Endoscopic Corner

Sriprayoon T
Akaraviputh T
Angsuwatcharakon P
Kongkam P
Klaikaew N
Rerknimitr R
Ratanachu-ek T

Case 1

A 65-year-old female known case of subepithelial gastric mass and had been followed with annual EGD examination for the past 2 years by another gastroenterologist. According to the patient's gastroenterologist, the lesion appeared to expand over the past year. She remained asymptomatic. She is now referred for an EUS evaluation of the gastric subepithelial lesion. On the endoscopic examination, the lesion is located in the gastric antrum, 2 cm. in diameter (Figure 1), well demarcated, intensely hyperechoic, and arising from the third EUS layer (Figure 2).

Discussion

Gastric subepithelial lesion of the stomach is usually identified incidentally during routine upper endoscopy. EUS is the diagnostic test of choice to assess size, margin, layer of origin and echo texture of the lesion. Current evidence does not allow making a firm recommendation on the optimal management for the patient with incidentally detected, asymptomatic gastric subepithelial mass. Options include performing no further testing, following the mass with periodic endoscopic or EUS surveillance and endoscopic or surgical resection of the mass (Table 1)[1].

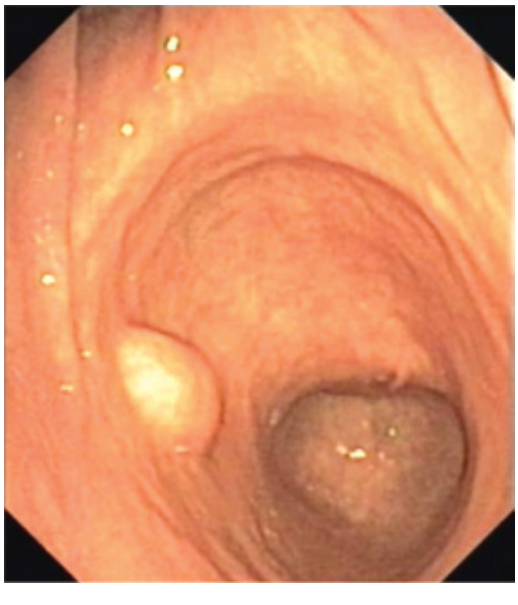

Figure 1 Endoscopic finding revealed a 2 cm. submucosal lesion in the gastric antrum.

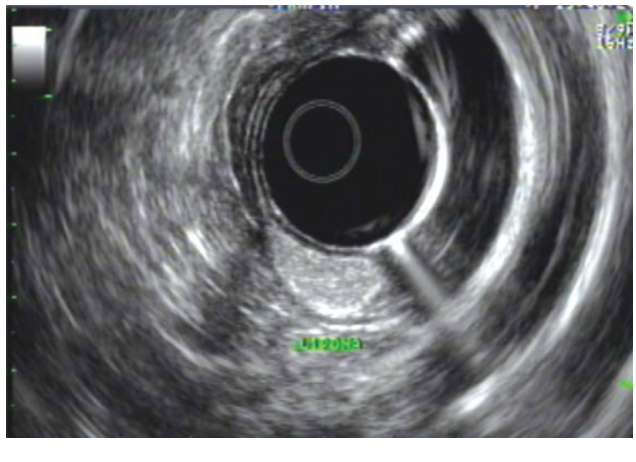

Figure 2 Demonstrating a well demarcated, hyperechoic, arising from the third layer (radial endoscopic ultrasonoscope (Olympus, Tokyo)).

Address for Correspondence: *Rungsun Rerknimitr, M.D., Division of Gastroenterology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.*

Table 1 Summary of recommendations for the management of asymptomatic gastric subepithelial masses[1].

No further investigation	Follow with periodic endoscopy and/or EUS or resection	Resection
- Normal extramural organ - Lipoma - Duplication cyst - Pancreatic rest - Inflammatory fibroid polyp - Neural origin tumor (e.g. Schwannoma)	- GIST < 3 cm. in diameter - Glomus tumor	- Carcinoid in the absence of hypergastrinemia - GIST ≥ 3 cm. in diameter

In this case, the patient was diagnosed as gastric lipoma which typically identified as hyperechoic lesion in the third layer. Most lipoma identified at EUS can be left alone. However, if lipoma is though to be causing symptoms e.g. obstruction, an endoscopic resection is recommended. In addition, EUS may be helpful for delineating and avoiding the underlying vascular structure[2].

REFERENCES

1. AGA Institute Medical Position Statement on the management of gastric subepithelial mass. Gastroenterol 2006;133:2215-6.
2. Nakamura S, Iida M, Suekane H, *et al*. Endoscopic removal of gastric lipoma : diagnostic value of endoscopic ultrasonography. Am J Gastroenterol 1991;86:619-23.

CASE 2

A 37-year-old female presented with chronic abdominal pain. She had a history of gallstone pancreatitis 8 years ago. A CT scan of the upper abdomen revealed a hypodensity lesion at uncinate process of the pancreas (size about 2 x 1 cm.). Pancreatic duct was normal. The radial endoscopic ultrasonography showed some hyperechoic foci, hyperechoic strands, lobularity and hyperechoic duct wall without irregularity. Pancreatic head and uncinate were normal without any abnormal mass (Figure 3, 4). She was diagnosed as chronic pancreatitis by 5 EUS criteria.

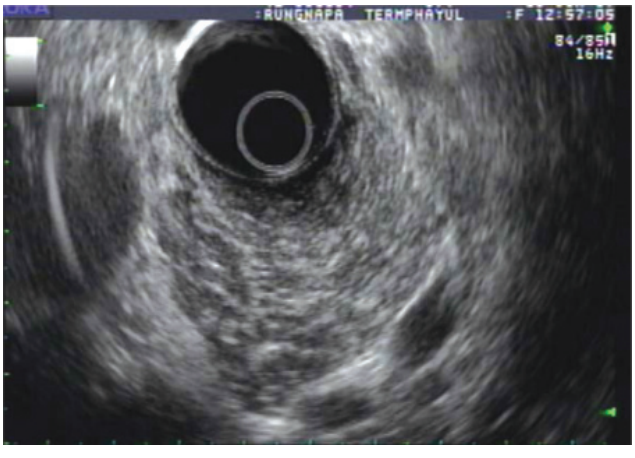

Figure 3 Endoscopic ultrasonography showed multiple small hyperechoic foci and lobularity of pancreatic parenchyma without abnormal mass lesion at the pancreatic head area.

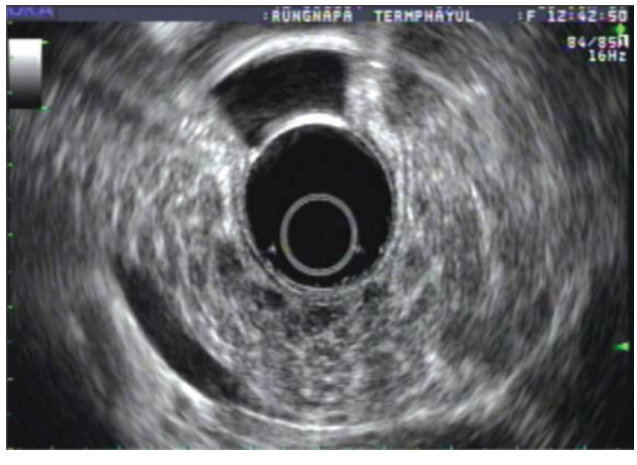

Figure 4 At the pancreatic body, EUS also revealed hyperechoic strands and lobularity of pancreatic parenchyma.

Discussion

The diagnosis of chronic pancreatitis (CP) remains challenging especially in the early stage of the disease[1]. Primarily, the diagnosis is established by typical signs and/or symptoms that compatible with the disease (steatorrhea, diabetes, weight loss and epigastric pain) and later confirmed by imaging modalities.

Increasing evidence suggests that ERCP may not actually be sensitive enough for CP diagnosis especially in patients with early stage[2-5]. Fortunately, EUS can provide the advantage to evaluate the pancreatic parenchyma and duct that are not visible on any imaging modalities. In addition, EUS is considered to be safer than ERCP. The diagnosis of CP by EUS can be made based on real time examination during the endoscopic procedure when 5 or more of established criteria which developed by the Internationl Working Group for Minimal Standard Terminology (MST) in Gastrointestinal Endosonography are present[6] (Table 2).

However, all these criteria may not be equally important. The presence of intraductal calcification alone is highly suggestive of CP even in the absence of other criteria. In addition, there are age-related changes in the pancreas that may affect the diagnostic threshold. The pancreatic duct becomes progressively wider as patient age increasing. A 4 mm. pancreatic duct may be normal for a 70-year-old man, but it is abnormal in a 18- year-old lady[3]. Currently, there is no standard scoring system that measuring these effects. One common practice is using a higher threshold (e.g. ≥ 5 criteria) for older individuals and a lower threshold (e.g. ≥ 4 criteria) for younger patients.

Table 2 Modified minimum standard terminology (MST) relevant to inflammatory pancreatic EUS criteria.

EUS criteria for Chronic Pancreatitis		Appearance	Histological feature
Parenchymal features	Hyperechoic foci	Small distinct foci of bright echoes	Focal fibrosis
	Hyperechoic strands	Small string like bright echo	Bridging fibrosis
	Lobularity	Rounded areas separated by hyperechoic strands	Fibrosis, Glandular atrophy
	Cyst	Abnormal anechoic round or oval structure	Cyst, Pseudocyst
	Calcification	Hyperechoic lesion with acoustic shadowing within pancreas	Calcified parenchyma
Ductal features	Ductal dilatation	3 mm. in head >2 mm. in body >1 mm. in tail	Duct dilatation
	Side branch dilation	Small anechoic structure outside the main pancreatic duct	Side branch dilation
	Irregular duct	Course uneven outline of the duct	Focal dilation, narrowing
	Hyperechoic duct wall	Hyperechoic margins of the main PD	Periductal fibrosis

REFERENCES

1. Catalano MF, Lahoti S, Geenen JE, *et al*. Prospective evaluation of endoscopic ultrasonography, endoscopic retrograde pancreatography, and secretin test in the diagnosis of chronic pancreatitis. Gastrointest Endosc 1998;48:11-7.
2. Kaufman AR, Sivak MV. Endoscopic ultrasonography in the differential diagnosis of pancreatic disease. Gastrointest Endosc 1989;35:214-9.
3. Ikeda M, Sato T, Morozumi A, *et al*. Morphologic changes in the pancreas detected by screening ultrasonography in a mass survey, with special reference to main duct dilation, cyst formation, and calcification. Pancreas 1994:508-12.
4. Nattermann C, Goldschmidt AJ, Dancygier H. Endosonography in chronic pancreatitis - a comparison between endoscopic retrograde pancreatography and endoscopic utrasonography. Endoscopy 1993;25:565-70.
5. Wiersema MJ, Hawes RH, Lehman GA, *et al*. Prospective evaluation of endoscopic ultrasound and retrograde cholangiopancreatography in patient with chronic abdominal pain of pancreatic origin. Endoscopy 1993;25:555-64.
6. International Working Group for Minimum Standard Terminology for Gastrointestinal Endoscopy. Reproduction of minimum standard terminology in gastrointestinal endosonography. Dig Endosc 1998;10:158-84.

CASE 3

A 61-year-old woman with epigastrium discomfort for 8 months underwent an EGD.
EGD was done and showed as Figure 3.
Endoscopic ultrasonography (EUS) was done and showed as Figure 4.

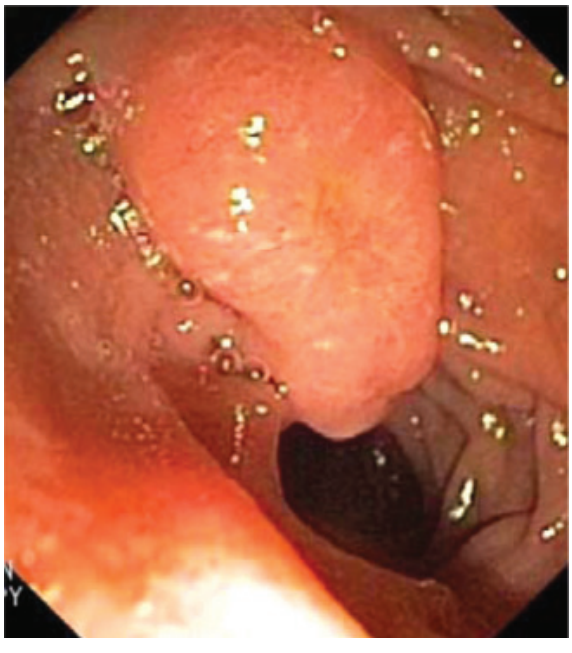

Figure 5

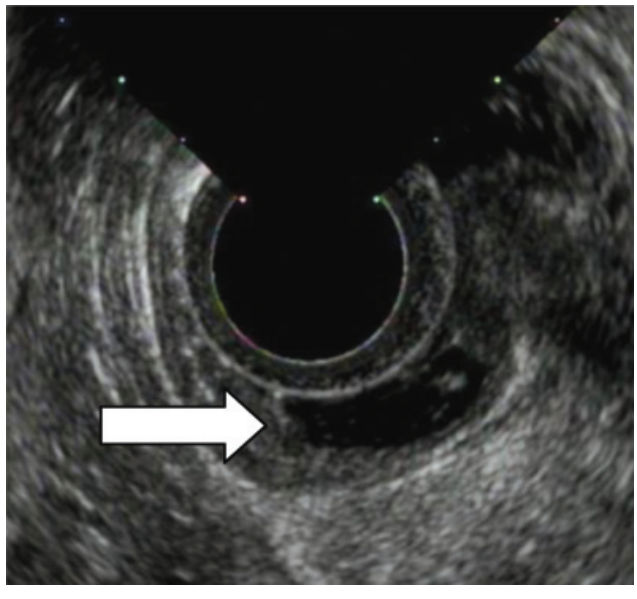

Figure 6

The EGD showed an ampullary mass, 1.5 cm. in size. The mass was overlaid with normal mucosa.
The EUS showed a hypoechoic lesion (white arrow) at ampullary region without muscularis propria invasion.
Endoscopic ampullectomy was done. Histology was demonstrated as Figures 7 and 8

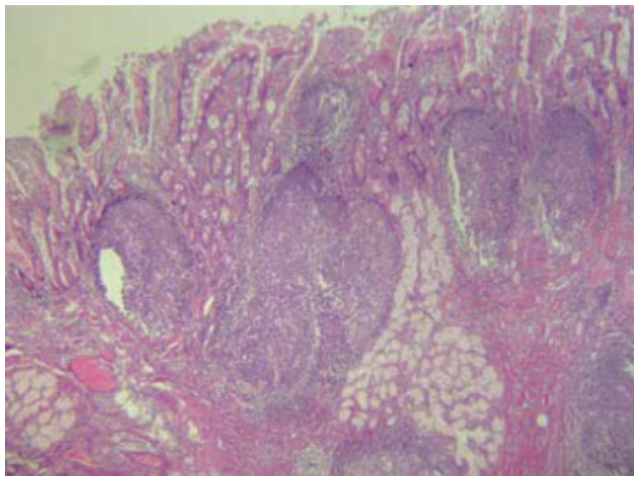

Figure 7

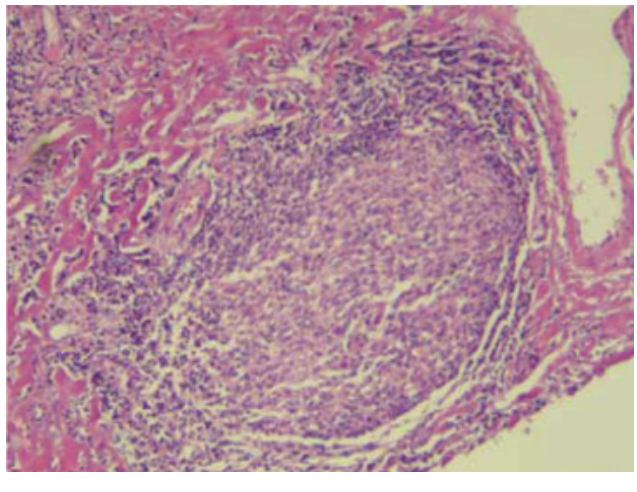

Figure 8

Histology revealed nodular lymphoid hyperplasia with normal mucosa.
The diagnosis is nodular lymphoid hyperplasia of the ampulla.

Discussion

Nodular lymphoid hyperplasia (NHL) is characterized by the presence of hyperplastic, mitotically active germinal centers with well-defined lymphocytes mantle[1]. NLH is a benign, reactive process of the small intestine. NLH is a common finding in children and the incidence is decreased in adult[2]. NHL can be found in terminal ileum, colon and duodenum. NLH is association with food allergy, Giardiasis, Ig-A deficiency and other immune deficiency syndromes2. Adult patients frequently present with diarrhea, involuntary weight loss or abdominal pain[1], and may rarely present with lower gastrointestinal hemorrhage[3].

REFERENCES

1. Rubio-Tapia A, Hernandez-Calleros J, Trinidad-Hernandez S, *et al*. Clinical characteristics of a group of adults with nodular lymphoid hyperplasia: a single center experience. World J Gastroenterol 2006:28(12):1945-8.
2. Shaoul R, Eliakim R, Tamir A, *et al*. Ileal lymphonodular hyperplasia is not associated with NOD2/CARD15 mutations. J Pediatr Gastroenterol Nutr 2006;43:30-4.
3. Buscaglia J, Carroll C, Daniels J, *et al*. Benign lymphoid hyperplasia: a rare cause of obscure overt bleeding in an adult. Gastrointest Endosc 2007;66:1248-50.

CASE 4

A 68-year-old female presented with abdominal discomfort. A transcutaneous upper abdominal ultrasonography showed pancreatic cyst at pancreatic head. A CT scan of the abdomen further revealed multicystic lesion with one large cyst at the same area (Figure 9). Later an EUS (convex type) was performed and confirmed on honey comb appearance of the cyst with one large cyst that was subsequently aspirated with a 22 G needle (Figure 10, 11). Cyst fluid was clear and contained normal levels of amylase and CEA (Figure 12). Cytology and culture from the cyst were unremarkable.

Diagnosis:

Serous cystadenoma of the pancreatic head

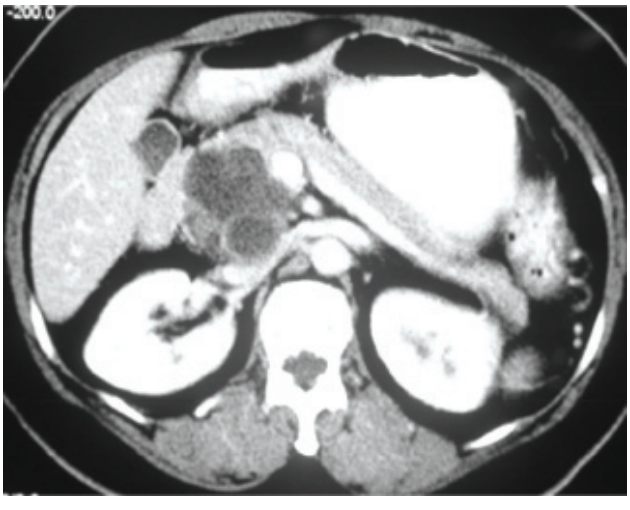

Figure 9

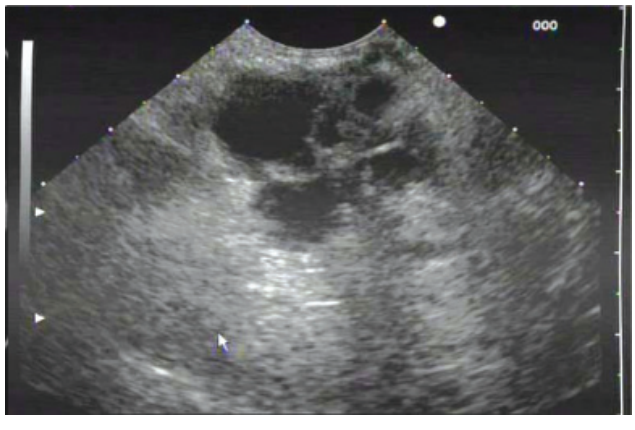

Figure 10

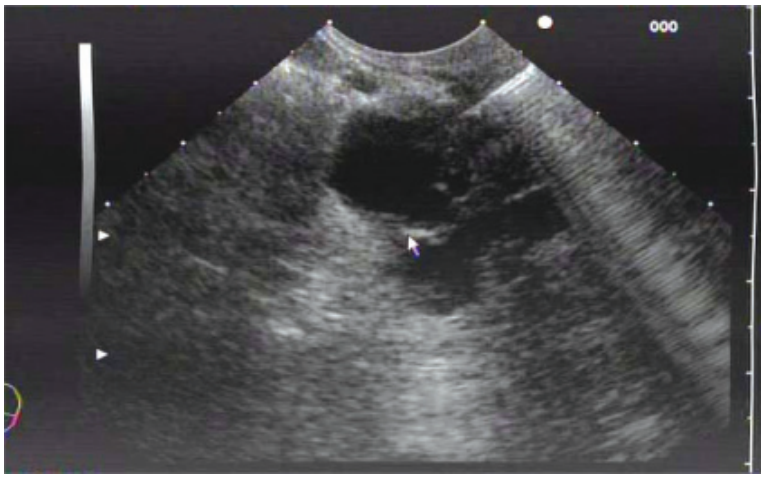

Figure 11 EUS/FNA

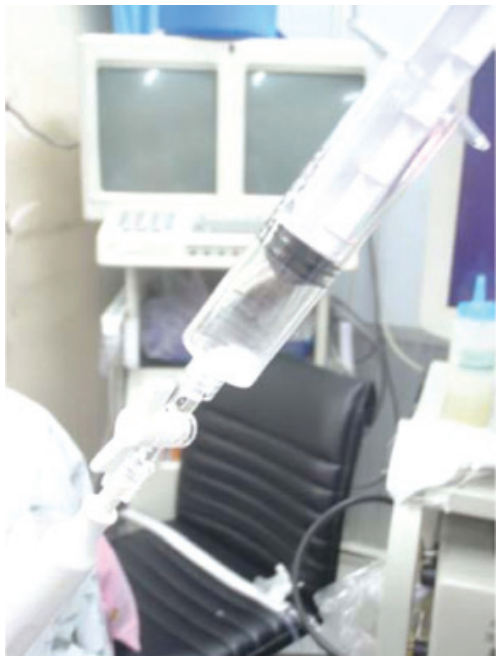

Figure 12 Clear cystic fluid

Discussion

Cystic lesions in the pancreas can be categorized according to pathology into congenital cysts, pseudocysts and cystic neoplasm. For cystic neoplasm, the main differentiate diagnoses are mucinous and serous cystadenoma. Mucinous cystadenoma carries a malignant potential and requires surgical removal whereas serous cystadenoma dose not require surgery unless it causes symptom mainly biliary obstruction. Currently, endoscopic ultrasonoraphy is a part of important tool to delineate the final diagnosis since it provides important information from fluid analysis. Elevated CEA level with normal amylase level is found in mucinous cystadenoma. In serous cystadenoma, we expect normal levels of amylase and CEA from the fluid[1,2].

REFERENCES

1. Linder JD, Geenen JE, Catalano MF. Cyst fluid analysis obtained by EUS-guided FNA in the evaluation of discrete cystic neoplasms of the pancreas: a prospective single-center experience. Gastrointest Endosc 2006;64:697-702.
2. Belsley NA, Pitman MB, Lauwers GY, *et al*. Serous cystadenoma of the pancreas: limitations and pitfalls of endoscopic ultrasound-guided fine-needle aspiration biopsy. Cancer 2008; 25:102-10.