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Neuroendocrine Carcinoma of the Stomach: A Case Report

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Abstract: Gastric neuroendocrine carcinomas are rare and have a poor prognosis. The present case concerns with a 55 year old female who presented with complaints of recurrent vomiting on and off, hematemesis and weight loss and history of lumbar stenosis. Esophagogastroduedenostomy (EGD) showed a large ulcerated growth in the antrum. Computed tomography abdomen revealed an ill defined soft tissue density in the gastric antrum, a partial gastrectomy was performed. Microscopic evaluation revealed a neuroendocrine neoplasm. Immunohistochemically positive for Chromogranin A and Non Specific Enolase (NSE). A diagnosis of Neuroendocrine carcinoma of the stomach was given based on recent WHO classification of Neuroendocrine carcinoma of the stomach and on mitotic index with reference to grading scale.

Keywords: Neuroendocrine carcinoma; Mitotic index; Immunohistochemistry.

1. Introduction

Neuroendocrine carcinoma of stomach is a rare neoplasm with poor prognosis and accounts for less than 1% of all gastric tumors[1, 2].They can be sub classified into 3 distinct groups: those associated with chronic atrophic gastritis/pernicious anemia (type 1; 70%-80%), those associated with Zollinger-Ellison syndrome (ZES) with multiple endocrine neoplasia type I (MEN I) (type 2; 5%), and sporadic NETs of the stomach (type 3; 15%-20%) [3]. Here, we describe a case of sporadic neuroendocrine carcinoma.

A 55 year old female who presented with a short history of recurrent vomiting on and off (4 episodes), hematemesis for 4-5 days and weight loss since 2-3 weeks and history of lumbar stenosis. Esophagogastroduedenostomy (EGD) showed a large ulcerated growth in the antrum. Computed tomography abdomen revealed an ill defined soft tissue density in the gastric antrum measuring 7x5.6 cms with contiguous involvement of stomach and duodenum with obliteration of fat planes between the lesion and gall bladder. Hemogram was normal except for mild anemia. A biopsy was performed and a diagnosis of round cell tumor with differential diagnosis of non-Hodgkins lymphoma and undifferentiated carcinoma was made. A distal partial gastrectomy with gastrojejunostomy and jejunostomy was performed. The resected specimen was sent to the Department of Histopathology. On gross examination, the specimen measured 15cms along greater curvature and 8cms along lesser curvature. On cut section an ulceroinfiltrative growth measuring 7x5 cms was identified in the gastric antrum along the lesser curvature. Microscopically, the tumor was composed of round to cuboidal cells with vesicular nuclei and dispersed chromatin with tumor cells arranged in sheets and forming nests at places. The tumor was mitotically active with 6-7 mitoses/HPF and was penetrating serosa with vascular invasion. The resected margins, adjacent gastric mucosa and omental fat were histologically unremarkable. Out of the ten lymph nodes dissected out, four showed metastatic deposits of the tumor.

Immunohistochemically, the tumor cells were positive for Chromogranin A and neuron Specific Enolase (NSE). Based on histological tumor patterns, positivity for neuroendocrine markers and mitotic counts a diagnosis of Neuroendocrine carcinoma of stomach –Grade 3 was made according to the recent WHO criteria. The post-operative period was uneventful. She was discharged on 10th post-operative day and followed up on an outpatient basis.

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Fig-1 A&B. Contrast Enhanced Computed Tomography (CECT) Abdomen. Well distended stomach showing circumferential thickening and mass within the gastric wall. There is peri-gastric fat infiltration and lymphadenopathy.

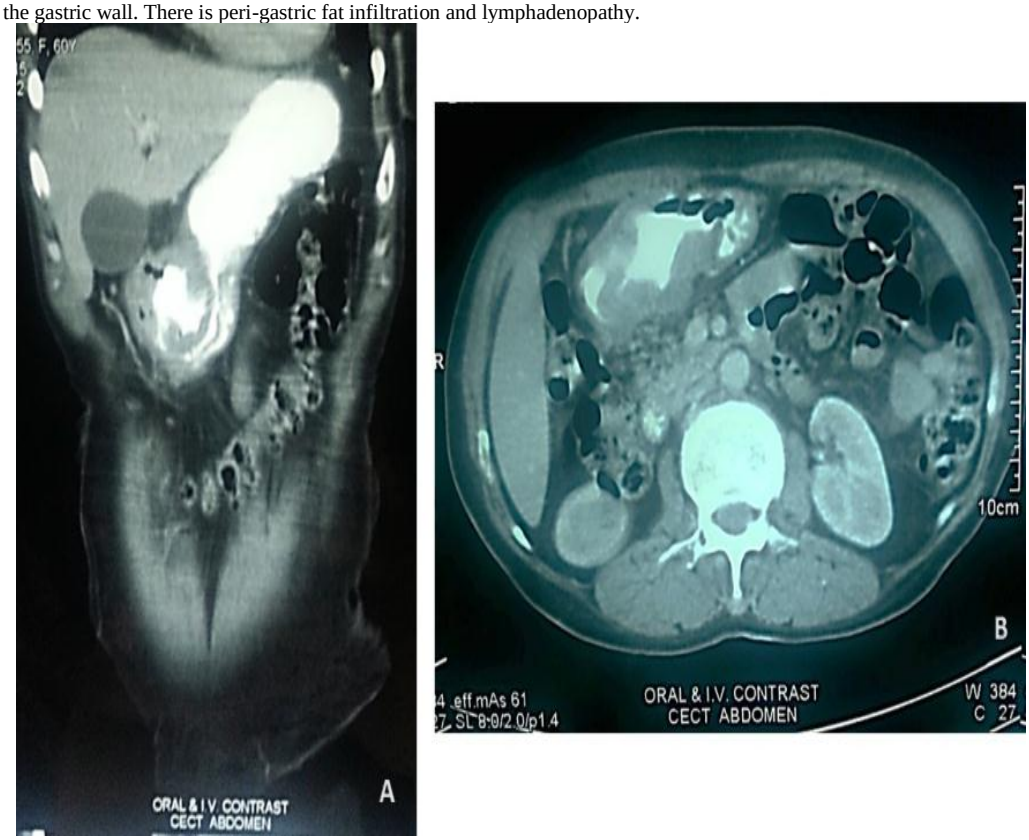
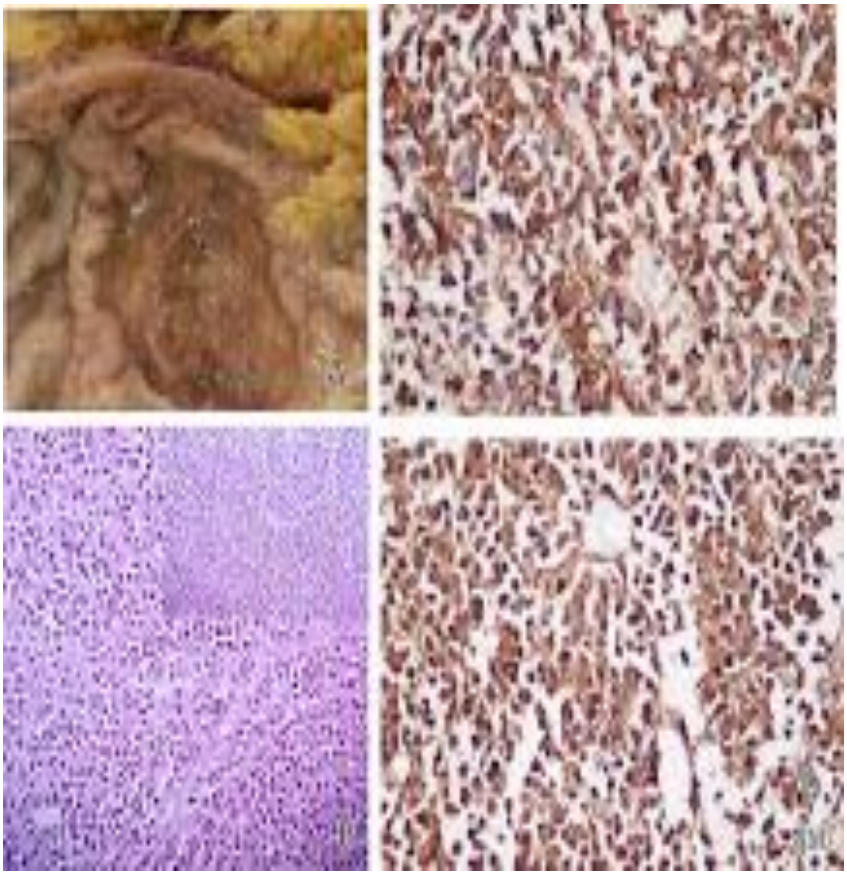


Fig-2A. Gross photomicrograph of gastrectomy specimen showing a large ulcerated growth infiltrating in to serosa.
Fig-2B. (H&E 400X): Small to medium sized tumour cells with moderate to scant amount of cytoplasm. Coarse, salt pepper chromatin with tumour cells arranged in sheets, trabeculae and rosettes (inset).
Fig-2C. (Chromogranin A; CGA): Tumour cells stained strongly positive for immunostain Chromogranin A.
Fig-2D. (Neuron specific Enolase; NSE): Tumour cells stained strongly positive for immunostain NSE.



2. Discussion

Gastric neuroendocrine neoplasms (NENs) embrace a group of tumors that exhibit a spectrum of histopathologic variations, ranging from clearly benign tumors to highly malignant ones. Neuroendocrine neoplasm (NEN) is an epithelial neoplasm with predominant neuroendocrine differentiation and is an uncommon tumor with multiple sites of occurrence [4]. Neoplasms may originate from any of the endocrine cells of the gastric wall, most commonly the enterochromaffin like (ECL) cells of the oxyntic mucosa. Proliferation of these ECL cells result in hyperplasia, dysplasia and neoplasia [5].The first reports of tumors with the characters of gastrointestinal (GI) NETs can be traced in the medical literature of the late 19th century. Lubarsch [6] is credited with the first detailed description of such tumors in autopsy material, while Ranson [7] described a patient with a tumor of the terminal ileum, hepatic metastases, diarrhoea and postprandial exacerbation of dyspnoea. In 1907, Oberndorfer coined the term .carcinoid. (Karzinoid) to contradistinguish the more benign course of these rare tumors from that of the much commoner adenocarcinomas [8]. The first two cases of gastric NET were described by Von Askanazy [9] and in 1961, Christodoulopoulos and Klotz listed 79 cases published in the international literature, [10] noting that their diagnosis was usually delayed and was often made at autopsy. Neuroendocrine carcinoma of stomach is a rare neoplasm with poor prognosis and accounts for less than 1% of all gastric tumors [1, 2]. It occurs mostly in adults and is rare in children and has prelidiction for females [11].

Recently WHO classifies the gastric neuroendocrine carcinoma in to well differentiated neuroendocrine tumor, well differentiated carcinoma and poorly differentiated carcinoma based on the biological behavior, tumor size, tumor infiltration and angioinvasion [12].

The proliferative rate of the tumor is assessed based on number of mitoses per 10 high per field or the percentage of neoplastic cells immunolabelleling for Ki-67, a proliferative marker [12]. Also lymph node involvement is a significant predictor of survival, because the lymph node involvement is an important indicator in the Tumor Node Metastasis (TNM) staging of g-NENs [13]. In present case on biopsy a differential diagnosis of non-Hodgkins lymphoma and poorly differentiated carcinoma was given and subsequently on gastrectomy a diagnosis of neuroendocrine carcinoma was made based on tumor pattern like nesting, typical neuroendocrine chromatin and mitotic count of >50 mitoses/10HPF based on the recent WHO criteria of classification of neuroendocrine neoplasms.

Our diagnosis was further supported by immunohistochemical positivety of tumor cells for chromogranin and NSE.

3. Conclusion

Neuroendocrine carcinoma although a rare tumor should be considered a potential diagnosis in endoscopic biopsies, so that an early diagnosis and treatment can be instituted before lymphatic spread and to improve the prognosis.

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