A 78 year old man was diagnosed with carcinoid tumor of the lung with no evidence of distant spread. He had the tumor surgically resected and was seen regularly in cardiothoracic surgery clinic. As part of his post-operative course, he was getting regular non-contrast CT scans of his chest to ensure there was no evidence of tumor recurrence. The patient was doing remarkably well post-operatively and had returned to work. In June, two years after his initial diagnosis of carcinoid, CT scan of his chest showed no evidence of tumor recurrence, but revealed dilation of his common bile duct with enlargement of the pancreatic duct. Due to this finding, the reading radiologist recommended a CT pancreas protocol to ensure there was not a pancreatic mass. In September of that same year, he had a CT pancreas protocol that showed an unremarkable pancreas but revealed a cystic structure in his lower abdomen that was incompletely visualized. As a result of this finding, CT abdomen pelvis was recommended. This was performed later that month and showed a 5 cm cystic mass as well as a hypodense area in his right inguinal region. A CT IVP was recommended as a follow up study, which revealed again a 5cm cystic mass in his left lower quadrant unchanged from his prior imaging and again a small area in the right inguinal region.

Since these lesions were unchanged in size, a follow up CT was not performed until June of the following year when he was due for his yearly CT chest to evaluate for recurrence of carcinoid. A CT abdomen pelvis was performed at this time to see if there was any change in the inguinal mass. He again had no evidence of recurrence of his initial carcinoid tumor, but the radiologist reported that the left lower quadrant and right inguinal masses appeared increased in size. He was then referred to interventional radiology for biopsy due to concern for underlying malignancy. The interventional radiologist felt confident that the cystic mass was likely a mesenteric duplication cyst and that biopsy would be of no benefit to the patient. Ultrasound of the right inguinal region revealed no mass at all but instead a non-specific fluid collection. The patient throughout this process was asymptomatic, but did suffer a considerable amount of anxiety as a result of these tests in addition to lost wages from being away from work for medical testing.
TEACHABLE MOMENT

The growth of medical technology has allowed physicians to have a greater ability to diagnose, evaluate, and treat disease. However, these new technologies come with a cost. The US spent 2.8 trillion dollars on health care in 2012, with more spent per capita than any other country in the world.¹ One of the fastest growing areas of medical technology includes medical imaging. Medical imaging over the last decade has grown at a much faster rate than many other physician ordered services.² From 1995 to 2005, the number of CT scans ordered for Medicare patients more than doubled and MRI scans more than tripled.³ While this imaging has allowed for advances in diagnosis of disease, physicians must carefully discern findings that may be clinically significant from those likely to be innocent. Incidental findings are common on CT imaging with one study showing nearly 40% of patients having at least one incidental finding. The risk of an incidental finding increases with age and is more common in abdominopelvic CT imaging.⁴ Beyond the societal impact of increased health care costs, incidental findings can create anxiety for patients and lead to unnecessary harm. Downstream harms may occur in a variety of ways including increased radiation exposure, contrast allergy or nephropathy, and risky invasive procedures. Incidental findings can be challenging to both physicians and patients as they leave a degree of uncertainty that often both parties are unwilling to accept. This can lead to an endless cycle of testing with no satisfying end. As the case highlights, testing can come with important harms to the patient, all for the sake of something that is nearly impossible to obtain – certainty. As demonstrated by the patient above, physicians must weigh carefully the decision to pursue incidental findings on the dark side of the diaphragm.

*Experts often possess more data than judgment*

*Colin Powell*

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