

Clinical and demographic factors associated with muscle function in patients with head and neck cancer: a prospective cohort study

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Background

- Skeletal muscle is essential for physical function and energy metabolism.
- Patients with head and neck cancer (HNC) are at risk for muscle dysfunction due to malnutrition, inflammation, and treatment effects.
- Muscle dysfunction can contribute to complications, toxicity, longer hospital stays, and reduced survival/quality of life.
- Risk factors include malnutrition, smoking, alcohol use, comorbidities, tumor site, and treatment modality.

Objectives

1. Assess longitudinal changes in muscle function (30s chair stand test; 30s-CST) over two years following HNC diagnosis.
2. Identify demographic, lifestyle, and clinical factors associated with muscle function.

Methods

Prospective cohort study using data from the NET-QUBIC study (2014–2018).

Newly diagnosed, untreated HNC patients (n=737).

Muscle Function Test:

- 30s-CST measuring lower body strength and endurance at 4 timepoints: baseline (M0), 6 months (M6), 12 months (M12), and 24 months (M24).

Variables Assessed:

- Demographics: age, sex, BMI, education, WHO performance score
- Lifestyle: smoking, alcohol use
- Clinical: tumor site/stage, treatment modality, comorbidity (ACE-27)

Statistical analysis: Linear Mixed Models (LMM) with time and covariates

Results

Participants:

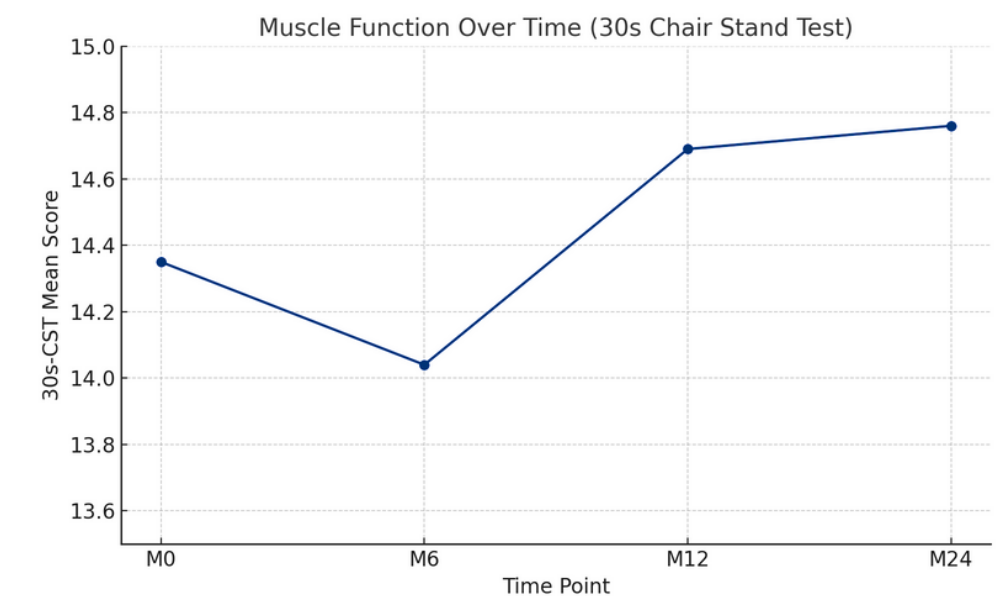
- 622 patients completed ≥ 1 30s-CST
- Baseline: n=511; M6: n=496; M12: n=408; M24: n=334
- Included group had fewer comorbidities and lower WHO scores than the overall NET-QUBIC cohort.

Univariable Analysis for time:

- Significant decline between M0 and M6 ($\Delta = -0.37$, $p=0.014$)
- No significant changes at M12 and M24

Multivariable Analysis:

- No significant interaction with time, indicating stable muscle function post-treatment
- Factors significantly associated with lower muscle function:
 - Severe comorbidity ($\beta = -1.68$, $p=0.009$)
 - Current smoking ($\beta = -0.64$, $p=0.027$)
 - Older age ($\beta = -0.13$ per year, $p<0.001$)
 - WHO score 1 vs 0 ($\beta = -1.14$, $p=0.003$)
 - Non-drinking ($\beta = -0.49$, $p=0.039$)
 - Lower education ($\beta = -1.07$, $p=0.007$)



Conclusion

- Muscle function in HNC patients is influenced by modifiable and non-modifiable factors.
- Interventions focusing on physical exercise, nutritional support, and lifestyle changes are essential for preserving function.
- Early screening can identify vulnerable patients who may benefit most from rehabilitation.

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