Screening and management for malnutrition and related gastro-intestinal disorders in systemic sclerosis: recommendations of a North American expert panel

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Malnutrition may be common in SSc and a multidisciplinary approach is important.

Introduction

Malnutrition has been defined as “a state of nutrition in which a deficiency, excess or imbalance of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form (body shape, size, composition) and function and clinical outcome” (1). Although the diagnosis of malnutrition is sometimes difficult to make, it is clear that patients with SSc and GI involvement are at risk for malnutrition (2, 3). In some cases, this may be related to malabsorption secondary to bacterial overgrowth (4). In addition, motility disorders of the gastrointestinal tract may lead to early satiety and persistent nausea and vomiting. Malnutrition is prevalent in SSc, with a recent study by the Canadian Scleroderma Research Group (CSRG) reporting that almost 30% of an unselected population of SSc patients was at a medium to high risk of malnutrition. Moreover, malnutrition in SSc may be severe, as is evidenced by the fact that parenteral nutrition is at times necessary in SSc patients (4-6).

In June 2008, the CSRG convened a meeting of experts in the areas of nutrition (PD-(nutrition), MD-(nutrition), GF, WGP-(motility), PPT-(malabsorption)), gastroenterology (MD-(nutrition), GF), oral health in SSc (MG), SSc (rheumatologists MB, MH, DK) and gastroenterology (MD-(nutrition), GF, WGP-(motility), PPT-(malabsorption)), to discuss the nutrition-GI paradigm in SSc and develop recommendations, based on expert consensus, that would be useful to physicians caring for SSc patients. The specific objectives of the meeting were to develop recommendations for 1) screening for malnutrition in SSc, and 2) management of malabsorption in SSc.

A. Assessment

1. Screening for malnutrition

Although malnutrition may include an excess of certain nutrients, in the context of SSc it was agreed that malnutrition usually refers to undernutrition. The expert panel agreed that physicians should screen ALL patients with SSc for malnutrition. The initial screening procedure should include an assessment of general appearance, eliciting...
a history of involuntary, significant weight loss and utilising an easy-to-administer screening tool such as the “Malnutrition Universal Screening Tool” (MUST) (1, 9, 10) or one of the many other screening tools available (9-37). Some of these tools, however, were directed at specific patient populations such as cancer (17), the elderly (18, 19, 22, 24, 26, 27, 29, 31, 32, 38, 39) or hospitalised patients (17, 30-32). Only the MUST has been studied in SSc (5). Although it was not specifically validated, for example by comparing it to a nutritionist’s assessment, it did correlate well what one might expect to find in malnourished patients such as more gastrointestinal complaints, diffuse disease, worse physician global assessment of disease severity, lower haemoglobin, smaller oral aperture, abdominal distension on physical examination, and physician-assessed possible malabsorption. This suggests good construct validity.

Body weight loss is the most sensitive indicator of malnutrition and should be performed at regular intervals A general rule of thumb for significant weight loss was identified as follows: 1%–2% in the previous week, >5% in the previous month, >7.5% in the previous 3 months, and >10% in the previous year (40). A body mass index <18.5 kg/m² is suggestive of protein-energy malnutrition (PEM) (41).

In addition, the panel agreed that a set of basic laboratory tests pertinent to malnutrition should be obtained for all patients with SSc. These should include: serum albumin (may indicate nutritional deficiency such as iron, folic acid or vitamin B12), serum carotene (indicative of fat malabsorption and inexpensive although limited sensitivity or specificity), serum folate (elevated in bacterial overgrowth but not valid if the patient is on folic acid supplements) (42). Serum albumin is commonly used to screen for malnutrition but it is a negative acute phase reactant that is neither sensitive nor specific for PEM. Serum albumin is commonly normal in prolonged “adapted” energy malnutrition (marasmus) but when levels falls below 35g/L (or 3.5 mg/dl), PEM must be ruled out.

The physician should also ask a series of questions that pertain to GI involvement and which may imply underlying disease that could be the cause of the patient’s malnutrition. These questions could be in the form of a validated questionnaire (43, 44) (available from author DK at dkanna@mednet.ucla.edu) or a series of questions such as the 14 questions used by the CSRG (Appendix). Finally, the physician should briefly screen for oral health (presence of teeth, ability to chew without pain, changes in taste), saliva production and depressive symptomatology.

Any screening test suggesting malnutrition should be confirmed by a full nutritional evaluation to confirm the diagnosis and determine its severity. There has never been a validation of the clinimetric properties of any particular malnutrition screening tool specifically in SSc.

2. Evaluation of malnutrition

If malabsorption is suspected, the following tests should be considered for further confirmation: serum methylmalonic acid (MMA) (elevated in malabsorption), zinc (decreased in malabsorption), 25-OH vitamin D levels, vitamin K level or prothrombin time (PT) and a C14 xylene breath test or a hydrogen breath test. Although the xylene breath test may be superior to the hydrogen breath test, the latter may be more readily available to some health care providers (45). Furthermore, although the hydrogen breath test is not as sensitive or specific it can be helpful since most SSc patients have such severe bacterial overgrowth when malabsorption occurs that the hydrogen breath test will likely be abnormal (46).

Patients who screen positive for malnutrition should be referred to a dietitian for a full nutritional evaluation to determine the type and severity of malnutrition and to begin appropriate treatment. Patients who have signs of weight loss, dysphagia, malabsorption, esophageal dysmotility, GERD, gastroparesis, or bacterial overgrowth but are not clinically malnourished could also benefit from nutritional intervention and should be referred to the dietitian to prevent vitamin or mineral deficiencies and progression to PEM. If treatment for PEM is contemplated, baseline and periodic serum pre-albumin sampling could be useful to monitor improvement in nutritional status, especially if it is abnormally low at baseline (47-49).

B. Interventions

1. For every patient in whom malnutrition is suspected based on initial assessment

a. Most cases of suspected malnutrition should be referred to both a dietitian and a gastroenterologist. The dietitian and gastroenterologist should have the expertise to assess and manage nutrient malabsorption and other issues specific to SSc such as delayed gastric emptying, dysphagia and abdominal distention. Use of dietary supplements including commercial meal replacement products may be included into a comprehensive nutritional plan formulated by a dietitian. Although there are no specific studies of their use in SSc, the use of enteral supplements in those who have SSc should be the same as other chronic diseases (50, 51) until a swallowing abnormality precludes drinking. Similarly, there are no studies regarding specific diets. However, the opinion of the experts is that there is no indication to restrict the intake of fats or sugars. Patients should be encouraged to eat a mixed balanced diet that meets their requirements for both macro and micro nutrients (assuming there are no other medical contraindications).

b. Consider referral to a patient support group. These may be good sources of educational material and support.

c. If screening uncovers depressive symptomatology, referral to a mental health worker should be done.

d. If screening reveals oral health problems, referral to a dentist, preferably with expertise in treating patients with SSc, should be done.

e. Consider referral to a speech pathologist if screening reveals problems with the oropharyngeal phase of swallowing.

2. Special situations

a. Xerostomia. Rule out true Sjögren’s syndrome through serology and, if appropriate, minor salivary gland biopsy. Biotine products and artificial saliva
could be prescribed for symptomatic treatment. A trial of pilocarpine 5 mg or Evoxac 30 minutes before meals could also be considered.

b. Esophageal disease. Most of the panel agreed that PPI therapy should be used first line for symptoms of heartburn and dyspepsia (52-55). Doubling of the dose could be considered in refractory disease, as could the addition of H2 blockers at bedtime (55, 56). One panel member recommended step up therapy for acid reflux disease: H2 blockers (still adequate in 50%) or low dose PPI (e.g. Rabeprazole 10-20 mg qd-q2d) before full dose PPI because of the risk of exacerbating small bowel bacterial overgrowth with PPI therapy (57). Most of the other experts however preferred PPI despite possible side effects and also noted that tolerance can develop to H2 blockers (58).

c. Gastric emptying disorder. If symptoms of gastroparesis such as early satiety, nausea and vomiting are present, a radionuclide gastric emptying study should be ordered and the patient should be referred to a gastroenterologist to rule out gastric outlet obstruction. Pro-motility agents such as erythromycin 100-150 mg qd, azithromycin 400 mg/d, metoclopramide 10-15 mg qid, and domperidone 10-20 mg qid may be helpful, although there is very limited data from controlled clinical trials demonstrating efficacy. Cisapride and tegaserod are also useful gastrokinetic agents, but their use is now restricted in North America.

d. Malabsorption. If bacterial overgrowth is suspected, irrespective of the results of breath testing, a 10-day course of a selective antibiotic could be tried (59). Some authors give an initial course of antibiotics for 21 days and then a 10-14 days course, as needed (60). The following antibiotics may be considered:

<table>
<thead>
<tr>
<th>Agent</th>
<th>Dose</th>
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<tr>
<td>Chloramphenicol</td>
<td>250 mg</td>
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<tr>
<td>Rifaximin</td>
<td>400 mg</td>
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<tr>
<td>Nitazoxanide</td>
<td>500 mg</td>
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If there is a symptomatic response but the patient quickly relapses, use the selective antibiotic for the first 10 days of each of 4 consecutive months. Some patients continue to relapse whenever antibiotics are stopped. In these individuals continuous antibiotic therapy may required. Alternatively, adding a probiotic when antibiotics are withdrawn should be considered.

In cases with refractory symptoms due to small bowel involvement, consider therapy with octreotide 50 mcg sc at bedtime (61, 62). This agent induces propulsive contractile activity throughout the small bowel. The physician should be aware of possible disadvantages including inhibitory effects on gastric emptying, pancreatic secretions and gallbladder contractions. In addition, octreotide is costly and requires parenteral administration.

e. For situations which do not respond to the above therapies. The group recommends that in these cases treatments such as parenteral nutrition or enteral nutrition via a jejunostomy may be considered. In patients with intact small bowel function enteral nutrition should always be attempted first as parenteral nutrition can be associated with complications including catheter sepsis, vascular thrombosis and liver failure. This decision should be individualised and should depend on close communication between the rheumatologist, gastroenterologist and the dietitian.

C. Follow-up

All SSc patients should weigh themselves monthly and report any sudden significant changes in weight as defined above in Section A.1. They should be assessed by the rheumatologist once a year for signs of malnutrition. For all patients treated with dietary manipulation or specific GI measures for underlying malnutrition, the patient’s nutritional status should be re-assessed longitudinally with the same tools that demonstrated abnormalities before therapy. It should not be assumed that apparently successful treatment of an underlying GI problem will necessarily be successful in treating the nutritional abnormality. Malnutrition, although a common problem of the SSc patient, can be detected and treated in a step-wise manner if nutritional assessment and therapy are incorporated into the overall care plan of the patient.

Acknowledgements

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References


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### Appendix

GI questions used by the Canadian Scleroderma Research Group

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<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1. I have (or have had) <strong>a poor appetite</strong>, on most days</td>
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<td>2. I have (or have had) <strong>difficulty in swallowing</strong> – food or liquids sometimes get stuck behind my breastbone on the way down</td>
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<td>3. I have (or have had) <strong>food or acid-tasting liquid that comes back up into my mouth or nose</strong></td>
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<td>4. I wake up (or have woken up) at night <strong>choking</strong></td>
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<td>5. I have (or have had) <strong>a burning feeling rising from my stomach or lower chest up towards my neck</strong>, on most days</td>
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<tr>
<td>6. I have (or have had) <strong>a feeling of being full shortly after starting a meal</strong>, on most days</td>
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<td>7. I have (or have had) <strong>visible swelling of my abdomen (stomach) or bloating</strong> (the feeling that one must loosen one’s clothes), on most days</td>
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<td>8. I have (or have had) <strong>nausea and/or vomiting</strong>, on most days</td>
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<td>9. I have (or have had) <strong>constipation</strong>, on most days</td>
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<td>10. I have (or have had) <strong>diarrhea</strong>, on most days</td>
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<td>11. I require (or have required) <strong>antibiotics to control my diarrhea</strong></td>
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<td>12. I have (or have had) <strong>greasy, foul smelling stools</strong></td>
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<td>13. I have (or have had) <strong>fecal incontinence</strong> (soiled my pants with stool)</td>
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<tr>
<td>14. I require (or have required) <strong>feeding (for nutrition - not just intravenous water) through my veins</strong></td>
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