CLINICAL VIGNETTE

Disappearing Abdominal Mass: A Case of Chilaiditi's Sign

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A 73-year-old male presented for evaluation of acute kidney injury noted on a recent blood test. His past medical history was notable for type 2 diabetes, chronic kidney disease stage 3, hypertriglyceridemia, and chronic pancreatitis. He was taking empagliflozin 25mg once a day for diabetes and hydrochlorothiazide 25mg once a day for hypertension prior to the blood test. He denied flank pain, gross hematuria, dysuria, or a change in urinary frequency. He was also free of fevers or chills, nausea or vomiting, or recent diarrhea. He took one OTC naproxen tablet 220mg three weeks before the blood test. He also denied unintended weight loss, chest pain, shortness of breath, or night sweats. He occasionally gets mild constipation which is not bothersome.

On physical exam, he had elevated blood pressure of 159/79 and had already stopped the hydrochlorothiazide and empagliflozin before the visit. His BMI was 28.63. Sclera were anicteric. Lungs were clear to auscultation bilaterally. Cardiac exam was notable for a 3/6 systolic ejection murmur heard best at the right 2nd intercostal space. A large right sided abdominal mass was noted on exam extending from the right upper quadrant to the right lower quadrant. Bowel sounds were normal. The mass was firm but nontender and the rest of the abdomen was soft without distention, guarding on rebound tenderness. He had no costovertebral angle tenderness and no inguinal lymphadenopathy.

Labs and Studies

Creatinine was 1.15mg/dL on 3/27/20 and increased to 2.09mg/dL on follow up labs three months later with a GFR of 30mL/min/1.73m2. Of note, his baseline creatinine typically ranged from 1.35-1.73mg/dL. His potassium was normal at 4.6mmol/L. He had proteinuria which was chronic even prior to the onset of this recent kidney injury. His albumin/creatinine ratio was 149.6mcg/mg. Urinalysis showed 4+ glucose and 3-5 hyaline casts/LPF. Immunofixation of the urine was negative for monoclonal immunoglobulins. PSA was 3.2ng/mL in the normal range for his age.

Lipase was elevated at 113 U/L which was an improvement from 342U/L on the prior test. AST, ALT, alkaline phosphatase and bilirubin levels were normal. His hemoglobin a1c was 10.0%. SPEP was positive for a monoclonal band in the gamma region. CBC showed normal white blood cell count, no anemia and normal platelet count.

CT scan of the abdomen and pelvis showed interposition of the ascending and transverse colon between the liver and the diaphragm. The bowel was nondilated and there was no bowel wall thickening or stranding. Other findings included prostate-megaly, bladder wall thickening, and lymphadenopathy. A 1.2cm enlarged mesenteric node, a 1.0 cm right periaortic node, and a 1.1cm enlarged aortocaval node were seen on the CT scan.

Treatment Course

On follow up physical exam, the mass was gone. His abdomen was soft, nontender and nondistended. The only interventions prior to resolution of the mass were an increase in water intake and cessation of empagliflozin and hydrochlorothiazide.

In regards to the acute kidney injury, it resolved after stopping the empagliflozin and hydrochlorothiazide. His creatinine improved back to 1.15mg/dL. His blood pressure worsened off the hydrochlorothiazide but he declined the addition of another antihypertensive medication.

He was referred to urology for further investigation of the bladder wall thickening and prostate enlargement and referred to oncology to further evaluate the monoclonal gammopathy and lymphadenopathy noted on the CT scan. The patient deferred consulting with urologist or oncologist and preferred to wait on further workup.

Discussion

Chilaiditi's sign is a rare anatomic variant that involves interposition of a portion of the colon between the liver and the diaphragm.[1] The hepatic flexure is the portion of the colon most commonly interposed between the liver and diaphragm though there are cases of small bowel interposition as well.[2] The diagnosis of Chilaiditi's syndrome is made when this colonic interposition causes symptoms.[1] The reported incidence of Chilaiditi's syndrome is between 0.025% and 0.28%.[3] Patients can present with a myriad of symptoms including but not limited to constipation, abdominal pain, nausea and vomiting, chest pain, and shortness of breath.[1] For our patient, diuresis may have contributed to short term constipation and the increased prominence of the colon on his right side.

Kapania et al. reported a patient who had an intermittent right-sided abdominal bulge.[3] The intermittent nature can make it a

challenge to diagnose this condition. Another diagnostic challenge is that Chilaiditi's sign on x-ray can mimic pneumoperitoneum and lead to unnecessary surgical intervention. On imaging, air below the diaphragm with haustral folds seen between the liver and diaphragm is characteristic of Chilaiditi's sign.[2] Changing the position of the patient does not change the location of the air under the diaphragm on x-ray for a patient with Chilaiditi's sign, but will change the location of the air if pneumoperitoneum is present.[2]

Risk factors for developing Chilaiditi's syndrome include laxity of the hepatic suspensory ligaments, and elongation and hypermobility of the colon. This can be seen with chronic constipation, diaphragmatic elevation from phrenic nerve injury, and liver atrophy from cirrhosis.[1] Obesity is another risk factor since it can increase intra-abdominal pressure.[2] Intraperitoneal adhesions from malignancy are also a risk factor.[2] Nurdjanha et al. reported a case of malignant fibrous histiocytoma in the gastric fundus causing adhesions and a change in position of the transverse colon and liver contributing to Chilaiditi's syndrome.[4]

Chilaiditi's syndrome is typically managed conservatively with laxatives, IV fluids, nasogastric decompression, and bowel rest.[5] However, there can be rare complications such as intestinal obstruction, volvulus, perforation, and ischemia.[5] When these more serious complications occur, surgical interventions such as bowel resection, colopexy, and hepatopexy are considered.[5]

Our patient was found to have enlarged abdominal lymph nodes in addition to a monoclonal gammopathy. There has been an association of Chilaiditi syndrome with certain malignancies including rectal cancer and mesenteric lymphosarcoma.[2] Kapania found an appendiceal adenocarcinoma in their patient who presented with an intermittent right-sided abdominal bulge.[3] Our patient was encouraged to complete PET/CT scan for further assessment and to see an oncologist. The bladder wall thickening may be chronic from outlet obstruction secondary to his enlarged prostate. However, a cystoscopy is recommended to further evaluate for malignancy.

Though our patient's colonic interposition was temporary, it did lead to a diagnostic workup that will hopefully lead to earlier identification of the cause for his enlarged abdominal lymph nodes. His case was also an important reminder to keep Chilaiditi's syndrome on the differential for a patient with an intermittent abdominal mass.

REFERENCES

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