

Figure 1: Endoscopy showing (A) Multiple brownish black spots in the duodenum (B) Magnification image (near focus mode, GIF HQ190_ Olympus).

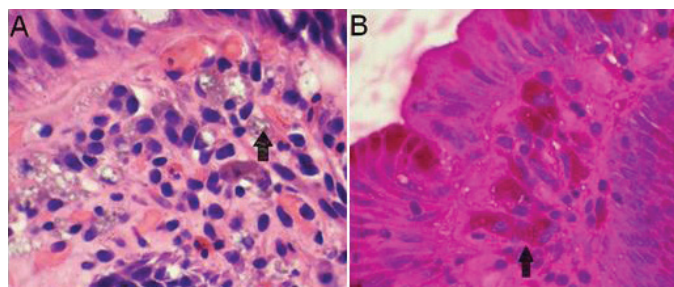


Figure 2: Duodenal biopsy showing brown pigment containing macrophages (arrow) in lamina propria at the tip of villi A) HE stain, x100 B) PAS stain, x100.

diabetes mellitus, GI bleeding and medications like ferrous sulphate, propranolol, hydralazine, thiazide, furosemide, digoxin and methyldopa.⁴ The pigment here may be melanine-like substances, hemosiderin, lipomelanin and lipofuscin.⁵ Although iron is the main compound, sulfur, calcium, potassium, magnesium, silver and aluminum have also been found in varying proportions.⁶ This pigment deposition may be due to an impaired intramucosal iron transport or impaired macrophage metabolism. Normally, a fibroinflammatory response follows the deposition of iron or other heavy metals elsewhere in the body. Interestingly, however, no cases of fibrosis, stricture, erosion or duodenitis in PD have been reported in the literature. The prognostic significance and natural history of PD is not clear. No therapeutic intervention or follow-up endoscopy is recommended.

Acknowledgement - Dr J P Bhatt contributed histopathological analysis.

K K Rawal

Department of Gastroenterology and Liver disease, Milestone Hospital, Vidyanagar Main Road, Rajkot-360002, Gujarat.

Correspondence: K K Rawal

Email: kkrawal@gmail.com

References

1. Bisordi WM, Kleinman MS. Melanosis duodeni. *Gastrointest Endosc.* 1976;23:37-8.
2. Banai J, Fenyvesi A, Gonda G, Petö I. Melanosis jejuni. *Gastrointest Endosc.* 1997;45:432-4.
3. de Magalhães Costa MH, Fernandes Pegado Mda G, Vargas C, Castro MEC, Madi K, Nunes T, et al. Pseudomelanosis duodeni associated with chronic renal failure. *World J Gastroenterol.* 2012;18:1414-6.
4. Giusto D, Jakate S. Pseudomelanosis duodeni: associated with multiple clinical conditions and unpredictable iron stainability - a case series. *Endoscopy.* 2008;40:165-7.
5. Rex DK, Jersild RA. Further characterization of the pigment in pseudomelanosis duodeni in three patients. *Gastroenterology.* 1988;95:177-82.
6. Ghadially FN, Walley VM. Pigments of the gastrointestinal tract: a comparison of light microscopic and electron microscopic findings. *Ultrastruct Pathol.* 1995;19:213-9.

Malignant insulinoma presenting with portal venous thrombosis and variceal bleeding

Insulinoma is the commonest hormone producing neuroendocrine tumour (NET of the GIT with 99% being of pancreatic origin. There is no report in literature describing malignant insulinoma presenting with portal vein thrombosis and variceal bleeding.

Case Report

A 48 years male presented to the emergency with two episodes of hematemesis not associated with jaundice or abdominal distension. He was also having recurrent seizure attacks for the last one and a half yrs. Hb-9.9, TLC-8831, Plt-2.1 lakh, U/cr -26/0.5. LFT was also normal with Bil.-0.3, AST/ALT-41/40, ALP-170 and Pr/Alb-7.1/3.3. USG abdomen showed a 3x3.5 cm bulky lesion in the pancreatic tail. On UGI endoscopy there was grade 2/3 esophageal varice x 2 columns. EVL was done. The patient also had recurrent attacks of hypoglycemia during the hospital stay. MRI brain was normal. On CECT abdomen there was a heterogeneous lesion in the pancreatic tail of 6x6.3x4.2 cm with few peri-pancreatic lymph nodes. Tumor thrombus was observed in portal vein and proximal splenic vein with collaterals. Few lesions were noted in segments V, VI and VIII of the liver showing enhancement in arterial phase and washout in post venous phase suggestive of hypervascular liver metastasis EUS guided FNAC from the pancreatic mass was suggestive of pancreatic neuroendocrine tumour (**Figure 1**). Glucose deprivation test was done. At serum glucose of 40 mg/dl, serum insulin level was 46.6 micro IU/ml (diagnosis of insulinoma when serum insulin is >6 micro IU/ml), serum C-peptide was 2.9 (elevated). Serum insulin/glucose >1. On basis of these reports the diagnosis was made as malignant insulinoma with hepatic metastasis and portal venous thrombosis with grade 2/3 esophageal varices. 68 Ga-DOTANOC whole body PET-CT study showed malignant somatostatin receptor expressing tumor in the pancreas (head, body and tail) with portal vein thrombosis and metastasis to segments III and VI of Right lobe of liver and spleen (**Figure 2 and 3**). TFT, serum PTH, cortisol and AFP levels were normal ruling out the possibility of MEN.

Discussion

Insulinomas account for 60% of all islet cell tumors. These are typically hypervascular, solitary, small (90% < 2 cm) and benign tumors 1.5-10% of insulinomas are malignant and maximum of those are associated

with MEN 1 syndrome.^{1,2} The diagnosis of insulinoma is suggested by endogenous hyperinsulinemia in the presence of hypoglycemia and reversal of the symptoms by administration of glucose (Whipple's triad). Patients usually present with neuro-hypoglycemic symptoms. Serum insulin level > 6 micro IU/L with a blood glucose level of 45 mg/dl or less is diagnostic. Further confirmation of endogenous hyperinsulinemia needs elevated serum C-peptide level and high serum insulin/glucose ratio (>0.3).³ Once a clinical and biochemical

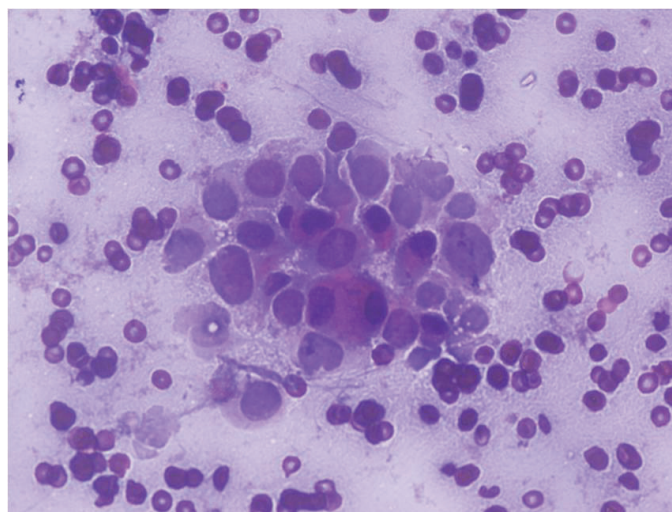


Figure 1: Cytology of pancreatic mass (EUS guided FNAC).

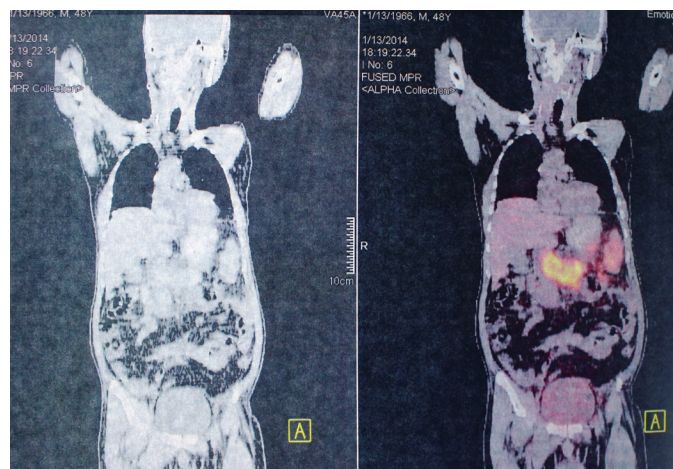


Figure 2: 68 Ga Dotanoc scan.

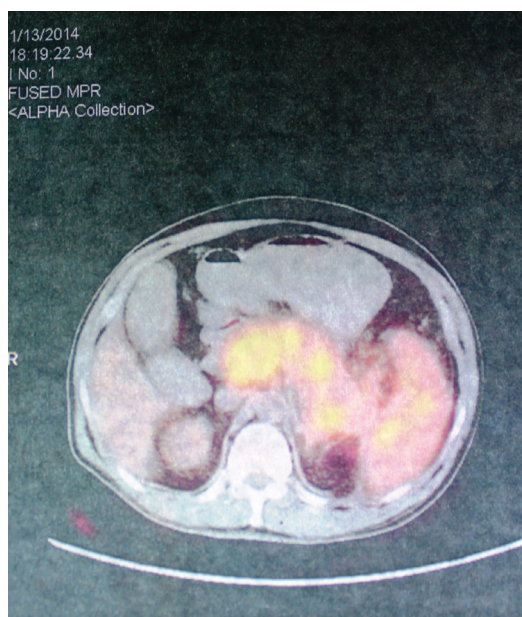


Figure 3: PET-CT study showed malignant somatostatin receptor expressing tumor in the pancreas (head, body and tail) with portal vein thrombosis and metastasis to segments III and VI of liver and spleen.

diagnosis is established, imaging modalities are used to localize the tumor. 111-In octreotide scan is considered to be the initial diagnostic procedure of choice for GI neuroendocrine tumors. EUS is highly efficient for localization and taking a biopsy of the tumor with 93% sensitivity and 95% specificity for intra pancreatic lesion.⁴ MRI is considered a better diagnostic tool than CT scan to detect hepatic metastases. If these modalities miss the tumor localization, invasive techniques like trans-hepatic portal venous sampling (TPVS), selective arterial calcium stimulation and hepatic venous sampling (ASVS) are used for pre-operative localization of the tumor with 77-100% sensitivity.⁵ The abundance of GLP1 receptors (GLP1R) in pancreatic β -cells in insulinomas has led to the development of GLP1R scanning by using GLP1-like radioligands, 111 In-DOTA-exendin. But the most sensitive method is palpation of the pancreas and intra-operative ultrasound.

Surgical excision is the treatment of choice. In case of metastases, resection of the liver metastases must be considered, especially when confined to the liver, and

surgery can remove >90% of tumor. Other approaches for the treatment of liver disease include hepatic artery embolization, radio frequency ablation, and cryoablation. As opposed to benign insulinomas, malignant insulinomas often express somatostatin receptor subtype 2, showing positive somatostatin receptor scintigraphy in 73% of cases. These can be targeted therapeutically with long-acting somatostatin analogs and peptide radionuclide receptor therapy. Malignant insulinoma is a very rare condition and metastases generally occur to liver and intra-abdominal lymph nodes as reported in most of the case reports.

PABITRA SAHU
SAURABH MISHRA
PARAS KATHURIA
SURESH KUMAR
PREMASHIS KAR

*Department of Medicine, Maulana Azad Medical College,
New Delhi-110 002.*

*Correspondence: Premashis Kar
Email: premashishkar@gmail.com*

References

1. Yao MM, Reynertson RH et al. Insulinoma: a case report and review of the clinical features and diagnosis. *Gundersen Lutheran Medical Journal*. 2005;3:73-6.
2. Hart SP, Frier BM et al. Causes, management and morbidity of acute hypoglycemia in adults requiring hospital admission. *QJM*. 1998;91:505-10.
3. Mignon M et al. Natural history of neuroendocrine enteropancreatic tumors. *Digestion*. 2000;62:51-58.
4. Kaltsas GA, Besser GM, Grossman AB et al. The diagnosis and medical management of advanced neuroendocrine tumors. *Endocr Rev*. 2004;25:458-511.
5. Troncone L, Ruffini V et al. 131I-MIBG therapy of neural crest tumors. *Anticancer Res*. 1997;17:1823-31.