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Original article

Nutritional status and gastrointestinal symptoms in systemic sclerosis patients☆

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SUMMARY

Background and aims: Gastrointestinal manifestations in systemic sclerosis (SSc) can influence the nutritional status of patients. Our objective was to examine whether nutritional status was associated with symptoms captured by the University of California Los Angeles Scleroderma Clinical Trials Consortium Gastrointestinal Tract Questionnaire (GIT 2.0).
Methods: A series of 24 University of Utah SSc Center patients were assessed using the MUST, SGA, and GIT 2.0. A single evaluator administered the nutrition assessment and gastrointestinal symptom questionnaire.
Results: Nine patients were assessed at moderate to high risk of malnutrition using the Malnutrition Universal Screening Tool (MUST) and 12 patients with moderate to severe malnutrition using Subjective Global Assessment (SGA). Neither MUST nor SGA status was associated with duration of disease. Soilage, social function and emotional subscores were associated with SGA nutritional status. Clinically significant differences in Total GIT 2.0 score, reflux, distention/bloating, soilage, diarrhea, social function and emotional well-being were observed across levels of nutritional status.
Conclusions: Clinically significant differences in gastrointestinal tract symptoms were observed across levels of nutritional status in patients with varying severity of SSc. These two clinically utilized tools, the SGA and the GIT 2.0, appear to be complementary in the evaluation of SSc patients.

1. Introduction

Systemic sclerosis (SSc) is believed to involve an appropriate genetic background, vascular injury and hypoxia, and excessive deposition of extracellular matrix proteins in skin, lungs, and other organs.[1] Predicting outcome for an individual patient with SSc is challenging because the disease can be heterogeneous both in its presentation and progression of involvement of vital internal organs. In patients with SSc, malnutrition is common and not identified by BMI.[2] As with many other chronic diseases, in SSc it is difficult to separate disease damage (severity) from disease activity, however, increasing weight loss in SSc is thought to help differentiate between mild (5.0–9.9 kg) to end-stage (20+ kg) disease.[3]

Gastrointestinal tract (GIT) involvement occurs in approximately 90% of patients with SSc, and is characterized by varying degrees of inflammation, vascular damage, and fibrosis in both the upper and lower GIT.[4] The multiple GIT manifestations in SSc can affect the nutritional status of patients by several mechanisms.[5] Major morbidity including profound gastrointestinal dysmotility, bacterial overgrowth, and poor nutritional status can result from this GIT involvement. Unfortunately, treatment for SSc is challenging and no immunosuppressive or anti-fibrotic therapy is currently effective for treatment of GIT co-morbidities in SSc. As such, for GIT disease a focus on symptomatic relief, with anti-reflux measures, rotating antibiotics, and pro-kinetics, is the standard of care.[6] It has been suggested that nutritional support may help prevent progressive debilitation in SSc and that nutritional treatment has impact on quality of life and survival. A North American expert panel has recommended an assessment of nutritional status in patients with SSc.[7]

Nutritional status in SSc is beginning to gather attention due to reported malnutrition in up to ranging 56% of patients.[2,5,8] However, traditional markers of nutritional status including BMI and serum albumin do not seem to be good indicators of malnutrition in SSc.[2,8] The few clinical reports of body composition suggest that lower lean body mass[5] with variable fat mass[2] is

Abbreviations: SSc, Systemic sclerosis; SGA, Subjective Global Assessment; GI, Gastrointestinal Tract; GIT 2.0, University of California Los Angeles Scleroderma Clinical Trials Consortium Gastrointestinal Tract 2.0; MUST, Malnutrition Universal Screening Tool.

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associated with disease outcome. Correlates of malnutrition include length of disease duration, diffuse cutaneous disease, physician global assessment of disease severity, hemoglobin, oral aperture and abdominal distention.[2,8] Risk for malnutrition was identified among 18% of two hundred fifty-eight SSc patients with poor appetite, bloating and abdominal swelling as the only gastrointestinal predictors of malnutrition using the Malnutrition University Screening Tool (MUST).[8]

The purpose of this study is to evaluate nutritional status and its association to gastrointestinal symptomatology in SSc patients. We examined the association of gastrointestinal symptoms—captured by UCLA GIT 2.0 and weight loss and manifestations of malnutrition—captured by SGA and MUST.

2. Materials and methods

Patients were recruited from the University of Utah SSc Center and consented during their routine clinic visit (IRB number 00038705). Inclusion criteria include adult patients (≥18 years) with a diagnosis of SSc.[9] A series of 24 patients seen serially were assessed using the SGA and GIT 2.0 questionnaires. Weight was measured in the clinic on the day of study enrollment. Change in weight from a 2-week interval was obtained by patient recall as an increase, no change, or decrease. Change in weight at 6 months and one year was calculated using weights recorded on pulmonary function tests documented in the medical record. A single evaluator (TF) asked the patients questions regarding dietary intake change, gastrointestinal symptoms and functional capacity, and evaluated metabolic demand, physical signs of malnutrition and overall SGA score.

The University of California Los Angeles Scleroderma Clinical Trials Consortium Gastrointestinal Tract 2.0 (GIT 2.0) is a validated, patient-reported outcome measure to assess health related quality of life (HRQOL) and GIT severity in SSc.[10,11] This 34-item instrument has seven subscales: reflux, distention/bloating, diarrhea, fecal soilage, constipation, emotional well-being, and social function and a total GI score. All Scales are scored from 0.0 (better HRQOL) to 3.0 (worse HRQOL) except diarrhea and constipation scales that range from 0.0 to 2.0 and 0.0 to 2.5, respectively. The total GI score is the average of 6 of 7 scales (excludes constipation) and total GI score are scored from 0.0 (better HRQOL) to 3.0 (worse HRQOL). This tool is available online at http://uclascleroderma.researchcore.org/. It is easy to use in the clinical setting, however, does not capture weight change or physical exam findings of malnutrition.

The Subjective Global Assessment (SGA) was determined to be a reliable (repeatable) method to assess nutritional status based on features of the history and physical examination.[12] Subsequently, it has been successfully used to classify nutritional status of patients suffering from various chronic diseases.[13–15] This tool uses medical history and physical examination to determine risk of malnutrition without the need for precise body composition analysis. It is considered the most reliable and efficient method of nutrition assessment.[16] Importantly, it evaluates time course of weight loss and whether the patient feels malnourished and includes assessment of gastrointestinal symptoms. This tool is also available online at http://www.hospitalmedicine.org/geriresource/toolbox/subjective_global_assessment.htm. Khanna et al. estimated the smallest change in score that patients perceive as beneficial or detrimental, in other words, symptoms being better or worse. These minimally important differences (MID) are used to assess clinical significance of changes in the GIT 2.0 scales.[18]

We screened for malnutrition using the Malnutrition Universal Screening Tool (MUST). 'Malnutrition Universal Screening Tool' (MUST) http://www.bapen.org.uk. Briefly, MUST assigns risk for

Table 1
Systemic sclerosis patient characteristics.

	All	Subjective Global Assessment nutritional status		
		Not malnourished	Suspected or moderately malnourished	Severely malnourished
Age	54 ± 13	49 ± 12	58 ± 13	62 ± 16
Gender				
Women	20	10	6	2
Men	4	2	3	1
Type of systemic sclerosis				
Limited	21	11	8	2
Diffuse	3	1	1	1
Immunosuppression				
Cellcept	5	2	2	1
Methotrexate	3	3	0	0
Cytoxin	1	0	0	1
Prednisone	2	1	1	0
Imuran	2	0	2	0
None	11	6	4	1
Interstitial lung disease	14	5	5	3
Pulmonary arterial hypertension	13	4	6	2
Digital ulcers	6	2	3	1
Probiotics	14	5	8	1
Medsger severity index weight*				
Normal	11	8	3	0
Mild (1)	2	0	2	0
Moderate (2)	2	1	0	1
Severe (3)	3	3	0	0
End-stage (4)	6	0	4	2
Malnutrition Universal Screening Tool (MUST)[a]				
Low risk	15	10	5	0
Moderate risk	2	1	1	0
High risk	7	1	3	3

* mild weight loss 5-9 kg; moderate 10-14.9 kg; severe 15-19.9 kg; and endstage 20+ kg' for the symbol.
[a] Significant difference across SGA nutritional status.