

中文題目：全身性硬化症患者與小腸菌叢過度增生

英文題目：Small Intestine Bacterial Overgrowth in A 49-year-old Systemic Sclerosis Patient

作者：詹雅喬<sup>1</sup>，張詩欣<sup>2</sup>，黃建中<sup>2</sup>，藍忠亮<sup>3</sup>

服務單位：<sup>1</sup>中國醫藥大學附設醫院教學部一般科內科組，<sup>2</sup>中國醫藥大學附設醫院內科部風濕免疫科，<sup>3</sup>中國醫藥大學附設醫院風濕免疫中心

**Introduction:** Systemic sclerosis (SSc) is an autoimmune disease with skin and multiple organ involvement. Gastrointestinal tract is the most frequent affected internal organ, in up to 90% of SSc patients, with a predominance of esophagus and small bowel involvement. The affected small bowel presented with bowel loops dilatation, dysmotility, small intestinal bacterial overgrowth (SIBO) and chronic intestinal pseudo-obstruction (CIPO), etc. The mechanisms of SSc related SIBO include a vicious cycle with vasculopathy and ischemic neuropathy and myopathy. The subsequent fibrosis would contribute to the intestine dysmotility. Impaired motility and stasis of small intestine may enhance the bacterial colonization and excess gas production, contributing to SIBO syndrome. The most common symptom of SIBO is abdominal bloating. In severe case, malabsorption and spontaneous pneumoperitoneum may occur together. Here we reported a case of SSc with SIBO.

**Case presentation:** A 49-year-old male with SSc diagnosed for 10 years had combined interstitial lung disease (ILD) and pneumoconiosis, pulmonary hypertension, severe Raynaud's syndrome with fingers dry gangrene, and chronic HBV inactive infection. This time he presented to our rheumatology clinic with progressive dyspnea and abdominal distention for weeks.

The patient was a stoner and construction worker at his age of 25 to 45. Around 40 years old, he firstly presented with skin thickening over his fingers then extending to limbs, trunk, and face progressively. Laboratory data showed ANA: Speckled 1:160 and Anti-Scl-70 antibody positive. The lung function test showed severely decreased DLCO: 31.3%, FEV1/FVC : 74%, and FEV1: 47.8%, which suggestive of restrictive lung disease. He initially took hydroxychloroquine, prednisolone, aspirin, penicillamine and Rituximab 2000mg treatment yearly for 2 years. However, after loss follow-up 1 year, worsening cough, dyspnea on exertion, chronic diarrhea and abdominal fullness developed. The series CT image showed extensive subpleural patchy ground-glass opacities, reticulation, bronchiectasis, and fibrosis in both lungs with posterior and basal predominance (**Figure 1**). He started to receive mycophenolate mofetil, prednisolone, tocilizumab, sildenafil and nintedanib in the past 3 years. The patient suffered from recurrent bilateral spontaneous pneumothorax (**Figure 2**) and progressive fibrosing ILD in recent one year. We shifted nintedanib to pirfenidone half year ago due to nintedanib related pneumothorax rare cases reported. IVIG was also given for his refractory disease with few effects. We then performed pleurodesis with intrapleural tigecycline injection to stop his recurrent pneumothorax.

Besides, he previously had pneumoperitoneum episodes without peritoneal signs and it could recover itself under supportive care. During these years, his relapsing bloating and diarrhea would improve after short courses of metronidazole. However, within this year, severe bloating and cachexia

developed. Physical examination showed extreme tympanic on percussion especially after meal. The KUB revealed dilated small bowel loops with pseudo-obstruction pattern (**Figure 3a**). During hospitalization, we initially tried in vain including the prescription of erythromycin as prokinetic agent, amoxicillin and metronidazole for bacterial overgrowth and even combined parenteral nutrition support. Several kinds of probiotics were used but worsening the bloating. Nasojejunal tube insertion for sampling jejunum fluid and decompression was performed but it failed to pass the tube through gastric outlet due to extreme dilated small bowels. Finally, we used combined antibiotics with ciprofloxacin and metronidazole, which obviously ameliorate the small bowel distension and postprandial intestinal symptoms. (**Figure 3b**)

**Discussion:** In case of SIBO, comprehensive treatments contain dietary modifications, nutrition supplements, and medications, especially with broad-spectrum antibiotics for aerobic and anaerobic organisms. The effects of probiotics for SIBO are still controversial, and probiotics might deteriorate symptoms like our case. Eradication of bacterial overgrowth would rely on antibiotics treatment, and intermittent rotation of antibiotics could prevent drug resistance. Rifaximin, ciprofloxacin and metronidazole were effective by previous studies.

The gold standard for diagnosing SIBO are breathing tests (exhaled hydrogen) and bacterial colony count  $\geq 10^3$  CFU/mL in a duodenal/jejunal aspirate (3–5 mL). However, the equipment of breathing test is not available universal. Furthermore, the intestinal aspiration for bacterial colonies is an invasive procedure, and the threshold cutoff for the definition of a positive culture has been controversial. Thus, no relevant data was disclosed in our case.

**Conclusion:** The small bowel is the second common organ involved in SSc. Over half of SSc patients with small bowel involvement remain asymptomatic. The hallmark of GI manifestations in SSc patients including dysmotility and bacterial colonization, resulting SIBO. Despite treatments, SIBO would recur around 27.5% at 6 months, and lead to malabsorption and malnutrition. Persistent abdominal bloating gives the hint of SIBO diagnosis. Early detection and appropriate treatments for SIBO could improve the prognosis and life quality in SSc patients.

**Figures:**

Figure 1. (2022/03/01 chest CT) SSc with ILD



Figure 2. (2022/05/30 chest xray) bilateral pneumothorax

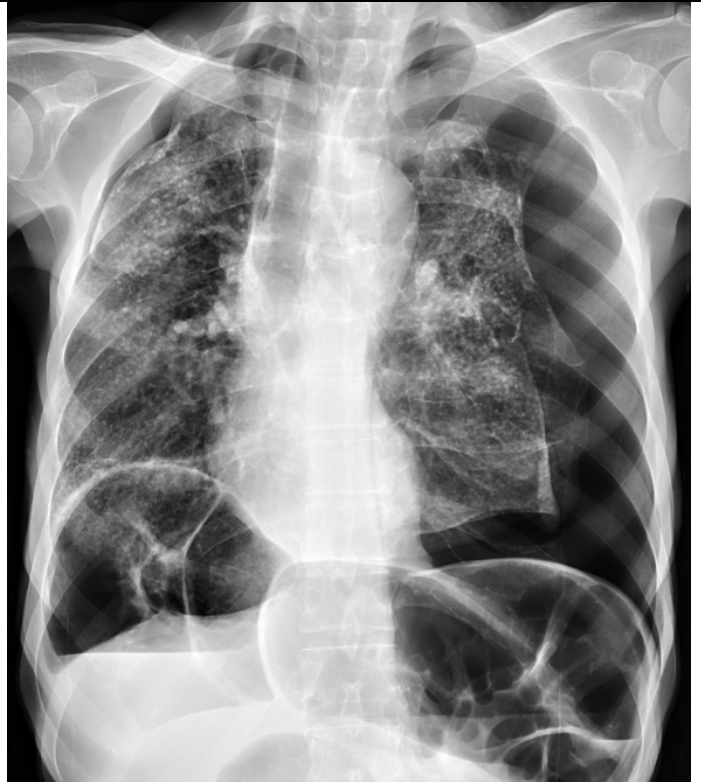


Figure 3a : KUB before treatment



Figure 3b: KUB after antibiotic treatment for SIBO

