Hyperparathyroidism presenting as acute pancreatitis: Case Report of mortality.

Case Report

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ABSTRACT

Background: Acute pancreatitis may be caused by a myriad of factors, hypercalcemia secondary to hyperparathyroidism, albeit is a rare cause of acute pancreatitis but not unheard of. If the underlying cause of acute pancreatitis is diagnosed, goal-directed management becomes possible, reducing morbidity and mortality. Though acute pancreatitis on its own presents significant mortality, hypercalcemia, especially detected late, augments this.

Case Report: We report a case of acute pancreatitis secondary to hyperparathyroidism. The patient was undiagnosed at the time of admission and presented with non-specific gastrointestinal symptoms. After admission, he developed multi-organ dysfunction and was managed by intensive care. The patient died within hours of admission despite our best efforts. Diagnosis of acute pancreatitis secondary to hyperparathyroidism was suspected on the basis of hypercalcemia, confirmed by a posthumous result of a raised parathyroid hormone assay.

Conclusion: When a patient is admitted in the emergency department with a suspicion of acute pancreatitis, serum calcium levels and its reporting should be expedited to as early as possible. Hypercalcemia in the setting of acute pancreatitis merits a multidisciplinary approach and expedited parathyroid hormone levels sent with a high suspicion of long-standing untreated hyperparathyroidism. Hyperparathyroidism is a cause of silent hypercalcemia and can be lethal if not diagnosed in time.

Keywords: *Pancreatitis, hyperparathyrpidism, hypercalcemia, management complications, mortality*.

INTRODUCTION

Acute pancreatitis has an incidence ranging from 4.5-79.8 per 100,000 per year worldwide.[1] It can have serious complications in up to 20-30% of presentations with a mortality figure of up to 1.62 per 100,000 cases worldwide.[2,3] It shares a decent share of annual admissions in the general surgery and gastroenterology services. Causes include alcohol, gallstone disease, abdominal surgery or blunt trauma, drug-induced, hypertriglyceridemia, infection, cancer, post-ERCP and hypercalcemia amongst others. About half the cases of all acute pancreatitis are caused by gallstones, followed by alcohol, usually binge drinking.[4] Acute pancreatitis can be managed without any long term complications with immediate hospitalization and admission and appropriate care based on severity, whether in the ward or in the intensive care unit.[5,6]

Hyperparathyroidism leading to hypercalcemia and secondary pancreatitis is a rare disease entity, with approximately 2.5% of patients presenting with pancreatitis being diagnosed with hyperparathyroidism.

However, patients with hyperparathyroidism may have a pancreatic disease with an incidence of about 1.5%-13%. The data available is variable, and the question about disease severity remains dependent on which was discovered first the hypercalcemia or pancreatitis.[7]

Hypercalcemia though a rare finding in its own, could be caused by various etiologies, hyperparathyroidism, multiple myeloma, malignancy and sarcoidosis being some of the common causes of long-standing and possibly silent hypercalcemia.[8]

Hypercalcemia may present as chronic pancreatitis or acute pancreatitis, and in cases with acute pancreatitis, the disease severity is likely to be associated with greater

morbidity and mortality as the long-standing hypercalcemia is more likely to have already affected other organ systems, and the usual treatment for pancreatitis might fall short. On the basis of severity, hypercalcemia is classified into mild (10-12 mg/dl), moderate (12-14mg/dl) and severe (>14 mg/dl).[9]

We present an unusual presentation of hyperparathyroidism presenting as acute pancreatitis culminating in multiple organ failure and death of the patient.

CASE REPORT

We present the case of a 42-year-old hypertensive male, who presented in the emergency room during the night with complaints of mild epigastric pain for five days and three episodes of vomiting over the last 24 hours. His past history was unremarkable. He was vitally stable, with a blood pressure of 130/80 mmHg, heart rate of 90 beats per minute, respiratory rate of 20 per minute and saturations of 98%. The examination was only remarkable for tenderness in the epigastric region, not associated with any guarding or rigidity and normal bowels sounds. He was started on pain medications, anti-emetics, ceftriaxone, a proton-pump inhibitor, and a ringer lactate infusion at 120ml/hr and admitted with a suspicion of pancreatitis. He was nil per mouth till further orders. Catheterisation was done to monitor urine output.Labs, including a complete blood count (CBC), liver function tests (LFTs), renal function tests (RFTs) and urine examination were sent at the time. A chest x-ray was done that did not show any active pulmonary pathology. An ultrasound was ordered to be carried out in the morning. His amylase returned in the morning, which was elevated at 514IU. However, on repeat examination 6 hours later, his epigastric tenderness was worsening in severity, and his chest now had a few scattered rhonchi. His saturations were dropping to 90% and oxygen at 2 litres per minute via nasal prongs was attached that promptly corrected the hypoxia, and 1-litre fluid rushed. His antibiotic was changed from ceftriaxone to imipenem. The patient was shifted to the ICU for intensive monitoring, and an ECG was done that showed poor R-wave progression, and a cardiology consult was requested. Troponin-I was done, which was negative. His labs from the night of admission showed normal LFTs, a raised alkaline phosphatase at 603U/L, RFTs were deranged, with a creatinine of 2.2mg/dL and urea of 56mg/dL, and a creatinine clearance that was compromised at 46.40, his medications were adjusted according to renal dosing. Coagulation profile was unremarkable, and his CBC was only remarkable for a platelet count of 120,000 u/L and a raised WBC count of 14.8 and neutrophilia. LDH was 720U/L, and Glucose random was 96mg/dL. Ranson's score was 1/5.

His serum calcium was sent that returned later in the afternoon, and an ABG was done that was normal. An ultrasound done in the morning after an evening of admission showed a left renal calculus, mild abdominopelvic ascites and echogenic debris in the gallbladder.

At this point, our impression was that he had gallstone pancreatitis with possible underlying acute on chronic kidney injury. He was conscious and alert till late afternoon. He started becoming slightly confused later in the evening; however, GCS was 15/15. Calcium returned at 3:00 P.M. and was 14.8 mg/dL with a normal albumin level. A parathyroid hormone assay was sent to make a diagnosis with multiple myeloma in the differentials. Malignancy and sarcoidosis were lower on the list due to a normal chest x-ray. The patient was in hypercalcemic crisis, and 2 l normal saline was rushed, and forced diuresis was done with 100 mg of furosemide. His urine output in the last 6 hours was 200 ml. Despite the forced diuresis his urine output in the anteceding 6 hours only increased by 250 ml.

Repeat labs at 10:00 P.M. showed calcium of 16.6 mg/dL, LFTs were now deranged with elevated bilirubin, ALT and AST. His creatinine was now 3.5mg/dL and urea 88mg/dL. Serum electrolytes besides calcium were normal throughout.

On examination, the patient was not maintaining oxygen saturations by face mask, was progressively becoming tachycardic, and his blood pressure which was previously maintained at 130-140/90-100 had shot up to 160/80. He was becoming confused and agitated, and his GCS had started to drop. He was intubated at 12:00 A.M., within 24 hours of his admission and kept on SIMV mode with an FIO_2 of 40%; Propofol and Atrelax infusions were used for sedation and paralysis.

His chest had increased rhonchi and abdomen was slightly distended. A diagnosis of multi-organ dysfunction was made, and forced diuresis was continued. A repeat ABG before intubation showed metabolic acidosis with partial respiratory compensation. Despite all efforts, early in the morning, he started to decompensate, was not maintaining his blood pressures and inotropic support was started. His urine output overnight while on mechanical ventilation, had only increased by 150 ml.

Nephrology was consulted for urgent dialysis; however, the patient, even on maximum ventilatory & ionotropic supports, couldn't maintain his saturations and pressures

and went into cardiac arrest. Despite extensive cardiopulmonary resuscitation, he did not revive. His parathyroid hormone assay returned shortly after and was 1145.4 pg. / ml. (Normal reference range: 15-68.3 pg. / ml).

DISCUSSION

Most of the serum calcium in the body is bound to albumin and rest is in ionized form. The level of serum calcium in varies with the serum albumin level. The severity of the disease depends on the level of calcium. Most of the cases with mild hypercalcemia remain asymptomatic. The most frequent gastrointestinal manifestations of hypercalcemia are constipation, heartburn, nausea & loss of appetite. Vague abdominal pain is also a common gastrointestinal manifestation of hypercalcemia.[10] Patients may have oliguria; a renal failure in such patients can be treated with correction of serum calcium levels and repeated hemodialysis. Chronic hypercalcemia can lead to the formation of renal stones, as was with our patient.[11]

Neuropsychiatric manifestations of hypercalcemia manifest as alternation in cognition and can progress to stupor and coma if untreated. Abnormally high serum calcium cause cardiac arrhythmias, shortens the QT interval and predisposes the patient to sudden cardiac death in some instances.[12] The diagnosis of primary hyperparathyroidism is made on the basis of persistently elevated serum calcium levels in the presence of abnormally high parathyroid hormone levels.[13]

Hypercalcemic crisis is a medical emergency that could present with gastrointestinal, renal and neurological involvement presenting as a diagnostic challenge due to the differential list that is exhaustive; and has been attributed to high mortality, which was nearly universal up until the late 1950s and 60s. A recent study showed that their patients with hypercalcemia had a 33.3% mortality rate.[14] Other studies show variable mortality some as low as 14%. However, the cornerstone of management remains forced diuresis along with bisphosphonate therapy, that might decrease the days it takes to reach eucalcemia to 4-5 days with bisphosphonates versus an average of 14-15 days without bisphosphonates- and expedited parathryoidectomy. The mortality seems to be higher in those with confusion and oliguria developing.[15]

Unfortunately for our patient, we presume he had long-standing hypercalcemia that developed into a hypercalcemic crisis with pancreatitis; developing and augmenting rapidly in severity for the five days before he presented to us, and was already at the beginning of multi-organ dysfunction syndrome (MODS) when we received him, and the MODS accelerated exponentially in the 24 hours that he was in the ICU leading to his death.

The disease is rapidly progressing, and there is the involvement of multiple systems. The mortality in pancreatitis secondary to hyperparathyroidism varies from 14-30%, and it becomes higher when the central nervous system and renal system is involved.[10-11,15]

In our patient, the delay of a few hours in sending serum calcium from presentation might have affected the outcome, but marginally. However, the role of expediting serum calcium levels in a patient with pancreatitis at presentation or a presumed diagnosis cannot be stressed upon more, knowing that in a rare and small percentage of patients pancreatitis could be secondary to hypercalcemia which would effectively change management goals largely.

Waiting for 48 hours to send serum calcium might be devastating, and from our experience, patients who present with suspicion of pancreatitis should have serum calcium sent at the time of workup for suspected pancreatitis to avoid unnecessary delays. Further, expediting parathyroid hormone levels in a patient with hypercalcemia and pancreatitis could lead to an urgent parathyroidectomy that might change the outcomes in such patients.

CONCLUSION

When a patient is admitted with a suspicion of acute pancreatitis, serum calcium should be sent on an emergent basis to rule out hypercalcemia as a cause. The management of pancreatitis depends on identifying the underlying cause; hyperparathyroidism should be investigated if hypercalcemia is found. Multidisciplinary teams should be involved in the treatment of such patients, and if merited, parathyroidectomy should be done to normalize calcium.

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CONFLICT OF INTEREST

The Authors declared no conflicts of interest.

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