

## Bioelectrical impedance is a useful adjunctive tool in assessing nutritional status in systemic sclerosis patients with gastrointestinal symptoms

N. M. Thoua<sup>1</sup>, C. P. Denton<sup>2</sup>, A. V. Emmanuel<sup>1</sup> and A. Forbes<sup>1</sup>

<sup>1</sup>GI Physiology Unit, University College Hospital, 235 Euston Road, London NW1 2BU, UK and <sup>2</sup>Rheumatology Department, Royal Free Hospital, Pond Street, London NW3 2QG, UK

Systemic sclerosis (SSc) is an autoimmune disorder which can affect multiple organs. The gastrointestinal (GI) tract is affected in up to 90% of patients and although in a small minority of patients severe GI involvement may lead to intestinal failure and malnutrition, the effect of less severe GI involvement in nutritional status is not known. The aim of this study was to investigate the nutritional status of SSc patients with or without moderate intestinal symptoms.

Thirty-five SSc patients (25 with diffuse and 10 with limited cutaneous SSc) referred to a tertiary referral centre were studied. Nineteen patients (16 female) reported moderate to severe GI symptoms (Sx) and 16 patients (all female) reported minimal GI symptoms (ASx). All patients had anthropometric measurements (weight, height, mid-arm circumference and triceps skinfold thickness), indirect calorimetry for measurement of resting energy expenditure (REE) and bioelectrical impedance (BIA) for assessment of body composition.

Results are given as median and 25–75% range. The median age of all patients was 58 years (52–65), disease duration 7.5 years (3.7–13.5), no difference between the 2 groups. There was no significant difference in the anthropometric measurements between the 2 groups, BMI: Sx 23 (19.5–25.5) versus ASx 23.15 (10–24.9); *P* = NS. The REE expenditure was lower in the Sx group (REE: Sx 1170 [1000–1368] versus ASx 1289 [1189–1382]; REE % predicted: Sx 90 [82–100] versus ASx 100 [92–106]; *P* < 0.02). BIA data are shown in the table.

	Sx – median (25–75%)	ASx – median (25–75%)	<i>P</i> value
Impedance	638 (547–712)	804.5 (667.5–1054)	<b>0.0085</b>
Phase angle	6.06 (5.15–14.87)	9.8 (5.42–25.32)	0.21
Reactance	73 (57.4–129)	125.8 (68.3–451)	0.095
Capacitance	43.5 (24.6–55.4)	21.9 (6.9–45.7)	0.095
Fat %	31.7 (26.77–35.65)	38.21 (32.31–41.11)	<b>0.01</b>
Extra-cellular water (ECW) %	42.81 (37.91–45.12)	35.72 (29.68–43.02)	<b>0.009</b>
Total body water (TBW) %	50.16 (47.67–53.55)	43.8 (40.99–51.7)	<b>0.033</b>

GI involvement is common in SSc and can affect both nutrient intake and absorption. Even in the absence of weight loss and normal anthropometric measurements, patients with moderate to severe GI symptoms, have altered body composition with higher extracellular water volume and lower fat mass as assessed with BIA. These differences may just be a reflection of chronic illness and are not necessarily a marker of sub-clinical malnutrition. Longitudinal studies in SSc patients would be helpful in understanding better both these changes and the role of BIA as a tool for nutritional assessment and prognostic modelling.