A Suspected Case Of Endoscopic Ultrasound Induced Pancreatitis, Without Fine Needle Aspirate

Michael John Abunassar BSc, BA, MD, Loree Boyle, BN, MD, FRCPC, Avijit Chaterjee, MSc, MDCM. FRCPC

About the Author

Dr. Michael John Abunassar is currently a Gastroenterology Fellow at The Ottawa Hospital – University of Ottawa. Dr. Loree Boyle is an Internist and Clinician Teacher with Internal Medicine who practices at the Ottawa Hospital (General Campus). Dr. Avijit Chaterjee is a Clinical Gastroenterologist, researcher, and program director of the Therapeutic Endoscopy Fellowship Program at The Ottawa Hospital – University of Ottawa. Correspondence may be directed to mabunassar@toh.on.ca.

Abunassar

Boyle

Chaterjee

Summary

A 78-year-old male developed nausea and epigastric pain 8 hours following an endoscopic ultrasound (EUS) procedure. The patient had a history of recurrent pancreatitis, and underwent the EUS procedure with the aim of aspirating a pancreatic cyst. The cyst had regressed in size, in keeping with a pseudocyst, and was not biopsied. The patient tolerated the procedure well with no immediate complications, and was discharged home in stable condition. Eight hours later, the patient developed acute pancreatitis.

Résumé

Huit heures après avoir subi une endo-échographie, un homme âgé de 78 ans ressent des nausées et une douleur épigastrique. Le patient a des antécédents de pancréatites récurrentes et l'endo échographie a été effectuée en prévision de l'aspiration d'un kyste du pancréas. Le kyste s'étant avéré avoir régressé à l'état de pseudokyste, on n'effectua pas de biopsie. Le patient, ayant bien toléré l'examen, ne présentant pas de complications immédiates et ayant un état stable, a reçu son congé. Huit heures plus tard, il développait une pancréatite aiguë.

Introduction

Endoscopic ultrasound (EUS) and (EUS)-guided fine needle aspiration (EUS-FNA) are recognized as accurate and safe methods for diagnosing and staging gastrointestinal and non-GI malignancies. EUS-FNA can also be used to aspirate fluid from cystic lesions, pseudocysts, and fluid collections for both diagnostic and therapeutic purposes. Rates of pancreatitis associated with pancreatic EUS-FNA range from 0% to 2%.¹ In a pooled analysis of 4909 EUS cases in the USA, acute pancreatitis secondary to EUS-guided FNA biopsy of pancreatic masses, pancreatitis resulted in 0.29% or 14 cases.² Therefore, the likelihood of pancreatitis occurring without direct biopsy of the pancreas is even lower, and has been reported twice, based on our review of the literature.^{3,4} Noteworthy is that

our patient was significantly older than the patients in these previous studies.

Case

A 78-year old male was seen for review of chronic, recurrent pancreatitis and a septated mass at the head of the pancreas. His medical history was complicated by (a) rheumatic heart disease leading to bio-prosthetic aortic valve replacement and mitral annulus ring (2003) (b) psoriatic arthritis treated with chronic low dose steroids (c) recurrent *E. Coli* bacteremia, source unknown (d) hypo-gammaglobinemia (e) chronic obstructive pulmonary disease (COPD) due to remote smoking habit (f) duodenal diverticulum. He had no current or prior alcohol consumption. He underwent EUS of the pancreatic mass

in October 2013. The mass had regressed in size, and it was thought to be most likely a pseudocyst. Therefore, it was not biopsied. The patient was asymptomatic post-procedure, and he was discharged home feeling well. The diagnosis post-EUS was chronic pancreatitis, complex pancreatic head cyst, and unilocular pancreatic body/tail cyst. (Figure 1) Repeat imaging was scheduled 6 months hence.

Figure 1: EUS REPORT

Celiac Lymph Nodes: None

Pancreas: Diffuse lobularity suggesting chronic pancreatitis. Complex multi-septated lesion in the head of the pancreas measuring 2.7 x 1.6 with solid internal components (presumably debris). Secondary unilocular cyst in the body of the pancreas measuring 1 x 1 cm with no suspicious features. The ampulla was unremarkable and both the pancreatic duct 'and' common bile duct (CBD) could be seen coursing into the ampulla with no evidence of stones or sludge.

CBD: Unremarkable (not well seen as it crosses the area of the pancreatic head cyst).

The endoscopic ultrasound images did not reveal a concerning solid pancreatic mass. No pancreatic calculus. Cystic structures within the pancreas were in keeping with post-pancreatitis pseudocysts. Imaging surveillance is suggested.

That evening, the patient developed nausea, followed by chills and worsening epigastric pain radiating to his back. Overnight his pain worsened, and he presented to the emergency department. The Gastroenterology service reviewed his condition, and a diagnosis of post-procedural pancreatitis was made.

On examination, he appeared unwell. His blood pressure was 90/55, his heart rate was 80 beats per minute (regular), his respiratory rate of 16 breaths per minute, his oxygen saturation of 93% on room air, and his temperature 39°C. His jugular venous pulsation (JVP) was at the angle of the jaw. No jaundice or scleral icterus was seen. Heart sounds were normal, and a 2/6 aortic flow murmur was present. Pulmonary exam was normal except for occasional crackles at the right lung base. The epigastrium was tender to palpation, but there was no rebound and bowel sounds were present. Extremities were warm and well perfused. Laboratory tests showed a white blood cell count of $24.6 \times 10^9/L$ (normal range $3.5\text{--}10.5 \times 10^9/L$), hemoglobin of 104 g/L (normal range 125–170 g/L), platelets $319 \times 10^9/L$ (normal range $130\text{--}380 \times 10^9/L$). Corrected

calcium 2.3 mmol/L (normal range 2.12–2.52 mmol/L), lipase 5632 U/L (normal range 73–393 U/L), liver function tests were normal. Blood cultures were negative. There was no laboratory evidence of hypertriglyceridemia. His initial chest x-ray showed a right middle lobe consolidation/atelectasis. A subsequent x-ray suggested a left-lower lobe pneumonia/atelectasis, which resolved with therapy.

He was admitted to the medicine service for acute monitoring, IV fluid resuscitation and empiric IV Piperacillin-Tazobactam 3.375g q6 hours therapy. This was changed after 48 hours to a 7 day course of oral Amoxicillin/Clavulanate. The patient's epigastric pain and nausea resolved quickly with bowel rest, IV fluids and supportive care.

Discussion

We present a suspected case of EUS-induced pancreatitis in a patient attending outpatient endoscopy in a Canadian tertiary endoscopy centre.

After an extensive literature search, we found 2 cases of post-diagnostic EUS pancreatitis. The first case report was of a 22-year-old woman with recurrent pancreatitis who sustained diagnostic EUS-induced acute pancreatitis. This condition may have been induced by mechanical irritation of the patient's pancreatic gland. Alternatively, it could have been due to 'ansa pancreatica'³ a communication between the main pancreatic duct (Wirsung) and the accessory pancreatic duct (Santorini).⁵ Ansa pancreatica is an uncommon anatomical variant predisposing pancreatitis.³

The second case report described a 33-year-old male with 12 episodes of recurrent pancreatitis. He was found to have had changes of chronic pancreatitis and an echogenic polypoid lesion was seen. A biopsy was not performed. He had nausea post-procedure, but was discharged 4 hours later only to return to hospital 10 hours later with increasing abdominal pain and nausea. His lipase was 6100 IU/L (normal range 166–292 IU/L). He was diagnosed with EUS-induced pancreatitis.⁴

Erikson (2002) suggests that EUS may be more prone to inducing pancreatitis than standard endoscopy for at least three reasons. 1) High risk patients with recurrent pancreatitis are often undergoing diagnostic EUS as part of their evaluation. 2) Much more time is typically spent in the duodenum during EUS than with standard endoscopy since it is there that the pancreatic head, ampullary region and extra-hepatic biliary tree is examined. 3) The water-filled balloon used for acoustic coupling may also result in additional mechanical trauma to the ampullary region through compression or rubbing.⁴

In our case, no balloon was used and the EUS transducer was positioned directly in contact with the ampulla. Hence,

the mechanical stress of the EUS probe in the region of the pancreas (in a patient who has a 'sensitive' pancreas, prone to recurrent acute inflammation) is suspected to have been the cause of pancreatitis.

Comparison between the 2 cases found in the literature (Kulling et al. (1998)³ and Erikson 2002⁴ with our case reveals a clear age difference. Our patient was significantly older (78-years-old) than their patients. Noteworthy, each patient had a history of recurrent pancreatitis. None of these patients had previously undergone an endoscopic retrograde pancreaticography (ERCP). None of these patients had a history of alcohol abuse. The patient in Erickson (2002) did have a family history of heavy alcohol use, recurrent pancreatitis, and subsequent pancreatic cancer in his father.⁴ The Kulling et al. patient developed symptoms of acute pancreatitis 30 minutes post-EUS,³ Erikson's patient appeared to develop nausea very soon post-procedure.⁴ Our patient developed symptoms 8 hours later.

We present a suspected case of a very rare complication of a procedure that caused patient morbidity. Clinicians should consider acute pancreatitis in the differential diagnosis of patients who present unwell post-EUS investigations, with or without biopsy. This potential complication should also be added to the informed consent discussion prior to the procedure.

References

1. Adler DG, Jacobson BC, Davila RE, et al. ASGE guideline: Complications of EUS. *Gastrointest Endosc* 2005. 61(1) : 8-12.
2. Eloubeidi MA, Gress FG, Thomas JS, et al. Acute pancreatitis after EUS guided FNA of solid pancreatic masses: a pooled analysis from EUS centers in the United States. *Gastroint Endosc* 2004. 60(3) : 385-389.
3. Kulling D, Sahai AV, Knapple WL. et al. Diagnostic endoscopic ultrasound of the pancreas may cause acute pancreatitis. *Endoscopy* 1998. 30(1): 7-8.
4. Erickson R. Acute pancreatitis complicating diagnostic endosonography. *VHJOE*. 2002. 1(3): 2-3.
5. Jarrar M, Khenissi A, Ghrissi R. et al. *Surgical and Radiologic Anatomy*. 2013. 35(8): 745-748.