Neuroendocrine tumor of ampulla of vater in existing tubulovillous adenoma

Justine Chinnappan MD[1], Murtaza Hussain MD[1], Smit Deliwala MD[1], Ghassan Bachuwa MD, MS, MHSA, FACP, AGSF[1], Qazi S. Azher MD[2], Mamoon M Elbedawi MD[3]

[1]Department of Internal Medicine. Michigan State University at Hurley Medical Center, Flint, MI – 48502

[2]Department of Pathology, Michigan State University at Hurley Medical Center, Flint, MI – 48502

[3]Department of Gastroenterology, Michigan State University at Hurley Medical Center, Flint, MI – 48502

MICHIGAN STATE UNIVERSITY
College of Human Medicine

HURLEY MEDICAL CENTER

INTRODUCTION

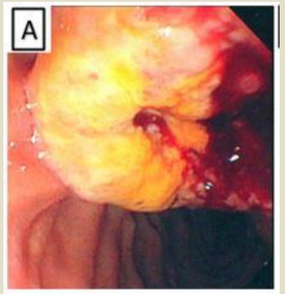
Primary neuroendocrine carcinoma (NEC) of the ampulla of vater (AoV) is an extremely rare occurrence comprising 2% of periampullary neoplasms and <1 % of gastrointestinal NECs[1]. Likewise, ampullary adenoma is an uncommon occurrence with high predisposition for transformation to adenocarcinoma[2]. Accordingly, their co-existence is sparsely reported[3,4]. Herein we present a rare case of ampullary high grade neuroendocrine carcinoma (HGNEC) arising from a pre-existing tubulovillous adenoma.

CASE PRESENTATION

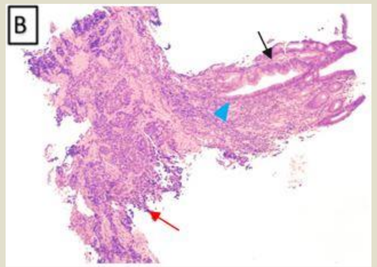
A 89 year old Jehovah witness male was evaluated for anemia 3 years ago and was found to have biopsy proven AoV tubulovillous adenoma. He was lost to follow-up after 6 months of surveillance esophagoduodenoscopy (EGD). He currently presents with severe bleeding per rectum with clots for one day. On presentation, his blood pressure was 85/47mm of Hg, Pulse rate 88 per minute and with bright red blood mixed with stool on digital rectal exam. Rest of the physical examination was grossly unremarkable. Laboratory work up revealed hemoglobin 8.1g/dL, AST 49U/L, ALT 54 U/L, alkaline phosphatase 748U/L, Bilirubin total/direct 1.8/1.5mg/dL, PT/INR 17.6 seconds/1.50. Given his ongoing bleeding, low hemoglobin and being a Jehovah witness, he was treated with IV iron sucrose, Aranesp, vitamin K, tranexamic acid. CT of the abdomen revealed extensive intra and extrahepatic bile duct dilation, common bile duct dilation (2.5 cm) and pancreatic duct dilation (1.2 cm). On MRCP, a small T2 hypointense lesion was identified near AoV. ERCP showed a large ulcerated mass measuring about 3 cm at the papilla, and the biopsy was significant for high grade small cell neuroendocrine carcinoma arising in a tubulovillous adenoma with immunohistochemical stains strongly positive for CDX2, CD 56, SATB2 and synaptophysin, and negative for CK7, CK 20, PSA, NKX3.1, chromogranin and CEA. Ki-67 stain revealed 100% of neuroendocrine cells positive. PET scan revealed duodenal mass with liver metastasis. Patient underwent percutaneous transhepatic cholangiography(PTC) with placement of biliary drain catheter for worsening hyperbilirubinemia (Total/direct bilirubin 12.5/9.8mg/dL). He was later started on palliative chemotherapy with etoposide and carboplatin.

Images

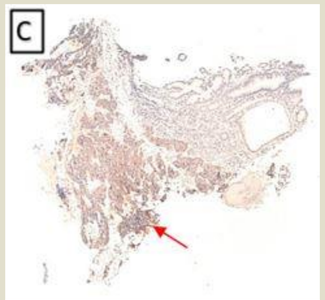
(A) Endoscopic image of large ulcerated ampullary tumor with bleeding



(B) H & E stain X40 showing tubulovillous adenoma (black arrow) segment of normal AoV epithelium (blue arrow head) and nest of neuroendocrine cell (red arrow)



(C) Immunohistochemical stain with synaptophysin x40 showing uniform staining of the neuroendocrine cells (red arrow)



DISCUSSION

Nassar et al, reported 50% of ampullary HGNEC is associated with adenoma and the pathogenesis is still unclear[5]. Positive immunohistochemistry marker CDX2, SATB2 suggest the tumor is of colorectal origin while CD56 and synaptophysin suggest neuroendocrine in nature. The ampullary HGNEC identified is an aggressive tumor substantiated by the short duration of presentation and high Ki-67 index. NEC of AoV are notorious for early metastasis hence pancreatoduodenectomy with local lymph node dissection is recommended at the earliest. Our patient had liver metastasis on presentation, hence he was treated appropriately with PTC biliary drain and palliative chemotherapy.

Learning Points

- Malignant transformation of benign tumor of AoV is very high.
- Neuroendocrine tumor of AoV are very aggressive in nature with early metastasis.
- Pancreatoduodenectomy with local lymph node dissection is warranted at the earliest due to concerns of early metastasis.

REFERENCES

1. Waisberg J, Joppert-Netto G, Vasconcellos C, Sartini GH, Miranda LS, Franco MI. Carcinoid tumor of the duodenum: a rare tumor at an unusual site. Case series from a single institution. Arq Gastroenterol. 2013;50:3-9
2. Ahmad SR, Adler DG. Cancer of the ampulla of vater: current evaluation and therapy. Hosp Pract (1995). 2014;42(5):45-61. doi:10.3810/hp.2014.12.1158
3. Lee SH, Lee TH, Jang SH, et al. Ampullary neuroendocrine tumor diagnosed by endoscopic papillectomy in previously confirmed ampullary adenoma. World J Gastroenterol. 2016;22(13):3687-3692. doi:10.3748/wjg.v22.i13.3687
4. Sun JH, Chao M, Zhang SZ, Zhang GQ, Li B, Wu JJ. Coexistence of small cell neuroendocrine carcinoma and villous adenoma in the ampulla of Vater. World J Gastroenterol. 2008;14(29):4709-4712. doi:10.3748/wjg.14.4709
5. Nassar H, Albores-Saavedra J, Klimstra DS. High-grade neuroendocrine carcinoma of the ampulla of vater: a clinicopathologic and immunohistochemical analysis of 14 cases. Am J Surg Pathol. 2005;29(5):588-594. doi:10.1097/01.pas.0000157974.05397.4f…….. 5aHoyuela C, Cugat E, Veloso E, Marco C. Treatment options for villous adenoma of the ampulla of Vater. HPB Surg. 2000;11(5):325-331. doi:10.1155/2000/86476

CONTACT

Justine Chinnappan, MD
MSU/Hurley Medical Center
Email: jchinna1@hurleymc.com
Phone: 8102629000
Website: hurleymc.com