder of the follow-up period.

Results

- The study included 20 patients, with a total of 344 visits analyzed
- On average, SBORN developed 7 ± 8 years after radiation therapy
- The mean follow-up time was 7±5 years
- Skull base ORN median survival was 6±4 years

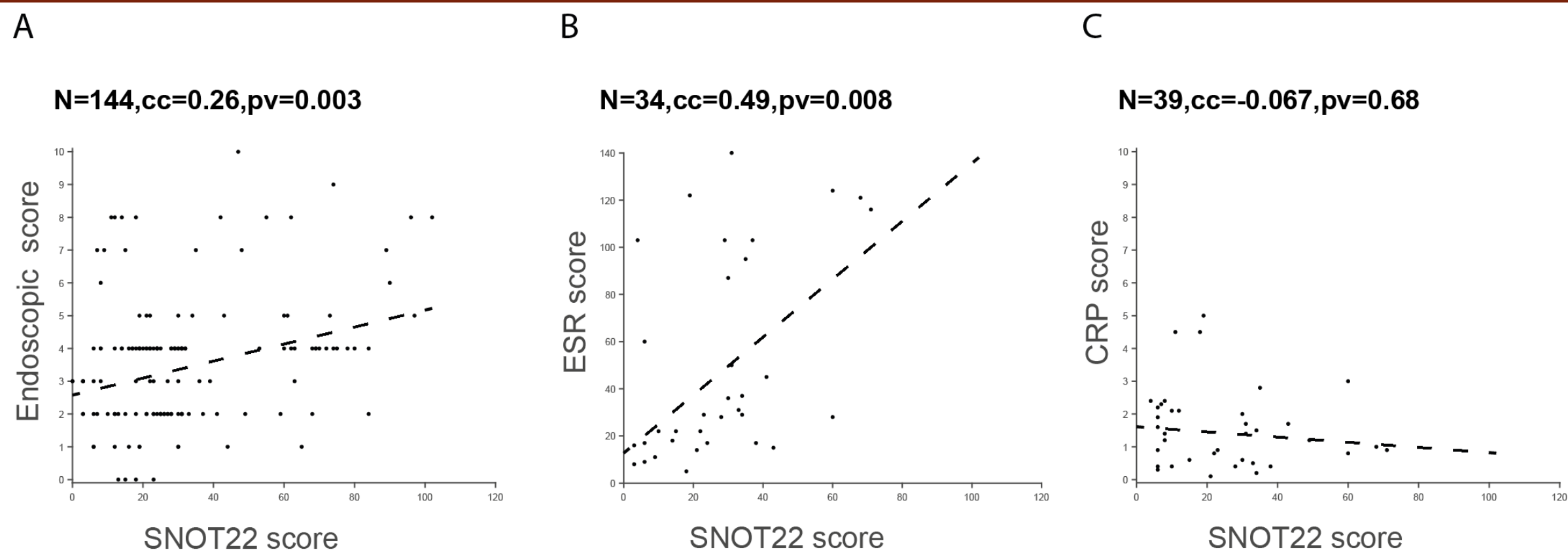
Table 1. Cohort characteristics

		% (Number)
Gender	Male	70% (14)
	Female	30% (6)
Ethnicity	Asian	55% (11)
	White	25% (5)
	Hispanic	5% (1)
	African American	5% (1)
	Native American	5% (1)
	Other	5% (1)
Tumor type	NPC	80% (16)
	Other	20% (4)
Re-irradiation		45% (9)

Table 2. SNOT 22 Scores

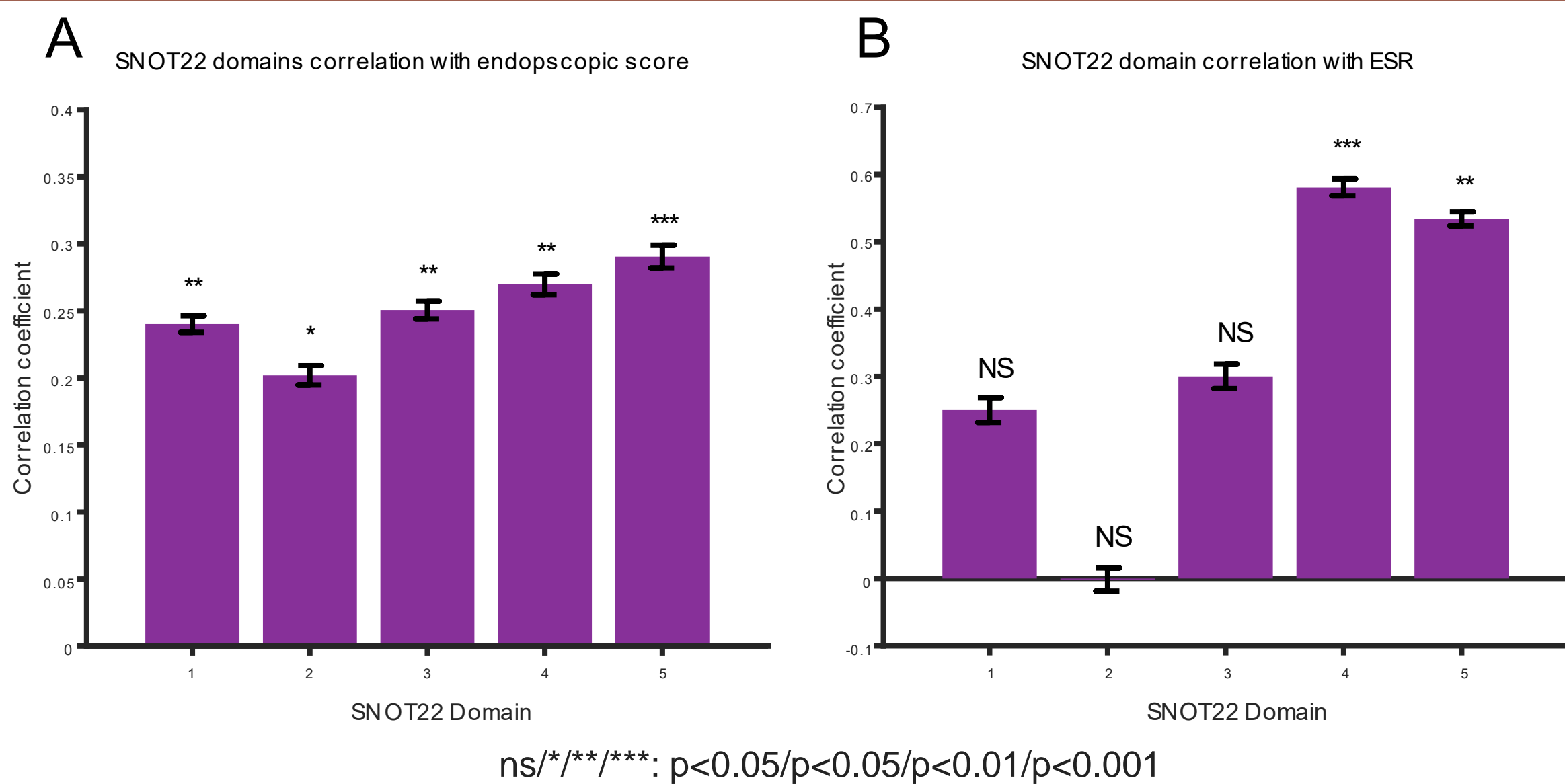
	SNOT22 score	Weighted Mean±SD	Highest score Mean±SD
Total score		32.8±22.3	48.8±26.7
Domains	Rhinologic symptoms	7.8±5.4	12.5±7
	Extranasal Rhinologic symptoms	5±3.3	8.3±3.7
	Ear/facial symptoms	8.2±4.8	12.6±5.7
	Psychological dysfunction	9.9±8.6	17.3±10.6
	Sleep dysfunction	7±6.2	12.1±8.7

SNOT 22 correlated with ESR and endoscopic score



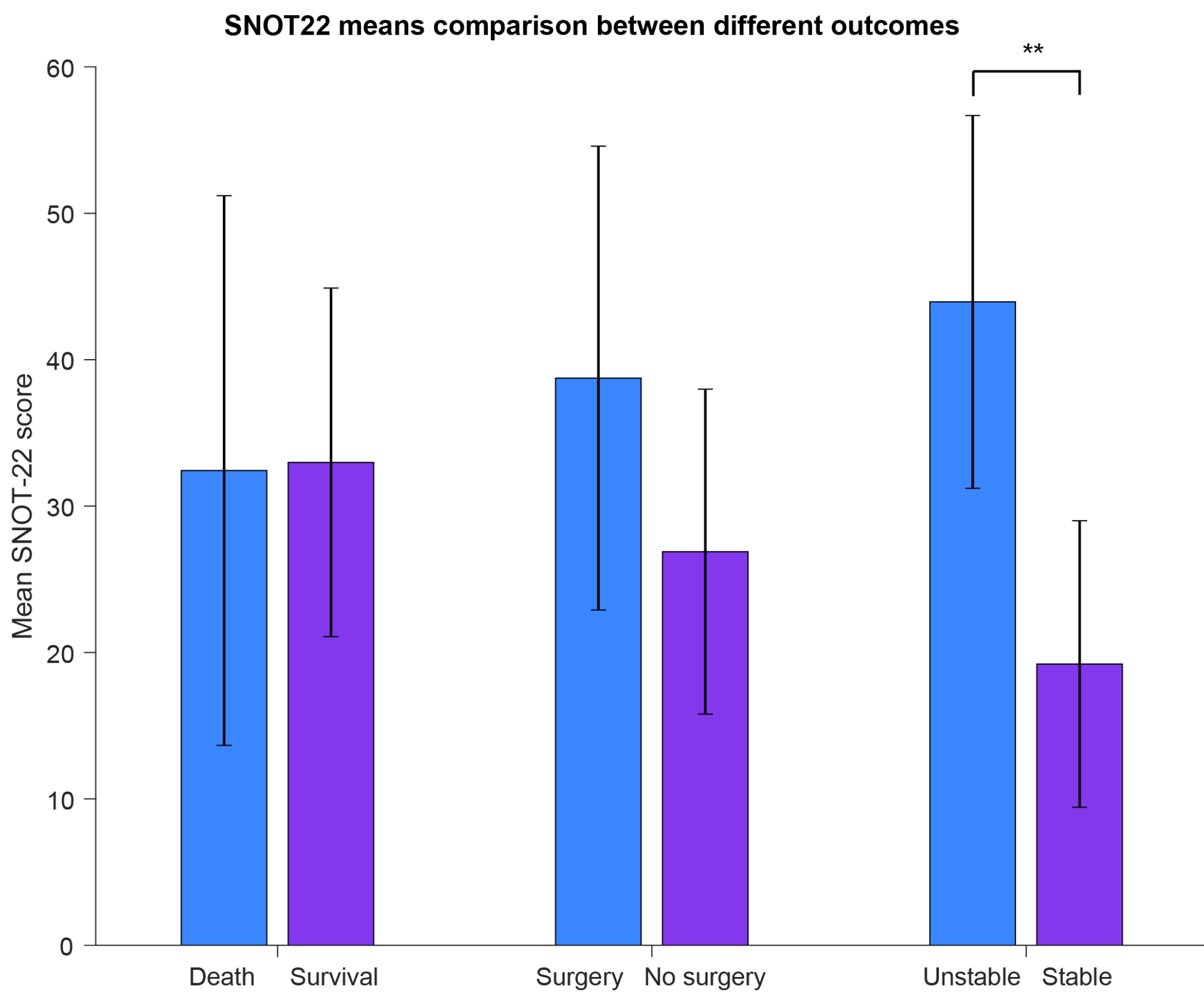
SNOT-22 scores showed significant correlations with endoscopic scores [A] and ESR [B], but not CRP [C]. When controlled for the number of visits, endoscopic scores (PCC=0.23, pv=0.0053) and ESR (PCC=0.49, pv=0.004) remain significantly correlated with SNOT-22.

SNOT 22 domains correlated with ESR and endoscopic score



- [A] All SNOT-22 domains significantly correlated with endoscopic scores, with the highest correlation seen in the sleep (4) and dysfunction domains (5).
- [B] The sleep (4) and psychological dysfunction domains (5) were strongly correlated with ESR.

High SNOT 22 score was associated with ORN progression



- Mean SNOT-22 score was lower in patients who eventually achieved stable SBORN compared to those who continue to progress (20.5 vs 40.9, p=0.037).
- Survival and need for surgical intervention did not show significant associations with mean SNOT-22 scores

Discussion

- The role of QOL and patient-reported symptoms in assessing patients with SBORN is underexplored. The only prior study assessing SBORN-related QOL was part of a larger study on patients who underwent salvage open nasopharyngectomy [11]. Their findings showed that SBORN patients experienced significantly greater pain, and their social lives were notably impacted.
- Our study showed that SNOT22 can be a valuable tool for monitoring SBORN as it is correlated with endoscopic appearance and ESR, both of which influence clinical decision making in these patients [1].
- Previous studies have shown that the SBORN 2-year survival rate is 70-79% with median OS rate of 83.9 months [6,7,8]. Emerging surgical techniques for management of skull base disease can increase patient life expectancy [9,6,10], underscoring the importance of addressing QOL concerns over a long follow up period.

Conclusions

SBORN has a substantial impact on patient QOL, and SNOT-22 can be a valuable tool for physicians in assessing SBORN progression and treatment efficacy

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