Muscle strength, phase angle and body composition in patients with neuroendocrine tumors: a case for obesity paradox?

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Background

Malnutrition is a widely recognized risk factor associated with unfavorable outcomes among patients with malignancies, impacting treatment response, prognosis, and overall quality of life. Limited data are available about nutritional status in individuals with neuroendocrine tumors (NETs), a heterogeneous group of rare neoplasms originating from neuroendocrine cells distributed throughout the body. Our study aimed to describe nutritional status among patients diagnosed with NETs.

Methods

In this pilot, observational study, we enrolled NET patients referring to NETTARE unit of Sapienza University of Rome – Policlinico Umberto I hospital and Sant'Andrea hospital. All participants underwent anthropometric assessment, Bioelectrical Impedance Analysis (BIA), Dual x-ray Absorptiometry (DXA) and handgrip strength test (HGS).

Results

We included 31 patients (51,6% men), mean age: 62.1± 10.5 years, mean body mass index (BMI): 28.1± 5.0 kg/m2. 28 out of 31 patients had gastro-entero-pancreatic NETs while 3 patients had lung NETs. 61% of subjects had metastatic disease, treated with somatostatin analogues (SAA). Comparing the two groups (non-metastatic and metastatic), we found a significantly lower phase angle (5.2 ± 0.5° vs. 6.1 ± 1.6°, p = 0.02) and HGS (20.3 ± 9.0 kg vs. 27.9 ± 9.6 kg, p= 0.046) in the non-metastatic group than the metastatic one. Also appendicular lean mass tended to be lower in NET patients without metastases (22.3 ± 9.9 kg vs. 26.6 ± 7.9 kg, p = 0.10).

Conclusion

Despite having a more advanced stage of disease, metastatic patients showed better phase angle values, muscle strength and muscularity compared to the non-metastatic group. These results may be attributed to the higher BMI values observed in this group, highlighting the potential role of the obesity paradox in patients with NET. Further investigation is needed to better understand the implications and underlying mechanisms of obesity paradox on this disease.

	All	Metastatic Disease	Non Metastatic
Patients, n (%)	31	19 (61)	12 (33)
Men, n (%)	16 (51,6)	13 (68,4)	3 (25)
Age (years)	62,1 (± 10,3)	62 (± 10,4)	61 (± 11,2)
GEP NET, n (%)	28 (90,3)	17 (89,5)	11 (91,7)
LUNG NET, n (%)	3 (9,7)	2 (89,5)	1 (8,3)
BMI (kg/m2)	28,1 (± 5)	28,9 (± 4,6)	26,9 (± 5,8)
WC (cm)	95,8 (± 14,7)	99,2 (± 12,9)	90,4 (± 17,6)
PhA°	5,73 (± 1,4)	6,1 (± 1,6)	5,2 (± 0,5)
FM (%)	26,9 (± 7,8)	25,6 (± 6,2)	29,4 (± 9,8)
ALM (kg)	25,1 (± 8,2)	26,6 (± 7,9)	22,3 (± 9,9)
HGS (kg)	25 (± 10)	27,9 (± 9,6)	20,3 (± 9,0)

Results are displayed as the mean (± standard deviation)

GEP NET= gastro-entero-pancreatic neuroendocrine tumor. WC= waist circumference. PhA°= phase angle. FM= Fat mass. ALM= appendicular lean mass. HGS= handgrip strength test.

References

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