A Case Report of Insulinoma; Diagnosed in Phichit Hospital

รายงานผู้ป่วย อินซูลินโนมา 1 รายที่ตรวจพบในโรงพยาบาลพิจิตร

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Abstract

Insulinomas are rare pancreatic and peripancreatic tumors, most are benign and almost always small that causes difficult challenge to radiologist to diagnosis and to localize the tumor preoperatively. This report was a case 42 years-old Thai woman who was heated in 3 hospitals as psychiatric patient for diagnosis of depressive disorder for two years before this admission she was repeated attack of dizziness, irritability, sweating, weakness and syncope insulinomas were localized and diagnosed by using a combination of realtime sonography and spiral CT. post-operative histology confirms diagnosis.

Keyword : Insulinoma, ultrasound, CT

บทคัดย่อ

อินซูลินโนมา เป็นเนื้องอกของตับอ่อนที่หายากและมักจะเป็นเนื้องอกธรรมดา และมีขนาดเล็ก ซึ่งเป็นการท้าทายต่อรังสีแพทย์มากในการที่จะตรวจพบและแสดงตำแหน่งเนื้องอกนี้ก่อนผ่าตัด รายงานนี้ได้แสดงผู้ป่วย 1 ราย เป็นผู้ป่วยหญิงไทย อายุ 42 ปี ซึ่งเคยรักษามาแล้วจาก 3 โรงพยาบาล ในระยะ 2 ปี ก่อนเข้ารับการรักษาครั้งนี้ด้วยอาการเวียนศีรษะ, กระสับกระส่าย, เหงื่อแตก, อ่อนเพลียและเป็นลมซ้ำๆ รังสีแพทย์สามารถตรวจพบและแสดงตำแหน่งของอินซูลินโนมาได้โดยใช้อัลตราซาวน์และเอกซเรย์คอมพิวเตอร์ร่วมกัน

Introduction

Insulinoma is functioning islet cell tumor (insulin-secreting tumor) of the pancreas. The patient usually has a set of clinical triad, Whipple's triad, consists of 1) spontaneous hypoglycemia, followed by central nervous system and vasomotor symptoms, 2) low blood glucose level usually <50mg/dl, 3) relief of symptom by administration of glucose.[4]

Pancreatic insulinomas are uncommon tumor - the incidence being 1 per 250,000 people/year[5] and are the most common endrocrine tumor of the

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pancreas. They are 80-90% single benign adenoma, 5-10% multiple adenoma/microadenomatosis (especially in MEN type I), 5-10% islet hyperplasia and 5-10% malignancy[1]. These benign tumors are a treatable cause of potential fatal hypoglycemia. About 60% of cases occur in women.[4] Calcification is present in 20% of cases and may signify malignancy. The tumor occurs in all age groups - the peak incidence being between 40 to 60 years of age. The tumor size is usually small, having diameter of less than 2.5cm [9]

They are demonstrated as round or oval, smoothly marginated solid homogeneously hypoechoic masses on sonographic examination, as hypoattenuation or isodensity or hyperattenuation on CECT (contrast enhanced computed tomography), as hypervascular lesion on angiography, and on MRI it is low signal intensity on fat-suppressed TIWI and hyperintense on T2WI + dynamic contrast-enhanced + suppressed inversion recovery images.[1]

The imaging modalities have been used for insulinoma investigations and detection rate are.[8]

- Trans abdominal ultrasound: readily available, inexpensive, noninvasive with detection rate of 25-65%

- Endoscopic ultrasound: equipment and expertise are not widely available with a 70% detection rate.

- CT: widely available and non invasive with a detection rate of 70% when contrast is used.

- MRI, angiography, percutaneous transhepatic portal venous sampling, arterial stimulation venous sampling and radionuclide imaging can also be used with sensitivity from 50 to 90%.

- Intraoperative sonography: equipment: not widely available with 75-90% detection rate. When using Intraoperative high frequency ultrasonography with palpation can approach 100%[3]

Nowadays, many noninvasive advanced imaging modalities such as MRI[7], MDCT, PET, contrast-enhanced ultrasonography[2], endoscopic ultrasonography[6], are acclaimed to be better for preoperative localization. However these are high technology and expensive, available in medical centers of university and some advanced imaging center not in Phichit Hospital.

Because of the difficulty in preoperative localization of insulinoma, in the past, almost all suspicious cases of insulinoma had to be referred to higher medical center for investigations and treatment. This caused problem of personal expense to patients and their family that some had refused and lost. On the basis of sufficient economy and sufficient medicine, we desired to investigate a case of insulinoma as best as we can.

Case Report

A 42 years old Thai woman was treated (in 3 hospitals) as psychiatric patient for diagnosis of depressive disorder for 2 years before this admission when repeated attacks of dizziness, irritability, sweating, weakness and syncope developed. During this admission she was found that she had very low blood glucose level of <30mg/dl and relief by IV glucose administration. Other blood chemistry studies were normal except the blood creatinine level that represents nepholithiasis problem. So she was brought to our attention to search for tumor of the pancreas.

Realtime sonography was performed. It demonstrated an about 0.8cm size well-circumscribed low echoic mass in body-tail junction. The pancreatic tail was not demonstrated owing to gas artifact.

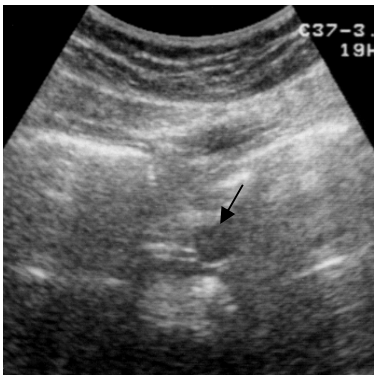

Fig. 1 Realtime sonography. A trasnsverse scan at epigastrium shows a 0.8 cm size well-circumscribed low echoic mass (arrow) in pancreatic body-tail region.

For better demonstration, Computed Tomography of the pancreas was performed and revealed 1.2x1.2x1.5cm-size and 0.7cm-diameter size contiguous masses of isodensity with small slightly hyperdense area in body-tail junction of the pancreas (Fig. 3) and show dense enhancement on contrast enhancement scanning (Fig. 4). She was diagnosed as small pancreatic tumors compatible with insulinomas. (she was also found that she had right renal stone and left upper UC with left hydronephrosis).

Surgical treatment was desired for curative purpose. At open laparotomy, two of 0.7cm and 1.5cm diameter size well-encapsulated masses were seen and palpated at posterior surface of body-tail of the pancreas. And 80% distal pancreatectomy was performed. (Fig. 2)

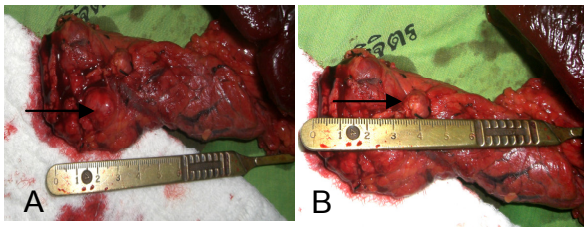

Fig. 2 The surgical specimen examination showed two 1.5cm (A) and 0.7 cm (B) size contiguous nodules at superficial posterior pancreatic body.

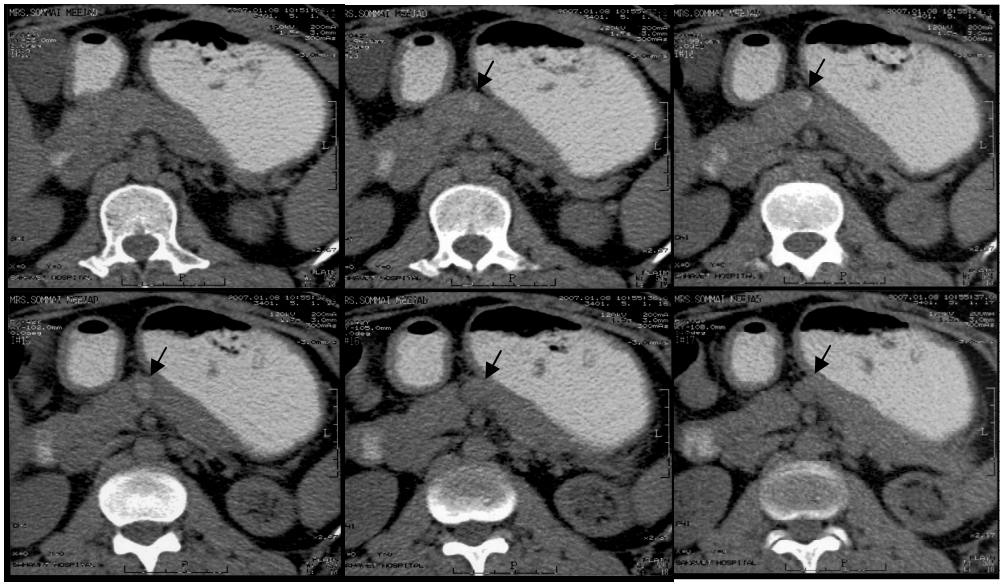

Fig.3 NCCT of pancreas, 6 serial images of 3mm thickness slice, reveal small slightly hyperdensity in small isodense masses (arrow in each image) in body-tail junction of the pancreas.

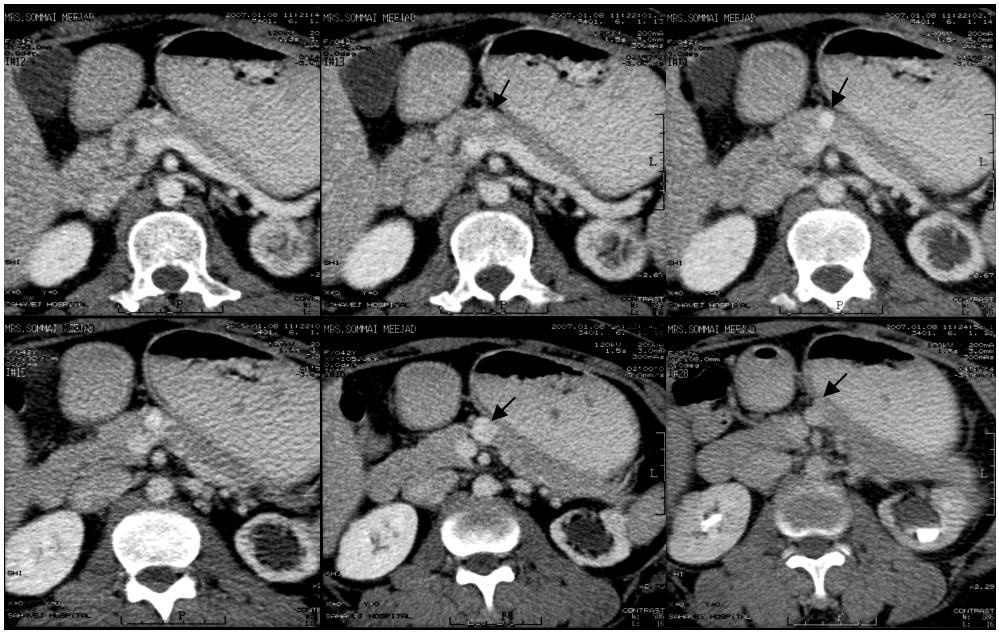

Fig. 4 CECT of the same location as in Fig. 2, 6serial images show enhanced masses (contiguous superior-inferior), approximate 0.5 cm diameter and 1.2x1.2x1.5 cm size, (arrow in each image).

Post-operative result was satisfied. The patient became asymptomatic (previously suffering) and had high blood glucose level, 211 mg/dl within 24 hour following surgery and gradually decreased to 110 mg/dl on the 7th postoperative day. This is acceptable postoperative reaction.

Pathological Examination revealed multiple pancreatic endocrine tumor nodules, measuring from 0.2 to 1.5 cm in maximal diameter (Fig. 5). There was no evidence of gross invasion and abnormal lymph nodes. Histopathological evaluation showed predominantly insulin-producing cells, few of them showed amyloid deposition (Fig. 6A) and no mitosis was detected. Immunohistochemical studies using an immunoperoxidase method revealed that nearly all of the neoplastic cells were strongly positive for the neuroendocrine markers including synaptophysin (Fig. 6B) chromogranin A, and neuron specific enolase (NSE). In addition, the mainly tumor nodules were immunoreactive for insulin (Fig. 6C) and focally immunoreactive for pancreatic polypeptide (Fig. 6D), but they did not mark with glucagon and somatostatin.

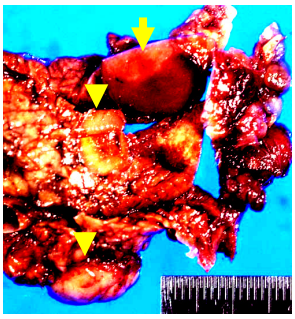

Fig. 5, The largest nodule was demonstrated (arrow), size 1.5 cm in diameter and two neighbor nodules were also present (arrow head).

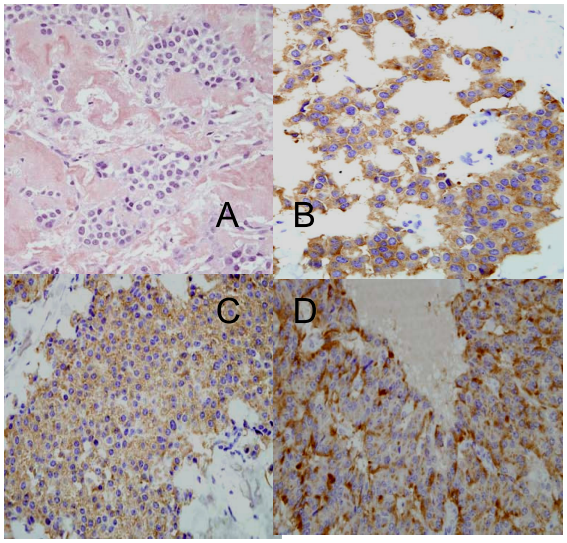

Fig. 6 A, B, C, D

Discussion

Curative treatment of insulinoma is surgical resection. The preoperative diagnosis and localization of the tumor is necessary for surgical planning about how much pancreatic tissue should be resected for avoidance of postoperative hyperglycemia (DM). This is difficult challenge to radiology because of the small size of these tumors.

This case, conventional sonography gave limited information owing to device limitation and gas artifact. (Fig.1). The computed tomographic study was performed in serial 3mm slice thickness of the pancreas (that is the best capable thinnest slice of this scanner) and demonstrated two, 0.7 and 1.5 cm size tumors in the body-tail region (Fig. 3,4). And had limitation for demonstration of multiple about 0.2 cm size tumors found in histopathology. Fortunately there is no malignancy associated.

Postoperative result was satisfied and in the near future, her nephrolithesis disease will be treated. However because of the multiplicity of small insulinoma found, she was planned to investigation for other hormonal abnormality (MEN type I) as well.

Conclusion

Pancreatic insulinoma is benign and curative disease but often difficult to diagnose owing to variability of presentations (especially the CNS and vasomotor symptoms) and small size of the lesion. Awareness of the disease is important and multiple imaging modalities will improve diagnostic power for preoperative localization. However, on the basis of limited investigation modalities, a case of insulinoma was detected in Phichit Hospital.

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