



## Phase Angle, Quality of Life and Survival in Women With Head and Neck Cancer: An Uncommon Condition

González Rodríguez J, Sat-Muñoz D, Martínez-Herrera B, Gutiérrez-Rodríguez LX, Mireles-Ramírez M, Trujillo-Hernández B, Quiroga-Morales LA, Alcaráz-Wong AA, Dávalos-Cobian C, Solórzano-Meléndez A, Flores-Carlos JD, Rubio Jurado B, Salazar-Páramo M, Gómez-Sánchez E, Carrillo-Nuñez GG, Nava-Zavala AH, Balderas-Peña LMA

### Introduction

In patients with head and neck cancer (H&NC), malnutrition is a frequent condition. The health related quality of life (HRQoL) of women with non-thyroid H&NC, is related to their nutritional status<sup>1,2</sup>. Bioelectrical impedance analysis is an instrument which has shown effectiveness to assess body composition, including the phase angle (PA), which indirectly measures cell membrane integrity<sup>3,4</sup>. In this report health-related quality of life, survival and risk of death and their relationship to PA were studied.

### Objective

To determine the role of phase angle in survival and HRQoL in a women population with H&N cancer.

### Results

The sample studied consisted of 32 patients with a mean age of 57.6 years.

Patients with a PA  $\geq 4.30$  had an  $\approx 50\%$  higher probability of survival at two years with a better quality of life compared to patients with a PA  $< 4.30^\circ$ .

Statistical differences were found in the functional and symptom scales, with lower functional scores and higher symptom scores in patients with low PA.

The ROC curve for women with H&NC according to the PA showed a cut-off point of  $4.30^\circ$  with an estimated sensitivity of 80% and an estimated specificity of 60%, with an area under the curve of 0.763 ( $p = 0.028$ ).

### Materials & Methods

This was a prospective cohort analysis. Non-probability sampling was performed and 32 patients aged 20-90 years with confirmed H&NC were enrolled and followed up for at least two years. The selected subjects were divided into two groups: women with PA  $< 4.30^\circ$  and women with PA  $\geq 4.30^\circ$ . Both of them were followed up for at least two years.

Height was measured by the Seca 213 height scale. In addition, the mBCA Seca 514 bioelectrical impedance analysis device was used to obtain the patients' weight, phase angle, total skeletal muscle mass index (SMMI), total body fat percentage and body mass index (BMI). A Jamar Plus+ Digital Hand Dynamometer was used to measure hand grip strength.

The EORTC QLQ-C30 v.3 questionnaire and the EORTC QLQ-H&N35 supplementary module for H&NC were used to assess health related quality of life (HRQoL). Both EORTC questionnaires' items required the linear transformation of each item or multi-item scale to get a range of scores from 0 to 100.

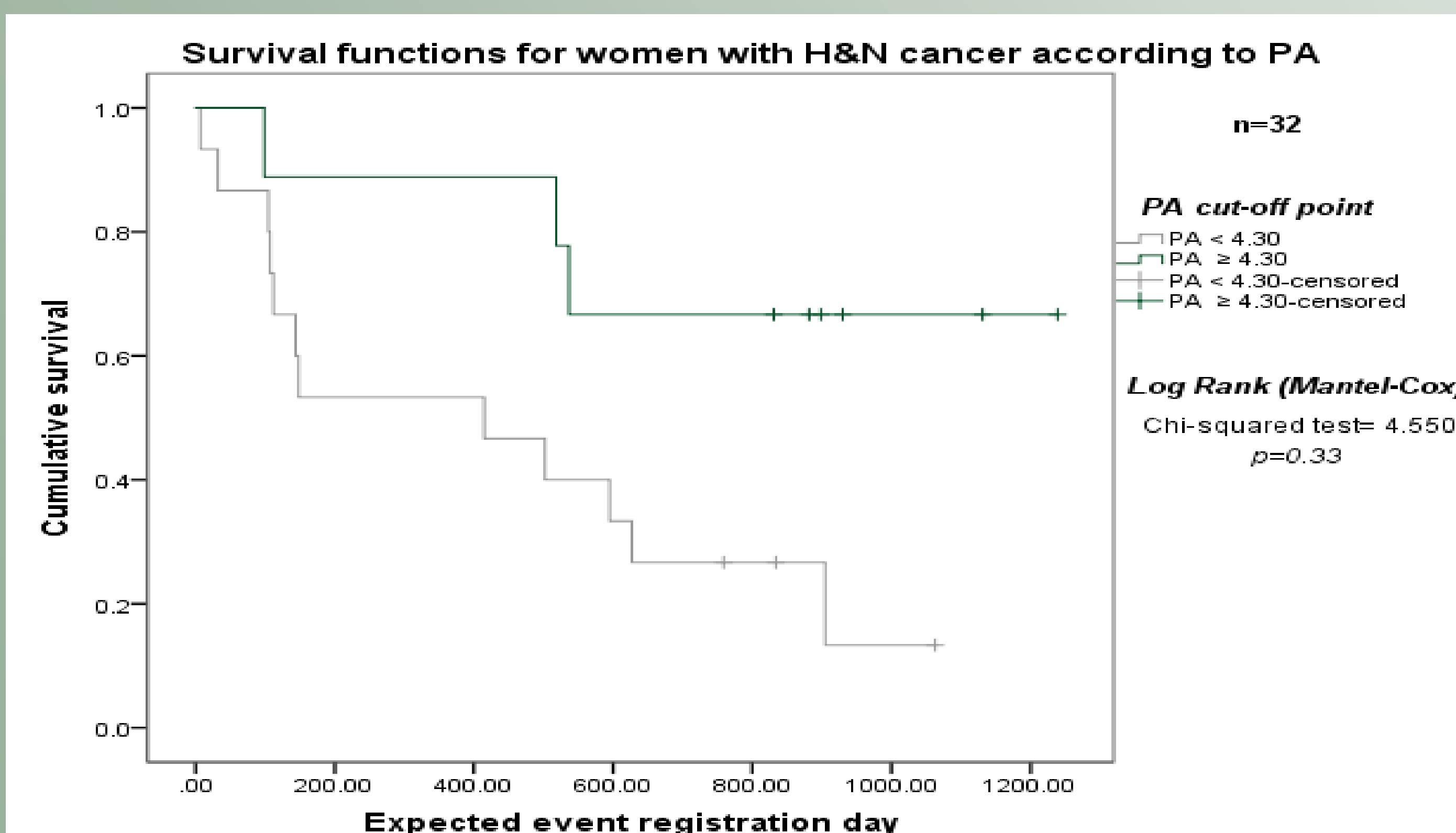
For the descriptive analysis, the respective operations were performed for parametric and non-parametric variables.

For the inferential analysis, Student's t-test and chi-square were calculated.

The Kaplan-Meier curve with Mantel-Cox, Breslow and Tarone-Ware tests were used for the analysis of survival and validity of the diagnostic test. In addition, a ROC curve analysis was performed to estimate diagnostic sensitivity and specificity.

Relationships between scores on the EORTC QLQ-C30 and EORTC QLQ-H&N35 questionnaires and phase angle in women							
Variable	PA < 4.30 n= 20			PA $\geq 4.30$ n= 12			p*
	Mean	SD	CI 95%	Mean	SD	CI 95%	
Scores on the EORTC QLQ-C30 questionnaires							
Physical functioning	66.67	32.23	51.58 - 81.75	84.44	18.05	72.97 - 95.92	0.055
Loss of appetite	43.33	39.14	25.01 - 61.65	16.67	26.59	-0.23 - 33.56	0.029
Scores on the EORTC QLQ-H&N35 questionnaires							
Senses problems	33.16	37.47	15.62 - 50.70	5.56	14.79	-3.84 - 14.96	0.007
Speech problems	41.125	52.78	13.89 - 66.67	16.665	33.33	0.00 - 33.33	0.047
Teeth	56.04	47.67	33.72 - 78.35	25.00	32.18	4.56 - 45.44	0.036
Sticky saliva	52.06	46.35	30.37 - 73.76	19.44	26.43	2.65 - 36.24	0.017

SD: Standard deviation. CI: Confidence interval. \*t-Test for independent samples (parametric quantitative data); statistical



### Conclusion

Malnutrition in our population is reflected in the lower PA cut off point than in other populations, which negatively impacts the HRQoL. Even with an extremely low number of female patients with non-thyroid H&N cancer, phase angle lower than  $4.3^\circ$  was the most crucial predictor of impaired HRQoL, worse survival and a risk factor for death.

### References

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