

Functional Evaluation of the Gastrointestinal Tract

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The connection between the immune system and the gastrointestinal tract:

- ▶ Autoimmune diseases damage the gastrointestinal tract
- ▶ Diseases of the gastrointestinal tract influence the function of the immune system
- ▶ Morphological consequences
- ▶ Functional consequences

Prevalence of GI symptoms in SSc I.:

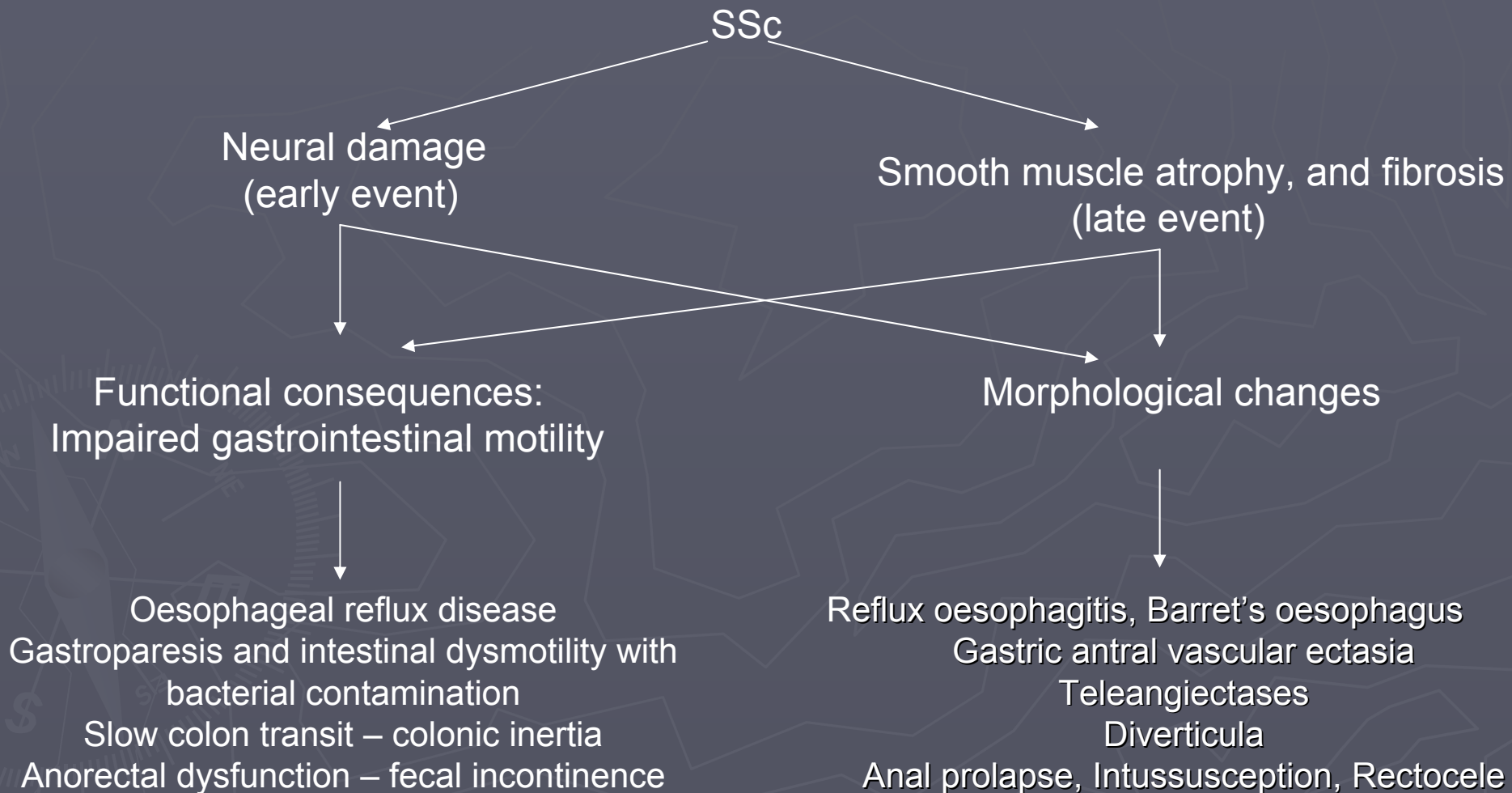
Symptom	dcSSc (36)	lcSSc (58)
Dysphagia	42 %	42 %
Heartburn	39 %	59 %
Bloating	33 %	42 %
Nausea/vomiting	25 %	27 %
Constipation	22 %	28 %
Diarrhoea	19 %	16 %
Fecal incontinence	5 %	6 %

Data were obtained from patient-questionnaires at Department of Immunology and Rheumatology of University of Pécs

Prevalence of GI symptoms in SSc II.:

	dcSSc (36)	lcSSc (58)
Positive barium swallow	69 %	39 %
Oesphago-gastro-bulboscopy		
Reflux oesophagitis	42 %	48 %
Barrett's metaplasia	0	12 %
Vascular malformation	5 %	4 %
Malabsorbtion	11%	7 %

Pathology of gastrointestinal involvement in systemic sclerosis:



Autonomic neuropathy:

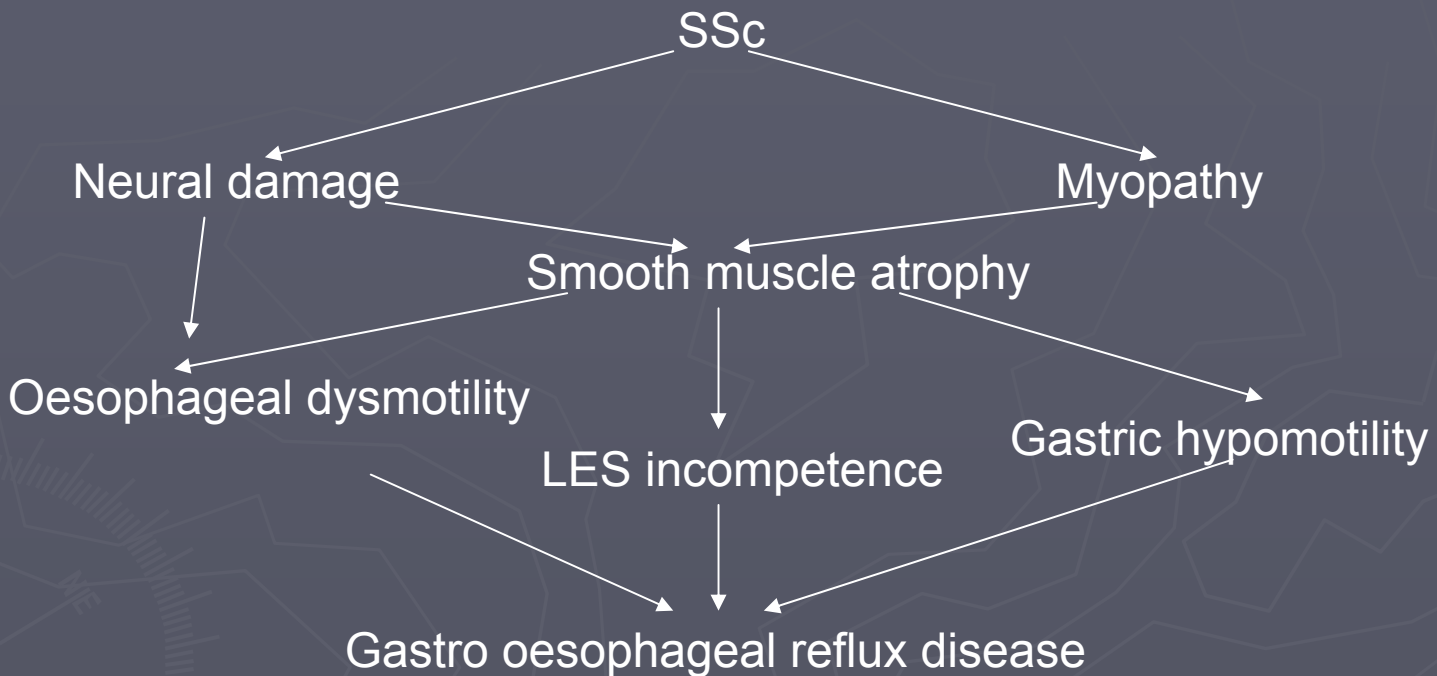
▶ SSc is associated with neuropathy:

- Sympathic skin response
- Cardiovascular innervation
- Urogenital innervation
- Impotence
- Pupillary autonomic innervation
- Glaucoma

▶ SSc:

- Neuropathic motility disturbance
- Functional antibodies inhibiting M3-muscarinic receptor mediated enteric cholinergic neuronal transmission
- Antimyeenteric neuronal antibodies:
 - ▶ Paraneoplastic syndrome (ANNA-1):
 - inflammation and destruction of myenteric cells
 - ▶ Sjögren's syndrome
 - ▶ Achalasia

Oesophageal dysmotility in systemic sclerosis:



Oesophagitis, ulcers, strictures, endobronchyoesophagus, Barrett's oesophagus

Extraoesophageal manifestations:
Posterior laryngitis, Hoarseness,
Asthma bronchiale, Pulmonary fibrosis?

▶ How frequent is Barrett's metaplasia and adenocarcinoma in SSc?

- ▶ Segel et al Gastroenterology 89:485-8, 1985:
 - 680 pts followed for 22 years: **the prevalence of adenocarcinoma of the oesophagus was not more frequent**
- ▶ Katzka et al. Am. J. Medicine 82:46-52, 1987:
 - **75 SSc pts: 24 pts had EGB, 9 Barrett's metaplasia and 2 adenocarcinoma were found**
 - lcSSc (CREST): the motility disorder is more frequent, increased risk to develop Barrett's metaplasia?

▶ How frequent is SSc in Barrett's esophagus?

- ▶ Sprung et al., Am. J. Gastroenterol. 80:518-22, 1985:
 - **107 Barrett** esophagus pts:
 - **3 SSc**
 - 2 high grade dysplasia

Nincs konkluzió. Most gyakoribb vagy nem?

Reumatológusoknak készül: nem tudják, hogy mi a Barrett.

Approach to esophageal involvement:

▶ Endoscopy:

- Dysphagia
- Bleeding/Anemia
- Weight loss
- Screening for Barrett's esophagus

▶ Barium esophagram:

- Structure of the esophagus
- Qualitative information about motility

▶ Manometry:

- Early detection, asymptomatic patients

▶ pH monitoring:

- Evaluation of pharmacotherapy

▶ Scintigraphy:

- High false positive rate

▶ Minimal requirements to establish esophageal involvement:

- Typical symptoms of ERD
- Barium swallow
- Proton pump inhibitor test
- Manometry to verify early involvement

Gastric dysmotility:

- ▶ Impaired gastric emptying
- ▶ Altered antro-duodenal coordination:
 - Early SSc: antral hypomotility and duodenal hypermotility
 - Late SSc: rare and low amplitude contractions in the antrum and duodenum
- ▶ Migratory myoelectric complex (MMC) is frequently missing

Clinical symptoms:

- ▶ Gastroparesis – not frequent:
 - Distension
 - Early satiety
- ▶ Bezoars
- ▶ Gastro-esophageal reflux disease
- ▶ Mucosal pathologies: Gastric antral vascular ectasia („GAVE“)

Approach to gastric involvement

▶ Gastric emptying studies:

- Barium radiography
- Emptying of radioactive meal
- C13 octanoic acid breath test

▶ Endoscopy

▶ Minimal requirements to establish gastric involvement:

- Typical symptoms of gastroparesis
- Demonstration of impaired gastric emptying
- Demonstration of vascular malformation by OEGB

Intestinal involvement:

▶ Pathology:

- Intestinal dysmotility
- MMC (migratory myoelectric complex) is frequently lacking

Clinical symptoms:

Intestinal bacterial contamination:

- Abdominal distention
- Malabsorption
- Loss of weight

▶ Chronic intestinal pseudoobstruction

▶ Malabsorption:

- Bacterial overgrowth
- Impaired absorption
- Pancreatobiliary insufficiency
- PPI treatment (?)

▶ Teleangiectasia

Approach to intestinal involvement:

- ▶ Abdominal X-ray and CT
 - Small bowel barium follow
 - ▶ Jejunal cultures
 - ▶ Hydrogen breath test
 - ▶ D-xylose absorption test
 - ▶ (Schilling's test)
 - ▶ 24 hr fecal fat determination
 - ▶ Intestinal manometry
 - ▶ Serum carotene, prealbumin, INR, Bw., BMI
- ▶ Minimal requirements to establish intestinal involvement:
 - Typical symptoms
 - Hydrogen breath test
 - Plain abdominal X-ray w. small bowel barium

Large bowel:

- ▶ Frequently disturbed motility:
 - Slow colon transit, „real“ colonic inertia
 - Obstipation
- ▶ Morphological pathologies:
 - Wide mouth true colonic diverticula: occult bleeding
 - Teleangiectasia

Approach to large bowel involvement:

- ▶ Colonoscopy
- ▶ Barium enema
- ▶ Colonic transit study with Sitz marker
- ▶ Intestinal manometry
- ▶ Minimal requirements to establish intestinal involvement:
 - Typical symptoms
 - Sitz marker studies
 - Or
 - Colonoscopy/barium enema

Anorectum:

► Patophysiology:

- Impaired recto-anal inhibitory reflex
- Decreased resting and squeeze pressure in the anal canal
- Short anus canal
- Low rectal compliance

► Clinical symptoms:

- Fecal incontinence
- Diarrhoea
- Anal prolapse, rectocele, intussusception

Examination of anorectal manifestations:

- ▶ Colon transit studies
- ▶ **Defecography**
- ▶ Anorectal manometry w. balloon distention
- ▶ Electromyography
- ▶ Pudendal nerve latency test
- ▶ Colonoscopy
- ▶ Endoanal ultrasonography

Hepatobiliary involvement in SSc:

- ▶ Primary biliary cirrhosis:
 - Autoimmune liver disease
 - Inflammatory destruction of interlobular and septal bile ducts
 - 5-10 % of SSc patients is associated with PBC
 - 50 % of PBC patients have SSc, SS, Raynaud's phenomenon
 - Diagnosis:
 - ▶ elevated AST, ALT, ALP, γ -glutamyl transferase, bilirubin
 - ▶ Histology
 - ▶ Anti-mitochondrial antibody (AMA)

Conclusions:

- ▶ SSc influences:
 - Quality of life
 - Mortality
- ▶ The involvement of the gastrointestinal tract in SSc:
 - Complex
 - Heterogenous
- ▶ A new approach to the GI involvement is required:
 - New protocols to detect early damage
 - Follow up