



## **A Rare Presentation of an Obstructing Metastatic Neuroendocrine Carcinoma of the Distal Ileum: A Case Report**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author IK was the treating physician and the surgeon who did the surgery and followed up the patient as well as data collection and writing of the manuscript. Author AD was involved in patient treatment/follow-up. Author AF was the pathologist who analysed the specimen. Author HS was the medical oncologist who was responsible for the adjuvant protocol. All authors read and approved the final manuscript.*

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**Case Study**

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### **ABSTRACT**

**Aims:** The aim of the study is to demonstrate a case report on a rare presentation of an obstructing metastatic neuroendocrine carcinoma of the distal ileum.

**Study Design:** Case report.

**Place and Duration of Study:** Saudi German Hospital, Jeddah, Saudi Arabia (Departments of General Surgery, Medical Oncology and Pathology).

**Background:** Neuroendocrine carcinomas typically originated from cells of the endocrine and nervous systems. It can emerge from any part of the gastrointestinal tract and are rarely encountered in the small intestine. It is characterized by being extremely malignant disease with a poor outcome. The presence of metastatic neuroendocrine carcinomas in gastrointestinal system with a primary origin in the small intestine is really an exotic event.

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**Case Report:** A 60-year-old woman attended the Emergency Department with the complaints of repeated vomiting, abdominal distention, pain and constipation, which had been present for 3 days. A CT scan of the abdomen was ordered and revealed a 2.4 cm focal obstructing thickening involving the terminal ileal loops with mesenteric lymph nodes in close vicinity to the lesion. Therefore, an exploratory laparotomy was commenced and resection of the involved segment with an adequate safety margin of more than 5 cm both proximally and distally was obtained together with removal of the mesentery with its contained lymph nodes.

The liver was grossly cirrhotic and involves multiple focal lesions that were palpable on its surface and documented later by an MRI, which confirmed metastatic lesions. The histopathology report confirmed a grade II invasive neuroendocrine Carcinoma of small intestine with 1/4 positive lymph node and the target neoplastic cells showed diffuse positive staining for neuroendocrine markers.

**Conclusion:** Metastatic obstructing NECs are rarely discovered. These poorly differentiated tumours usually arise in the oesophagus and large bowel. In addition, the disease presents with intestinal obstruction and liver metastasis, which necessitate post-operative adjuvant chemotherapy.

*Keywords: Neuroendocrine carcinoma; metastatic distal ileum.*

## ABBREVIATIONS

CT : Computed Tomography  
HPF : High Power Field  
NEC : Neuroendocrine Carcinoma  
GIT : Gastrointestinal Tract  
NEN : Neuroendocrine Neoplasm

## 1. INTRODUCTION

Neuroendocrine carcinoma (NEC) could develop in the majority of the epithelial organs in humans. Neuroendocrine carcinomas really are a distinctive number of tumors and they have appeared chiefly within the lung, gastrointestinal tract (GIT) and pancreas [1].

The present categorization (2018) targets to classify neuroendocrine neoplasms regarding their prognosis. This classification tailored by World Health Organization (WHO) is divided based on the anatomical location of the tumor and its grade. In gastrointestinal system the present terminology of NEC are graded into 3 grades; well, moderate and poorly differentiated [2].

Neuroendocrine neoplasm takes into account about 0.5% of currently recognized tumours. Their occurrence has increased, possibly because of better diagnostic strategies [3]. Their prevalence is recorded to be twice the prevalence of pancreatic and gastric cancers combined within the United States [4]. These tumors possess a female predominance close to 2.5:1. The commonest initial location would be in the gastrointestinal tract (62%-67%), the lung

(22%-27%) and 12% to 22% are metastatic at presentation [5]. Probably the most frequently reported Neuroendocrine neoplasm (NEN) locations in the gastrointestinal tract are in the colon and rectum (69%), followed by small intestine (36%), stomach (10%), appendix (5%) [6]. Nearly all NENs arise sporadically, but a connection with Multiple Endocrine Neoplasia Syndrome type 1 is noticed [5]. NENs are available synchronously along with other primaries, which are detected at the same time or metachronous (occurring at different instances) [7].

The understanding of these types of cancer concerning tumor behaviour is limited [3]. Poorly differentiated NEC frequently exists in the large intestine. Although, it might occur within just about any area of the GIT. It is very rare to take place in the small intestine, especially in the distal ileum. Metastasis to other organs has manifested in many patients during the time of diagnosis. The general rate of survival is considered to be very poor [8].

## 2. CASE REPORT

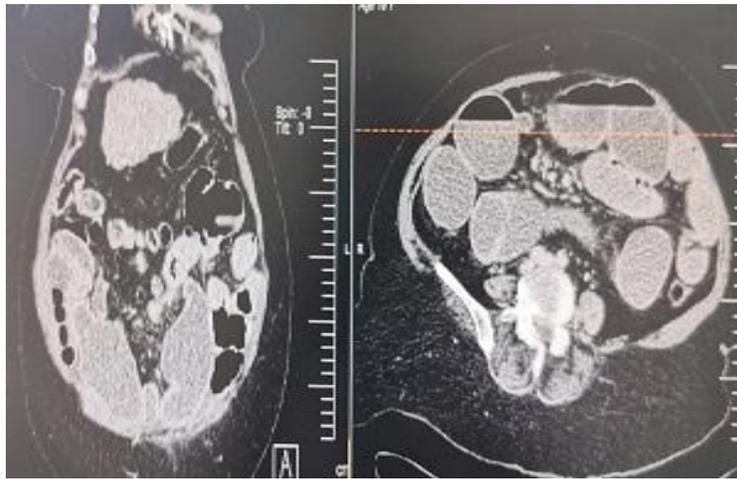
A 60-year-old woman attended the Emergency Department with the complaints of repeated vomiting, abdominal distention, pain and constipation, which had been present for 3 days. The patient has several associated co morbidities: She has been on insulin for 5 years and she is known to have liver cirrhosis due to Hepatitis B viral infection with multiple hepatic focal lesions considered as being metastatic lesions by a previously ordered MRI. In accordance to the previous findings, a CT scan

of the abdomen along with other relevant blood investigations was requested and revealed a 2.4 cm focal obstructing thickening involving the terminal ileal loops with mesenteric lymph nodes in close vicinity to the lesion (Fig. 1).

The lady was admitted to the hospital for resuscitation and correction of electrolyte imbalance together with decompression of the dilated stomach and proximal small bowel loops by naso-gastric tube. A trial of ultrasound-guided biopsy was decided but it failed due to centrally located lesion in the abdomen. Her Hydroxy-

Indolacetic acid was highly positive 1000 ml in 24-hour sample.

After she had improved, an exploratory laparotomy was commenced and an obstructing anti-mesenteric distal ileal lesion approximately 80 cm from the ileo-cecal valve with an additional enlarged lymph node was detected on exploration (Fig. 2). Therefore, resection with an adequate safety margin of more than 5 cm both proximally and distally was obtained together with removal of the mesentery of the involved segment till the border of superior mesenteric vessels with its contained lymph nodes.



**Fig. 1. A focal thickening of the small bowel is noted in the distal ileum in coronal view (Lt) and axial view (Rt)**

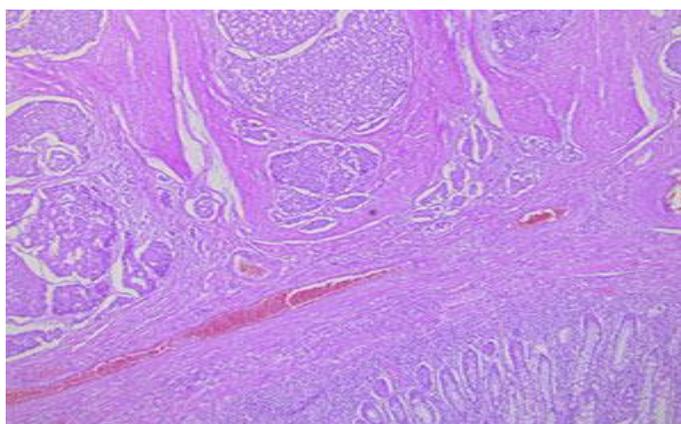


**Fig. 2. A stenotic segment is noted in the distal ileum with proximally dilated bowel and mesenteric lymph node**

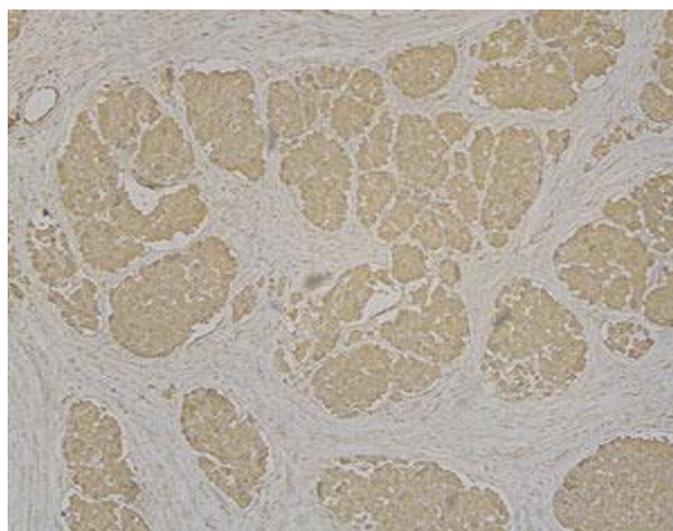
The liver was grossly cirrhotic and involves multiple focal lesions that were palpable on its surface and documented later on by an MRI which confirmed the presence of metastatic lesions in liver due to a primary NECs.

The histopathology report confirmed a grade II invasive Neuroendocrine Carcinoma of small intestine with a mass size of 2.5 cm infiltrating the whole thickness of the intestinal wall accompanied with 1/4 positive lymph node, which was 2x1.5 cm The microscopic picture from the stenotic mass revealed an invasive sub mucosal tumour formed of solid, insular, and glandular masses with peripheral pallasiding. The tumour cells mostly rounded with granular cytoplasm and small nuclei. Mitotic figures were

infrequent. The tumour masses infiltrated the whole intestinal wall till serous coat. The large lymph node detected showed dense metastatic deposits. The three small lymph nodes were negative. The mitotic count is up to 20 high-power fields (HPFs), the results of the immunohistochemical slides, which prepared from the paraffin block and stained with antibodies against NSE, Chromogranin, Synaptophysin, Ki-67, Cytokeratin-20 and CEA. These target neoplastic cells showed diffuse positive staining for neuroendocrine markers (NSE, Chromogranin, Synaptophysin), and negative staining for Cytokeratin-20, and CEA. Ki-67 showed positive staining in >20% of the neoplastic cells (Figs. 3 and 4).



**Fig. 3. The tumor arranged in an insular growth pattern with focal solid and cribriform structures H&E x20**



**Fig. 4. The neoplastic cells are positive for synaptophysin (immunostating x 20)**

She had undergone a successful uneventful postoperative course and she was discharged on the 5<sup>th</sup> post-operative day. Following the discharge, metastatic workup done in the form of CT scan of chest, MRI abdomen, bone scan. Which all were free except MRI of abdomen that revealed multiple hepatic focal lesions, we recommended for her octreotid for 3 months then to repeat the MRI to assess response.

### 3. DISCUSSION

Neuroendocrine carcinomas originating from the GI tract are infrequent tumors and are known as either the small cell or large-cell type. Therefore, NEC originating from the small intestine is extremely hard to find [9].

In many reports, a remote metastasis was discovered in about 50% of the sufferers in the follow-up time. Additionally, liver and lymph-node contribution are present in roughly 7-80% of patients during the time of detection [10,11]. Since the clinical options that present in patients are several, multiple treatment approaches are essential and should be used. Surgery represents a huge role not just in the relief of signs and symptoms, but additionally within the pathologic tissue validation [8].

The adjuvant management of the NEC is comparable to the synchronous colorectal cancer chemotherapeutic agents. The effective use of cisplatin or carboplatin and etoposide for 4-6 cycles is required for poorly differentiated NECs. Following the first line chemotherapy, most sufferers subsequently relapse and request a second line chemotherapy. Generally, the prognosis of recurrence and metastasis is extremely poor, and also the response to second line chemotherapy is going to be restricted. For example, second line chemotherapy carboplatin, everolimus, gemcitabine, bevacizumab may be used including cisplatin, irinotecan and etoposide. The response rates of these treatments are not well recognized and varied individually [12].

Although systemic chemotherapy continues to be the most generally applied treatment model of these infrequent tumors, constrained data on appropriate second-line treatment are available. In addition, consecutive radiation can be viewed as in instances where a greater local-recurrence risk is a problem. Regardless of these treatments, condition advancement and also the metastasis are quick and frequent [13].

### 4. CONCLUSION

Metastatic obstructing NECs are rarely discovered. These poorly differentiated tumours usually arise in the oesophagus and large bowel. In addition, the disease presents with intestinal obstruction and liver metastasis, which necessitate a post-operative adjuvant chemotherapy.

### CONSENT

All authors declare that 'written informed consent was obtained from the patient for publication of this case report and accompanying images'.

### ETHICAL APPROVAL

All procedures performed in the current study involving human participants were in accordance with the ethical standards of the institutional research committee.

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### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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