**When Primary is Secondary: A Case For Overdiagnosis**  
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**Story from the front lines:**  
A 28 year-old woman with history of chronic abdominal pain presented to the Emergency Department (ED) complaining of worsening, generalized abdominal pain over the past three days. She denied fevers, chills, dysuria, hematuria, or vaginal discharge. Her pain was similar to past flares. Prior evaluations have included a normal colonoscopy, upper endoscopy, abdominal ultrasound and CT imaging of the abdomen. She has a good relationship with her primary care doctor and usually has made a same day appointment and been treated as an outpatient during these episodes. She was unable to reach her doctor so she presented to the ED. She last had a CT abdomen done one year ago at this same hospital.

In the ED, she had normal vital signs and diffuse mild abdominal tenderness without peritoneal signs. Labs including a comprehensive metabolic panel, lipase and complete blood count were all normal. She was tolerating a normal diet. The decision was made to get a CT scan of her abdomen. The only abnormality noted on this study was evidence of isolated mesenteric adenitis. Based on her abdominal pain and this finding she was admitted to the hospital.

Upon arrival to the floor the patient was tearful and asked to be discharged. The anxiety of being in the hospital was making her abdominal pain worse. After four hours, she was discharged with follow up with her primary care doctor.

**Teachable Moment:**  
Cross-sectional imaging technology has advanced rapidly and become an essential part of modern medicine. Particularly for patients presenting to the ED, it can provide important diagnoses quickly and non-invasively. Given its benefits, the per-capita use of CT imaging has doubled from 1997 to 2006 and the cost per medicare enrollee for imaging has more than doubled.\(^1\) While CT scans have revolutionized the way medicine is practiced, they do have significant potential downsides. One of the biggest problems is the discovery of incidental findings. In an ED study, 33% of CT scans had an incidental finding and abdomen/pelvis scans had the highest rate of incidental findings at 56%.\(^2\) Many of these findings require serial imaging and monitoring.

This case illustrates the downsides of cross sectional imaging well. The patient was admitted based on a finding of mesenteric adenitis. A radiologic diagnosis of mesenteric adenitis is made when three or more lymph nodes larger than 5 mm are identified in the right lower quadrant mesentery. The diagnosis is further characterized according to primary or secondary causes. Primary mesenteric adenitis occurs when there is no other identifiable inflammatory process, while in secondary cases there is a detectable intra-abdominal inflammatory process. In a series of 60 patients with mesenteric adenitis, 18 of the cases were primary.\(^3\) None of these patients underwent surgery and none had follow up imaging within the 12 months of follow up. In our case, not only was abdominal CT
not indicated, this patient could have avoided admission for further work up of primary adenitis since it has such an excellent prognosis.\textsuperscript{3}

A more subtle risk of CT imaging relates to radiation exposure. In a young patient with no comorbidities this exposure comes with significant potential harms. In 20-year-old females, 500 patients would have to undergo only one CT abdomen-pelvis study for one radiation induced cancer to occur over her lifetime.\textsuperscript{4} Our patient has already had a CT scan and is at risk for several more throughout her lifetime given her relapsing abdominal pain syndrome. Given that the risk of malignancy is related to cumulative dose, this data is even more concerning. This case illustrates the importance of judicious use of the CT scan in the appropriate clinical setting and discerning the the significance of unsuspected incidental findings on CT scan.

References: