

Hyperamylasemia with Normal Pancreas in Leptospirosis

Vasu Pillai Letchumanan^{1,*}; Manisekar K. Subramaniam Frcs²

¹ Surgeon, Hepatobiliary Unit, Department of Surgery, Hospital Sultanah Bahiyah, Alor Star, Kedah, Malaysia.

² Consultant Hepatobiliary Surgeon, Hepatobiliary Unit, Department of Surgery, Hospital Sultanah Bahiyah, Alor Star, Kedah, Malaysia.

* Corresponding author.

Received 20 December 2011; accepted 25 March 2012.

Abstract

Serum α -amylase has been the most widely used laboratory test to diagnose acute pancreatitis. Serum amylase can be raised in many conditions including acute pancreatitis, other pancreatic diseases and non-pancreatic diseases. In addition, serum amylase not necessarily increased in acute pancreatitis. These two cases illustrate, a rare condition in which hyperamylasemia was noted in a case of leptospirosis in the absence of pancreatic involvement. The initial clinical diagnosis in these patients were acute pancreatitis.

Key words: Pancreatitis; Hyperamylesemia; Leptospirosis

Vasu Pillai Letchumanan, Manisekar K. Subramaniam Frcs (2012). Hyperamylasemia with Normal Pancreas in Leptospirosis. *Advances in Natural Science*, 5(1), 37-40. Available from: URL: <http://www.cscanada.net/index.php/ans/article/view/j.ans.1715787020120501.000>
DOI: <http://dx.doi.org/10.3968/j.ans.1715787020120501.000>

CASE 1

The patient was 16 years old Malay boy with history of fever for five days. The fever was high grade and continuous. It was associated abdominal pain radiating to back and diarrhoea for one day duration. He experienced shortness of breath for 3 days but no chest pain.

He was noted to be febrile (37.9 C), tachycardiac and hypotensive on presentation.

He was pink but not jaundiced. He was dehydrated. The abdomen was schaphoid, soft and not distended. It

was non tender, no guarding and no ascites. The bowel sounds was normal.

Chest examination revealed coarse crepitations till midzone bilaterally.

Other systems were normal.

Investigations revealed hemoglobin level of 7.3 g/dl, platelet count was 74,000 and total white cell count was 12.7. His blood gases revealed metabolic acidosis.

Serum electrolytes showed renal impairment with blood urea of 16.5 mmol/l and serum creatinine of 242 umol/l.

Liver function test(LFT) revealed raised bilirubin of 38 umol/l and serum alanine transaminase(ALT) 469 u/L with normal alkaline phosphatase(ALP) 77 u/l. Creatinine kinase was 242 umol/l and serum lactate dehydrogenase(LDH) was 368 u/l.

His serum amylase at presentation was 2805.48 u/l.

His chest xray revealed features of Acute respiratory Distress Syndrome (ARDS).

So, he was treated as acute pancreatitis with ARDS and mild renal impairment.

He was resuscitated adequately and was ventilated due to his lung problem.

He was started on intravenous antibiotics.

After his renal function improved in two days, a contrasted computed tomography(CT) abdomen revealed normal pancreas with no other intraabdominal pathology.

Due to his altered liver function test and raised ures, serum leptospirosis serology test was requested initially during his work up which surprisingly turned out to be positive.

His antibiotic was changed and patient recovered well and discharged.

CASE 2

We present a 50 years old Malay gentleman, farmer by profession, presented with acutegeneralized abdominal

pain and fever for three days. He had low grade and tachycardia but he was normotensive. On examination the abdomen was soft, not distended and no area of guarding noted. His lungs were clear.

Biochemically he had mild renal impairment with serum amylase of 3000 u/l. His liver function test was normal.

US abdomen revealed normal pancreas with no intraabdominal pathology. Leptospirosis serology was done as an investigation for persistent fever. His leptospirosis serology was positive. His condition improved with antibiotic treatment and was discharged well with oral antibiotics.

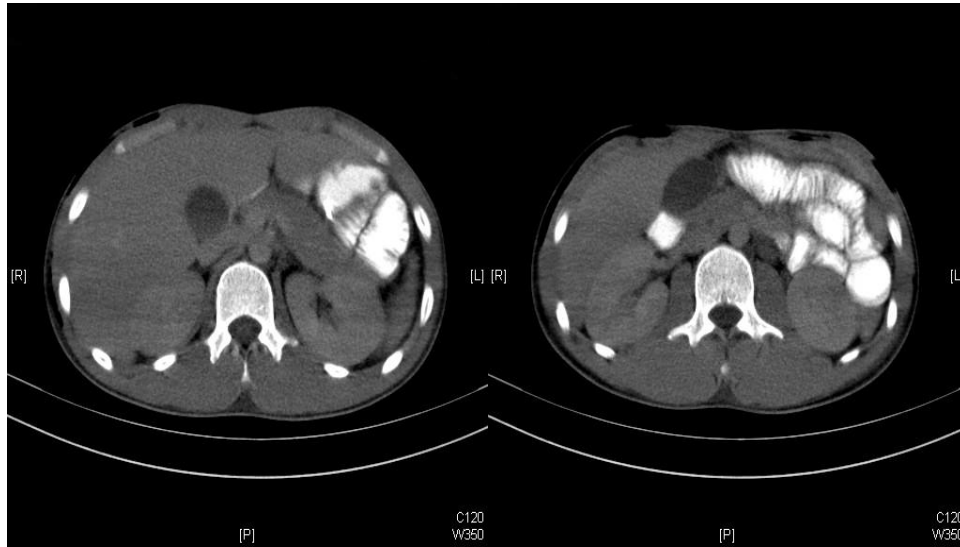


Figure 1
Pancreas Grossly Appears Normal (Delayed Venous Phase) in Case 1

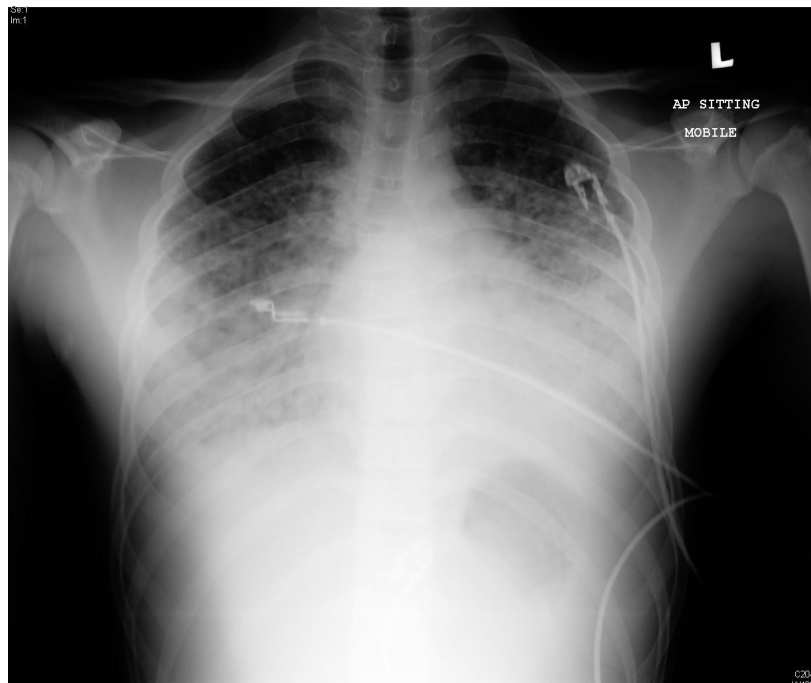


Figure 2
Chest X-ray of the Patient (Case 1) Having Acute Respiratory Distress Syndrome in Leptospirosis



Figure 3
Ultrasound Images of Case 2 Showing Normal Pancreas

DISCUSSION

Acute pancreatitis is a potentially fatal condition and occasionally it can be a challenge to diagnose this condition.

The 1992 Atlanta symposium classified acute pancreatitis as an acute inflammatory process of the pancreas with variable involvement of other regional tissues or remote organ system, associated with raised pancreatic enzyme levels in blood and/or urine (Bradley EL, 1993).

Commonly used laboratory tests in diagnosing acute pancreatitis are total serum amylase and serum lipase.

Serum amylase levels in patients with pancreatitis vary depending on the severity of the disease. On average, during uncomplicated cases, the serum amylase level starts increasing from two to 12 hours after the onset of symptoms and peaks at 12 to 72 hours (Winslet, Hall, London, & Neoptolemos, 1992). It usually returns to normal within one week. Although it lacks sensitivity (87 to 96 percent) (Winslet et al., 1992 & Clavien PA et al, 1989) measurement of the serum amylase level is the most widely used. The advantages of amylase testing are that it is performed quickly and inexpensive.

Lipase levels increase within four to eight hours of the onset of clinical symptoms and peak at about 24

hours (Tichtin, Trujillo, Evans, & Roe, 1965). Levels decrease within eight to 14 days. Orebaugh SL, 1994 in his study noted that the sensitivity of lipase was about 95% in diagnosing pancreatitis.

Amylase or lipase levels at least 3 times above the reference range are generally considered diagnostic of acute pancreatitis.

Although unnecessary in mild cases of pancreatitis, radiological visualization of inflammatory changes within the pancreas provides morphologic confirmation of the diagnosis (Silverstein, Isikoff, Hill, & Barkin, 1981).

Contrasted CT scan of the abdomen has a role in grading the severity and identifying complications of pancreatitis.

However, a variety of nonpancreatic conditions can cause increased amylase levels. Hyperamylasemia has been noted in conditions like malignancies (gastric, ovarian neoplasm, multiple myeloma, lung, pheochromocytoma), perforated hollow viscus, ruptured tubal pregnancy, opiate administration, cardiac failure, diabetes ketoacidosis, post cardiac surgery, salivary gland disorders, renal failure, trauma bulimea, anorexia nervosa, familial hyperamylasemia and macroamylasemia.

It is a tendency to suspect pancreatic disease whenever hyperamylasemia is encountered as illustrated in these cases. Absence of clinical findings to support pancreatitis should alert the managing team to further investigate for non pancreatic causes of hyperamylasemia.

Measurement of isoenzymes namely pancreatic type amylase and salivary type rather than total level may be helpful in excluding pancreatitis. However, these tests may not be available in many centers.

In both these cases, radiological investigations have aided in excluding pancreatic involvement.

Leptospirosis is water borne disease caused by a spirochaete bacterium called *Leptospira spp.* Leptospirosis is an emerging public problem and there has been recent outbreak of the disease in Malaysia. Majority of leptospiral infection is subclinical or it results in very mild illness. However a small proportion develops various complications due to involvement of multiple organ systems.

In leptospirosis serum amylase can be elevated due to acute renal failure, or due to pancreatic involvement of

the disease or due to hyperamylasemia. Dahel et al, 2003 in their study has documented histological changes of pancreas indicating acute pancreatitis in leptospirosis but in few of their cases medication induced pancreatitis was not ruled out.

In both our cases, there was mild renal impairment which improved with rehydration, and the pancreas was imaged normal with no inflammatory changes. In first case, as no proper arterial phase was seen, by CT we could not exclude mild acute pancreatitis though there was clinical evidence of pancreatitis. In the second patient the pancreas was normal by ultrasound. Even though both patients were diagnosed as acute pancreatitis, clinical evaluation was doubtful leading to further investigations and the diagnosis. Appropriate antibiotic treatment allowed the full recovery of these patients.

REFERENCES

- [1] Bradley E. L. (1993). A Clinically Based Classification System for Acute Pancreatitis. Summary of the International Symposium on Acute Pancreatitis, Atlanta, Ga, September 11 through 13, 1992. 3rd. *Arch Surg.*, 128(5), 586-90. Review.
- [2] Clavien P.A., Robert J., Meyer P., Borst F., Hauser H., Hermann F.,...Rohner A. (1989). Acute Pancreatitis and Normoamylasemia. Not an Uncommon Combination. *Ann Surg.*, 210, 614-20.
- [3] Daher Ede F., Brunetta D. M., de Silva Junior G.B., Puster R. A., Patrocinio R.M. (2003). Pancreatic Involvement in Fatal Human Leptospirosis: Clinical AMD Histopathological Features. *Rev Inst Med Trop Sao Paulo*, 45, 307-13.
- [4] Orebaugh S. L. (1994) Normal Amylase Levels in the Presentation of Acute Pancreatitis. *Am J Emerg Med*, 12, 21-4.
- [5] Silverstein W., Isikoff M.B., Hill M. C., Barkin J.(1981) Diagnostic imaging of Acute Pancreatitis: Prospective Study Using CT and Sonography. *AJR Am J Roentgenol*, 137, 497-502.
- [6] Tichtin H. E., Trujillo N.P., Evans P. F., Roe J. H.(1965). Diagnostic Value of a New Serum Lipase Method. *Gastroenterology*, 48, 12-7.
- [7] Winslet M. & Hall C. (1992). Relation of Diagnostic Serum Amylase Levels to Aetiology and Severity of Acute Pancreatitis. *Gut.*, 33, 982-6.