One Test Too Many: Diagnostic Dominos

A 40-year-old woman with a history of progressive systemic sclerosis (scleroderma) presented to internal medicine clinic for routine follow up. She was malnourished, having difficulty eating secondary to abdominal bloating and pain for several weeks. On exam she had abdominal distension and was tympanic to percussion. An abdominal plain film was ordered for concern for possible obstructive pathology, and revealed pneumoperitoneum and pneumatosis intestinalis, both new findings.

Patients with systemic sclerosis can often have involvement of the GI tract. Individual manifestations can include gastroesophageal reflux, malabsorption, esophageal dysmotility and jejunal diverticuli\(^3\). Rarely benign spontaneous pneumoperitoneum can occur. Pneumoperitoneum occurring in the setting of advanced systemic sclerosis is often an incidental finding, it typically does not represent a ruptured viscous and patients will lack clinical signs of peritonitis. This process is theorized to occur from a breach in the intestinal mucosa from bacterial overgrowth\(^4\). Management is supportive and includes bowel rest. Hospitalization and surgical exploration are unnecessary and should be avoided\(^1\).

The patient returned to clinic 2 days later for follow-up. She had no abdominal pain at that time and felt that her abdominal distension had improved. She had a reassuring abdominal exam with normal bowel sounds and no tenderness to palpation. Despite this reassurance several laboratory tests were ordered given persistent concern over her x-ray findings. Complete blood count revealed a leukocytosis and the serum lactate was mildly elevated above normal. With these results we requested that she proceed to the emergency room. She was evaluated by Surgery who felt she did not have any evidence of peritonitis, but she was then admitted for observation overnight. She was made NPO and started on broad-spectrum antibiotics for a possible intra-abdominal infection. Several hours after admission and receiving the first dose of antibiotics she became febrile and tachycardic for a short period of time. This transient abnormality resolved spontaneously and patient remained asymptomatic afterward. The episode triggered re-evaluation by the surgical team who noted that she continued to have a normal abdominal exam. However, given the episode of fever and tachycardia they felt urgent exploratory laparotomy was indicated. The patient was adamantly against having surgery as she had legitimate fears concerning her ability to heal given her chronic malnutrition and steroid use. She eventually agreed to surgery, and underwent ex lap, which confirmed that the pneumatosis intestinalis was an incidental finding and did not represent more serious pathology. She was discharged home the next day and completed a 10-day course of oral antibiotics. After the fact, we felt that the transient fever and tachycardia that prompted surgery were a reaction to one of the many antibiotics she had received on admission.

This case is an example of the potential dangers of diagnostic testing, and how one abnormal result can lead to progressively more invasive and potentially dangerous
interventions. It was certainly reasonable to obtain an abdominal plain film for new abdominal distension and mild discomfort, and to have our patient return 2 days later to ensure her findings on x-ray represented benign spontaneous pneumoperitoneum and nothing more. When she returned with improved symptoms and a benign abdominal exam, the workup should have stopped. However, our unfamiliarity with the condition of benign pneumoperitoneum and discomfort with her x-ray findings led us to order laboratory tests. This eventually lead to unnecessary surgery which could have potentially had catastrophic results for our patient given her malnutrition and comorbidities.

Benign spontaneous pneumoperitoneum is a rare condition, but has been described previously in several case reports of patients with advanced systemic sclerosis. Our patient provides an example of the importance of thoughtful diagnostic testing. Taken in the context of her improving clinical status and continued reassuring exam, the abdominal x-ray findings were suggestive of a chronic process and not an acute bowel perforation. A more thoughtful approach that considers how additional information is a double edged sword – along with continued close follow in clinic to allay our concerns – would have prevented unnecessary lab tests, antibiotic administration, and ultimately, unnecessary surgery.