Medical Science and Discovery
ISSN: 2148-6832

Gastric Mixed Neuroendocrine-Nonneuroendocrine Neoplasm: A rare case report

Mecdi Gurhan Balci[1]*, Mahir Tayfur[1]

1 Erzincan Binali Yıldırım University, Faculty of Medicine, Mengücek Gazi Training and Research Hospital, Dept of Pathology, Erzincan, TR

*** Corresponding Author:** Mecdi Gurhan Balci **E-mail:** gurhanbalci@hotmail.com

ABSTRACT

Objective: The incidence of gastric neuroendocrine neoplasms is less than 1%. They are seen as combined tumors with non-neuroendocrine neoplasms at a rate of approximately 7%. This study aims to share the case of mixed neuroendocrine and non-neuroendocrine cancer with the literature.

Case: Endoscopic biopsies were taken from the tumoral mass detected in the gastric cardia region at endoscopy in a 60-year-old male patient that has complaints of weight loss and epigastric pain. Histopathological examination revealed malignant tumor infiltration that consisting of neuroendocrine cells with large nuclei and narrow cytoplasm in some areas and adenoid structures composed of atypical cells with pleomorphic large nuclei in some areas. Strong staining was observed in neuroendocrine areas with neuroendocrine markers such as synaptophysin and Chromogranin. Ki-67 proliferative index and mitotic activity were high in neuroendocrine neoplasm areas. The case was reported as a high-grade neuroendocrine-non neuroendocrine mixed neoplasm.

Conclusion: Gastric Mixed Neuroendocrine-Nonneuroendocrine neoplasms are rare cases and correct diagnosis and grading are important in the treatment and patient follow-up protocol.

Keywords: Gastric, neuroendocrine, non-neuroendocrine, neoplasm

INTRODUCTION

Gastric cancer is the fifth most common malignancy worldwide and the third cause of death among all malignancies (1). It is rare before the age of 40, most common in the 50 to 70 age group, and more often in men (2). Symptoms such as dysphagia and persistent vomiting can be seen (3). The most common histopathological type, constituting 95% of all gastric malignant tumors, is adenocarcinoma (4). Gastrointestinal neuroendocrine neoplasms originate from neuroendocrine cells located in the mucosa and submucosa (5). Neuroendocrine neoplasms (NEN) are about 1% of digestive system malignancies (6). The incidence among all gastric cancers is approximately 0.1-0.6% (7). They can be seen as a mixed neoplasm approximately 7% with a non-neuroendocrine neoplasm (8).

The aim of this study is to share the case of mixed neuroendocrine and non-neuroendocrine neoplasm (MiNEN) with the literature.

CASE

A 60-year-old male patient was admitted to the hospital with complaints of weight loss and epigastric pain. Endoscopic biopsies were taken from the patient whose endoscopy revealed a mass in the gastric cardia region. 4-micron sections were taken from the paraffin blocks prepared from the tissues belonging to the lesion. The samples were examined by staining Hematoxylin-Eosin. Malignant tumoral infiltration consisting of atypical adenoid structures and neuroendocrine cells with narrow cytoplasm with large nuclei in some areas was detected in histopathological examination (Figure 1). Necrosis areas and high mitotic activity were present in areas containing NEN. Staining was observed with pan-cytokeratin in areas with atypical adenoid structures, and with synaptophysin and chromogranin in neuroendocrine areas. Ki67 proliferative index was 80% in neuroendocrine areas (Figure 2). The case was reported as MiNEN (adenocarcinoma and neuroendocrine carcinoma mixed tumor).

Case Report

Received 02-04-2020

Accepted 16-04-2021

Available Online: 19-04-2021

Published 30-04-2021

http://dx.doi.org/10.36472/msd.v8i4.528

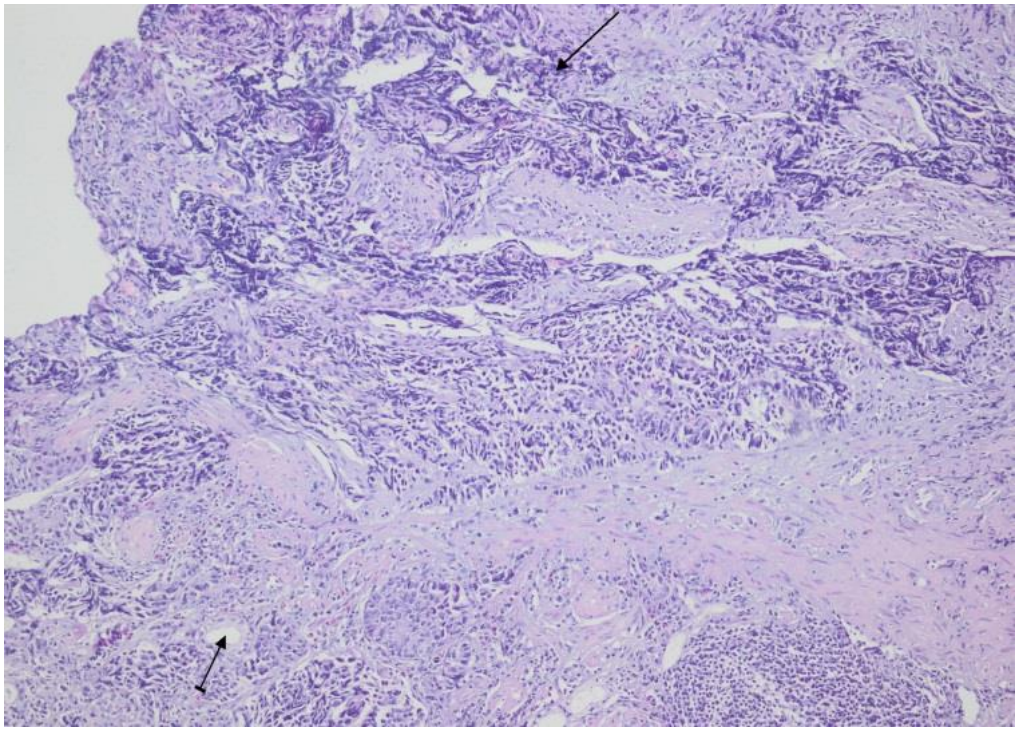

Figure 1. Short arrow: Adenoid areas, long arrow: Neuroendocrine areas (HEx200).

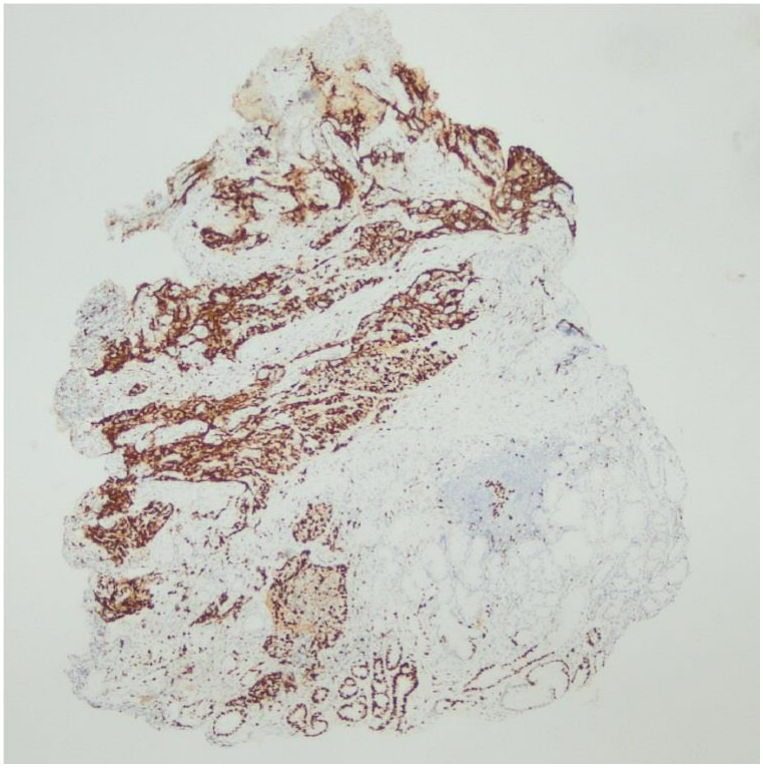

Figure 2. Ki-67 proliferation index (x40).

Table 1. The 2017 World Health Organization classification of neuroendocrine neoplasms

Grade	Mitotic index, mitoses per 10HPF	Ki67, %
Grade 1	<2	<3
Grade2	2-20	3-20
Grade 3	>20	>20

DISCUSSION

NEN is classified as a neuroendocrine tumor, neuroendocrine carcinoma, and mixed neuroendocrine-non-neuroendocrine neoplasms (9). The 2017 World Health Organization classification of NEN was made according to the Ki-proliferation index and mitotic activity (10). In grade 1 NEN, the Ki-67 proliferative index is less than 3 and mitotic activity is less than 2 in 10 high power fields (HPF). In grade 2 NEN, 2-20 mitosis/10 HPF and Ki-67 proliferative index is 3-20%. In grade 3 NEN, Ki-67 proliferative index is higher than 20 and mitotic activity is more than 20 in 10 HPF (Table 1).

High-grade MiNEN is usually in the form of adenocarcinoma and neuroendocrine carcinoma (11). Clinically, NEN can be functional with symptoms due to hormonal hypersecretion (12). The neuroendocrine component has an important role in determining biological behavior.

Chromogranins and synaptophysin markers are used to determine neuroendocrine differentiation in the gastrointestinal system (13). Prognosis and treatment planning should be made according to the most aggressive neoplastic component (14). Medications such as somatostatin analog can be used to control hormonal syndrome in advanced NEN (15). The surgical approach is the most important treatment in early cases. In functional NEN, hormonal stabilization should be provided with therapies before surgery (16).

CONCLUSION

Gastric MiNEN is rare cases and correct diagnosis and grading are important in the treatment and patient follow-up protocol. In this study, the case detected in the stomach cardiac region MiNEN was shared with the literature.

Author contributions: MGB, MT; Patient examination, Literature search and study design, data collection and analyzes **MGB;** Writing article and revisions

Conflict of interest: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. This research did not receive and specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethical issues: All authors declare originality of research.

REFERENCES

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin 2018;6: 394-424

2. Llanos O, Butte JM, Crovari F, Duarte I, Sergio Guzmán S . Survival of young patients after gastrectomy for gastric cancer. World J Surg 2006;1: 17–20

3. Shaukat A, Wang A, Acosta RD, Bruining DH, Chandrasekhara V, Chathadi KV, et al. The role of endoscopy in dyspepsia. Gastrointestinal Endoscopy 2015;2: 227-232

4. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: globocan 2008. Int J Cancer 2010;12: 2893–917

5. Hirabiyashi K, Zamboni G, Nishi T, Tanaka A. Histopathology of gastrointestinal neuroendocrine neoplasms. Frontiers in Oncology 2013;2: 1-11

6. Lepage C, Bouvier AM, Faivre J: Endocrine tumours: epidemiology of malignant digestive neuroendocrine tumours. Eur J Endocrinol 2013;4: 77-83

7. Matsubayashi H, Takagaki S, Otsubo T, Iiri T, Kobayashi Y, Yokota T, et al. Advanced gastric glandular-endocrine cell carcinoma with 1-year survival after gastrectomy. Gastric Cancer 2000;3: 226-233

8. La Rosa S, Inzani F, Vanoli A, Klersy C, Dainese L, Rindi G, et al. Histologic characterization and improved prognostic evaluation of 209 gastric neuroendocrine neoplasms. Hum Pathol 2011;10: 1373-1384

9. de Mestier L, Cros J, Neuzillet C, Hentic O, Egal A, Muller N, et al. Digestive system mixed neuroendocrine-non-neuroendocrine neoplasms. Neuroendocrinology 2017;105:412–425.

10. Klöppel G, Couvelard A, Hruban RH, Klimstra DS, Komminoth P, Osamura RY, et al: Neoplasms of the neuroendocrine pancreas; in: WHO Classification of Tumours of the Endocrine Organs, ed 4. Lyon, IARC Press, 2017, 210-239

11. Volante M, Monica V, Birocco N, Brizzi MP, Busso S, Daniele L, et al. Expression analysis of genes involved in DNA repair or synthesis in mixed neuroendocrine/nonneuroendocrine carcinomas. Neuroendocrinology 2015;2: 151-160

12. Yao J, Phan A. Optimising therapeutic options for patients with advanced pancreatic neuroendocrine tumours. Eur Oncol Haematol. 2012;8: 217–223

13. Kubota T, Ohyama S, Hiki N, Nunobe S, Yamamoto N, Yamaguchi T. Endocrine carcinoma of the stomach: clinicopathological analysis of 27 surgically treated cases in a single institute. Gastric Cancer. 2012;3: 323–330

14. La Rosa S, Marando A, Sessa F, Capella C. Mixed adenoneuroendocrine carcinomas (MANECs) of the gastrointestinal tract: an update. Cancers 2012;4: 11-30

15. Oberg K, Kvols L, Caplin M, Delle Fave G, de Herder W, Rindi G, et al. Consensus report on the use of somatostatin analogs for the management of neuroendocrine tumors of the gastroenteropancreatic system. Ann Oncol. 2004;6: 966–973

16. Yao JC, Hassan M, Phan A, Dagohoy C, Leary C, Mares JE, et al. One hundred years after carcinoid: epidemiology and prognostic factors for neuroendocrine tumors in 35.825 cases in United States. J Clin Oncol 2008;6: 3063-3072