Global Academic Journal of Medical Sciences

Available online at www.gajrc.com
DOI: https://doi.org/10.36348/gajms.2025.v07i01.007

OPEN ACCESS

ISSN: 2706-9036 (P)
ISSN: 2707-2533 (O)

Case Report

Neuroendocrine Carcinoma of the Sigmoid Colon Occurring During Surveillance of a Treated Sigmoid Adenocarcinoma: A Case Report

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Article History
Received: 19.01.2025
Accepted: 24.02.2025
Published: 27.02.2025

Abstract: Colorectal cancers are among the most common cancers worldwide, but neuroendocrine carcinomas (NECs) of the colorectum are rare, accounting for less than 1% of cases. This article describes the case of a 64-year-old man who developed an NEC at the site of a previously treated sigmoid adenocarcinoma. Following a sigmoid resection and adjuvant FOLFOX-based chemotherapy, the patient underwent regular surveillance. Two years after treatment, a secondary tumor lesion was detected. Histological and immunohistochemical analyses confirmed a well-differentiated grade 2 NEC. Management included local tumor resection, followed by multidisciplinary discussions regarding additional chemotherapy. This case highlights the challenges associated with the rare occurrence of NECs at sites previously treated for adenocarcinoma, with several hypotheses proposed to explain this phenomenon: tumor transformation, selection of tumor subclones by chemotherapy, undetected coexistence, or a distinct neoplastic process. Diagnosis relies on immunohistochemistry and advanced imaging, while treatment combines surgery, platinum based chemotherapy, and rigorous follow-up. This report underscores the importance of individualized surveillance to detect recurrences or new lesions early.

Keywords: Colorectal cancer, Histopathology, Neuroendocrine carcinoma (NEC), Adenocarcinoma, Sigmoid colon, Tumor subclones.

INTRODUCTION

Colorectal cancers are among the most common cancer types worldwide [1], while colorectal neuroendocrine carcinomas (NECs) remain rare, accounting for approximately 1% of colorectal tumors [2]. The occurrence of NEC at a site previously treated for adenocarcinoma is an exceptional but clinically significant phenomenon due to its diagnostic and therapeutic implications [3]. Here, we report a case study of a man who developed NEC at the same site as a previously treated sigmoid adenocarcinoma during post-therapeutic surveillance.

CASE PRESENTATION

Medical History

A 64-year-old man, a former chronic smoker who quit 20 years ago and with no significant comorbidities, was diagnosed in 2021 with sigmoid adenocarcinoma classified as pT2N1M0 according to the TNM classification (stage IIIA) [4]. Initial management included:

Citation: N. Laghfiri, A. Jallouli, M Elbouatmani, O. Nacir, F.Z. Lairani, A. AitErrami, S. Oubaha, Z. Samlani, K. Krati (2025). Neuroendocrine Carcinoma of the Sigmoid Colon Occurring During Surveillance of a Treated Sigmoid Adenocarcinoma: A Case Report. *Glob Acad J Med Sci*; Vol-7, Iss-1 pp- 47-49.

- Sigmoid resection with primary anastomosis.
- Twelve cycles of adjuvant chemotherapy with FOLFOX (5-fluorouracil, folinic acid, oxaliplatin) [5].

Post-treatment outcomes were favorable, and the patient was enrolled in a surveillance program, which included clinical examinations, tumor markers (CEA and CA19-9), and regular imaging studies [6].

Detection of the Secondary Lesion

Two years after completing chemotherapy, an abnormality was detected at the resected sigmoid site during a surveillance CT scan [7]. Colonoscopy confirmed the presence of an ulcerative-vegetative tumor mass. Biopsy revealed a poorly differentiated tumor proliferation with immunohistochemical (IHC) markers positive for chromogranin A, synaptophysin, and CD56, consistent with a well-differentiated grade 2 NEC [8].

Therapeutic Management

Local resection of the tumor was performed, followed by a multidisciplinary oncological evaluation. Additional chemotherapy with platinum salts and etoposide was considered due to the lesion's metastatic potential [9].

DISCUSSION

Epidemiological and Clinical Context

Colorectal NECs are a rare entity, with an estimated incidence of less than 1% of colorectal tumors [2]. They are characterized by aggressive behavior, high metastatic potential, and often delayed diagnosis [10]. The occurrence of NEC at a site treated for colorectal adenocarcinoma presents diagnostic and therapeutic challenges [11].

Pathophysiological Hypotheses

The occurrence of NEC at a previously treated site could be explained by several mechanisms:

1. **Heterogeneous Tumor Transformation:** Some colorectal tumors exhibit cellular plasticity [12].
2. **Chemotherapy Effects:** Cytotoxic agents like FOLFOX may select for neuroendocrine tumor subclones [5].
3. **Undetected Coexistence:** An initial neuroendocrine component may have been underdiagnosed [13].
4. **Independent Carcinogenesis:** The development of NEC could reflect a distinct neoplastic process [14].

Diagnostic Challenges

1. **Histopathology and IHC:** IHC is crucial for distinguishing NECs from other poorly differentiated tumors [8].
2. **Advanced Imaging:** Gallium-68 DOTATOC PET imaging can improve detection of neuroendocrine lesions [15].

Therapeutic Implications

1. **Surgery:** Complete resection is essential for localized NECs [16].
2. **Chemotherapy:** Platinum salts and etoposide are standard for advanced NECs [9].
3. **Follow-Up:** Surveillance with markers like chromogranin A is critical [17].

CONCLUSION

This case highlights a rare but important scenario: the occurrence of NEC during the surveillance of treated colorectal adenocarcinoma. It underscores the importance of individualized and rigorous follow-up. Further research is needed to better understand the underlying mechanisms and to optimize therapeutic strategies.

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