Neuroedocrine Tumor Masquerading as a Volvulus

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Neuroendocrine tumors are a group of tumors that arise from the cells of the endocrine or nervous system, which may lead to an excess amount of secretions of their respective hormones. These rare tumors could occur anywhere throughout the body, but they are prominently found in the lungs, gastrointestinal tract, and pancreas. These tumors have a variety of ranges, from well-differentiated to poorly differentiated to highly aggressive carcinomas. In terms of this case, the patient presented with black stools and generalized weakness with a past medical history of colon cancer. A colonoscopy was then subsequently performed, and results revealed a Meckel's Diverticulum. The pathology of said diverticulum uncovered a neuroendocrine tumor, which was ultimately found to be well-differentiated.

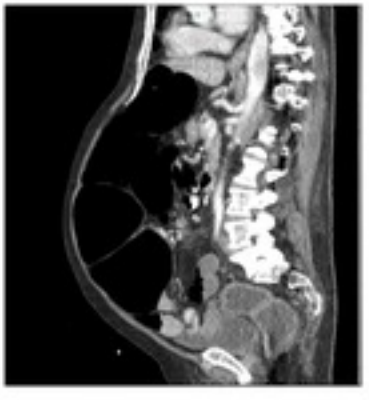
Keywords: Meckel's Diverticulum, neuroendocrine, volvulus

CASE PRESENTATION

A 74-year-old Hispanic male with a past medical history of colon cancer, cirrhosis, chronic kidney disease, diabetes mellitus, hypertension, colitis, chronic obstructive pulmonary disease, Parkinson's, ileus, and schizophrenia, presented to the emergency department complaining of black stools, generalized weakness, and difficulty ambulating. He is a poor historian. The patient also endorsed pain in the right medial thigh, right knee, and right calf. The patient denied fever, chest pain, difficulty breathing, and abdominal pain. The patient has a significant medical history and is currently a smoker. The patient is up to date on vaccines and denies any recent travel or sick contacts. The patient was afebrile, with normal sinus rhythm, normal blood pressure, and tachypneic on room air. Vital signs: Temperature 97.7 F, Heart Rate 85 bpm, Blood Pressure 127/74 mmHg, Respiratory Rate 18 bpm, and saturation 99% oxygen on room air. On physical exam, the patient is well developed and well nourished, and in no apparent distress. The patient is normocephalic and atraumatic. There were no abnormal findings for the head, ear, eyes, neck, throat, chest, or respiratory exam. Upon abdominal exam, the abdomen was soft, nontender, and non-distended, with no rigidity or guarding. The bowel sounds were present. There were negative Murphy's and McBurney's signs. Black stools were noted on physical exam. There was no costovertebral tenderness, suprapubic tenderness, Cullen's sign, or grey Turner's sign. The patient had a shuffling gait, with no midline spinal tenderness. Finally, there were no abnormalities for the musculoskeletal, neurological, and skin exams.

The patient underwent a colonoscopy with placement of a rectal tube. The rectosigmoid area was clean. When trying to advance the scope to a twist in the sigmoid colon, there was a copious, hard, green material that would not allow the scope to transverse. A rectal tube was placed successfully. There were no complications. On post-operative day 2, the tube had fallen out, and there was concern about a recurrence of volvulus. He was scheduled for replacement of the tube, but the patient was bradycardic. The patient was also having watery stools that were confirmed to be Clostridioides Difficile. Pathology is also concerned about a recurrence of colon cancer due to a high CEA of 5.2. The patient underwent a colonoscopy with placement of a drainage tube. Small polyps were seen but could not be biopsied due to poor prep. After recovery of C. Diff infection, the patient had a laparoscopic sigmoidectomy, Meckel's diverticulectomy, and an end colostomy creation for sigmoid volvulus. During the surgery, the patient's sigmoid was dilated and immobile. A diverticulum was noted on the asymmetrical border of the small bowel in the right upper quadrant, and a 1 cm irregular outpouch was noted on the diverticulum. The patient was recovering well post-surgery.

Pathology confirmed that the patient had a Meckel's diverticulum and, in the sigmoid colon, a 0.3 cm tubular adenoma, 2 hyperplastic polyps, and volvulus. The patient was found to have a NET within a Meckel's diverticulum, incidentally detected on colonoscopy. To prevent any future development of malignancy, a diverticulectomy was performed. The resection/diverticulectomy showed a Meckel's Diverticulum with heterotopic gastric mucosa with benign resection margins. The diverticulum resection measured 3.2cm x 2cm x 1cm. Inside the muscularis propria of Meckel's Diverticulum was the well-differentiated, 0.5cm, neuroendocrine tumor. The tumor cells were positive for chromogranin, synaptophysin, and AE1/AE3. No lymphovascular invasion was seen, nor was there any mitosis. The tumor had a low proliferative index.



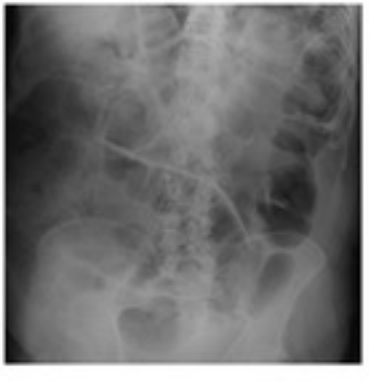


Figure 1 (above) shows the abdominal CT for the patient, where a massive intestinal dilation is noted. Figure 2 (below) shows an abdominal X-ray where dilated bowel loops with air fluid levels are noted.

DISCUSSION

Neuroendocrine tumors are a group of neoplasms that are most commonly found in the gastrointestinal tract, pancreas, and lungs. These tumors can occur at any age but are usually found in people between the ages of 55 and 65. Neuroendocrine tumors can be found incidentally with other pathologies, and making sure to check is important for knowing if a malignant process is happening or not. NETs are classified into grades 1-3: 1 is low grade, well differentiated; 2 is intermediate grade, well differentiated; and 3 is high grade, poorly differentiated. NETs are also predisposed to being functional tumors, secreting hormones that can lead to certain syndromes (insulinoma, carcinoid tumor, gastrinoma). They can also be non-functional, causing a mass effect on surrounding tissues or metastasizing. Diagnosis can be made by imaging (CT, MRI, colonoscopy) and biochemical markers (chromogranin A, etc.). Surgery is the primary treatment option. For more advanced disease, you can prescribe somatostatin analogs (octreotide) as well as chemotherapy.
Early recognition is crucial, as NETs can be indolent and asymptomatic for years but still metastasize. A multidisciplinary approach to treatment is necessary, including endocrinologists, surgeons, oncologists, etc.

CONCLUSION

Although neuroendocrine tumors arising in Meckel's diverticulum are rare, they are also clinically important findings that can be found incidentally or during the investigation of Meckel's diverticulum, which is typically a benign congenital condition, but it has the potential to harbor malignant neoplasms such as NETs. Due to the risk of metastasis associated with larger or invasive lesions, early recognition and complete surgical excision are crucial for optimal patient outcomes.