Hypercalcemia Related Pancreatitis

Wg Cdr AVS Anil Kumar*, Col PG Kumar*, Gp Capt AK Pujahari#, Wg Cdr S Sampath**

MJAFI 2010; 66 : 385-386

Key Words : Hypercalcemia; Parathyroid adenoma; Hyperparathyroidism; Sestamibi scan; Pancreatitis

Introduction

Common etiological factors of acute pancreatitis are Alcohol, gallstone disease, drugs, trauma, viral infection and hyperlipidemia. Hypercalcemia as a cause of pancreatitis is very rarely reported. Hypercalcemia is usually the result of hyperparathyroidism (HPT) and the most common cause of HPT is parathyroid adenoma. We present a case of recurrent pancreatitis, which helped in diagnosing an otherwise clinically silent parathyroid adenoma.

Case Report

Seventy year old lady presented with acute pain abdomen in the casualty department. The pain was severe, located in the upper abdomen and radiating to the back. It was associated with vomiting and low grade fever. She had past history of three similar episodes in the last two years and was diagnosed as acute pancreatitis and gall stone disease. Cholecystectomy was done after the second episode. Four months back during her third episode of acute pancreatitis, magnetic resonance cholangiopancreatography (MRCP) was done which was negative. She was managed conservatively and had recovered within a week. There was no history of diabetes, tuberculosis or peptic ulcer disease. She had remained asymptomatic till the present episode.

Clinically she had pulse of 110/minute, blood pressure (BP) 110/70 mm Hg and body temperature 100°F. There was tenderness and guarding in the upper abdomen, however, there was no lump or organomegaly and bowel sounds were sluggish. Examination of other systems did not reveal any abnormality. Laboratory studies revealed amylase 1280 U/l, serum calcium 11 mg/dl, ionized calcium 6 mg/l, phosphorus 2.8 mg/dl, cholesterol 190 mg/dl, high density lipoprotein (HDL) cholesterol 30 mg/dl, low density lipoprotein (LDL) cholesterol 119 mg/dl and triglycerides 203 mg/dl. Computed tomography (CT) scan of abdomen revealed evidence of acute pancreatitis and left sided nephrolithiasis. Intravenous (IV) fluids and pain medication were initiated along with empirical antibiotics and the pancreatitis resolved uneventfully. Perusal

of her old medical documents revealed that during the previous three episodes also her calcium levels were slightly high. This raised a suspicion of hypercalcemia related pancreatitis and she was further evaluated with parathyroid hormone (PTH) estimation, magnetic resonance imaging (MRI) of neck and chest and technetium (Tc-99m) sestamibi scan. Her PTH level was 765 pg/dl, MRI revealed nodule in the inferior pole of left thyroid lobe (Fig. 1) and the Tc-99m labeled sestamibi nuclear scan revealed the presence of hot focus in the left inferior pole of thyroid in the delayed image, compatible with the diagnosis of parathyroid adenoma (Fig. 2). There was no other evidence of the tumour in ectopic locations. Patient underwent surgical removal of the adenoma and histopathology confirmed the diagnosis. Her hypercalcemia and raised PTH levels settled in four days.

Discussion

HPT is a rare cause of pancreatitis. Prinz et al [1] in their study of 1475 patients with acute pancreatitis found HPT accounting for only five (0.4%) cases. However, in patients with HPT and resulting hypercalcemia, pancreatitis occurs ten to twenty times more often than in the general population. The main causes of primary HPT are single or double parathyroid adenoma (80%), hyperplasia of all four or more existing parathyroid glands (15–20%) and rarely cancer (2%) of the parathyroid gland [2-4]. It is postulated that hypercalcemia leads to accelerated intrapancreatic conversion of trypsinogen to trypsin, which causes the pancreatic damage [5]. Normally hypocalcaemia is expected during an attack of pancreatitis and hypercalcemia is a strong clue for suspecting HPT [6-8]. In our case there was no clear etiological factor for pancreatitis except hypercalcemia may manifest as polyuria, depression, nephrolithiasis, peptic ulcer or pancreatitis [6,7]. The diagnosis of pancreatitis usually predates the recognition of HPT. Often, there is no previous history to suspect this disorder. Our patient, in addition to pancreatitis, had

*Classified Specialist, Medicine & Nuclear Medicine, *Senior Advisor, Medicine & Nuclear Medicine, #Senior Advisor, Surgery & GI Surgery, **Classified Specialist, Pathology & Biochemistry, Command Hospital, Air Force, Bangalore-07.

Fig. 1 : MRI showing nodule in the inferior pole of left lobe of thyroid.

Fig. 2 : Tc-99m-sestamibi scan showing hot focus in the inferior pole of left lobe of thyroid.

Fig. 3 : Parathyroid adenoma resected.

asymptomatic nephrolithiasis as a manifestation of HPT.

Most of the time parathyroid adenomas are located in the neck. However, in 10 to 20% cases the parathyroid adenomas are found to be located within the mediastinum [2,3]. We had done both MRI and Tc-99m labelled sestamibi scan of neck and chest to rule out any ectopic adenoma. In fact most of the investigators advocate the need for the concordance of at least two diagnostic modalities before surgical excision. The combination of Tc-99m sestamibi scintigraphy with CT scan or MRI of the chest and neck gives important information to proceed with surgery and to minimize the risk of re-operation for recurrent HPT in the future [9-11]. The combination of both techniques has 100% sensitivity and 97.4% positive predictive value for the detection of the cause of primary HPT [10]. After surgery, the patient's PTH and calcium levels returned to normal in the next four days. Thus, whenever acute pancreatitis is associated with hypercalcaemia, the clinician should entertain a possibility of hypercalcemia related pancreatitis and try to exclude HPT.

Conflicts of Interest

None identified

References

1. Prinz RA, Aranha GV. The association of primary hyperparathyroidism and pancreatitis. *Am Surg* 1985; 51: 325-9.
2. Ewing P, Hardy JD. The mediastinum. In: Baue AE, Geha AS, Hammond GL, Laks H, Naunheim KS, editors. *Glenn's Thoracic and Cardiovascular Surgery*. Connecticut: Appleton and Lange 1991; 1: 569-94.
3. Richards ML, Bondeson AG, Thompson NW. Mediastinal parathyroid adenomas and carcinomas. In: Shields TW, LoCicero III J, Ponn RB, editors. *General Thoracic Surgery*. Philadelphia: Lippincott, Williams and Wilkins 2000; 2: 2383-90.
4. Fraker DL. Update on the management of parathyroid tumors. *Curr Opin Oncol* 2000; 12: 41-8.
5. Abdullah M. Pancreatitis in primary hyperparathyroidism. *Med J Malaysia* 2003; 58: 600-3.
6. Nikolaidis LA, Leon MN, Paslidis NJ. Acute pancreatitis as the first manifestation of hyperparathyroidism in an otherwise asymptomatic patient. *J Ark Med Soc* 1995; 92: 273-5.
7. Katoh H, Kojima T, Shimozaawa E. Chronic calcifying pancreatitis associated with primary hyperparathyroidism. *Jpn J Surg* 1990; 20: 704-6.
8. Smith MD, Pawlak M, Pantanowitz DP. Hyperparathyroidism and chronic pancreatitis. *Afr J Surg* 1999; 37: 12-4.
9. Nyugen BD. Parathyroid imaging with Tc-99m sestamibi planar and SPECT scintigraphy. *Radiographics* 1999; 19: 601-14.
10. Lumachi F, Tregnaghi A, Zucchetta P. Technetium-99m sestamibi scintigraphy and helical CT together in patients with primary hyperparathyroidism: a prospective clinical study. *Br J Radiol* 2004; 77: 100-3.
11. Patrick N, Lenzo NP, McCarthy MC, Thompson I, Leedman PJ. Ectopic parathyroid adenoma localized with sestamibi SPECT and image fused computed tomography. *MJA* 2003; 179: 485-7.

Answers to MCQ

1. b	2. d	3. b	4. d	5. a
6. b	7. c	8. c	9. b	10. c
11. b	12. c	13. d	14. c	15. d