

ACUTE PANCREATITIS IN THE SETTING OF DKA AND HYPERTRIGLYCERIDEMIA

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Learning Objective

Consider acute pancreatitis in a patient presenting with DKA

Case Presentation

A 28 year old obese male with no known PMH who presented to the ED with complaints of epigastric abdominal pain. He drank a liter of vodka a few days prior. He also endorsed having unquenchable thirst for the few weeks prior to presentation. He was drinking water, to the point that he was full, but still feeling thirsty. He also mentioned increased urinary frequency but no dysuria. On lab examination in the ED his lipase was noted to be 6,499. Bedside glucometer measured blood glucose of 364. He had an anion gap of 22. A CT of his abdomen showed findings consistent with acute pancreatitis. His blood was found to be lipemic and a lipid panel was done. Total cholesterol was 327, HDL 17, TG 3,122, LDL 102. He was started on IV fluids and an Insulin drip, kept NPO and his pain was managed. He was started on gemfibrozil and discharged when his anion gap closed and TG were 1065 by the time of discharge.



Figure 1. CT abdomen showing large fat stranding surrounding pancreas



Figure 2. CT abdomen showing hepatosplenomegaly.

	7 4/26/2018 0448	6 4/26/2018 1444	5 4/27/2018 0136	4 4/27/2018 1334	3 4/28/2018 0127	2 4/29/2018 0623	1 4/30/2018 0527
LIPIDS							
CHOLESTEROL	327*	311*	271*	321*	316*	338*	333*
HDL	17*	18*	17*	17*	17*	19*	17*
TRIGLYCERIDE	3,122*	2,435*	1,473*	1,682*	1,301*	1,278*	1,065*
CALCULATED NON HDL	310*	293*	254*	304*	299*	319*	316*
CHOL/HDL	19.2*	17.3*	15.9*	18.9*	18.6*	17.8*	19.6*
LDL (Direct)	102*	67*	55*	59*	76*	92*	103*

Figure 3. Triglyceride trend

Discussion

- Insulin deficiency increases lipolysis causing increase in FFA, accelerating VLDL production.
- Lipoprotein lipase decreases activity leading to increase of VLDL, causing hypertriglyceridemia.
- If TG > 2,500 mg/dL, electrolytes decrease by over 5% because of intracellular movement of serum lipid components
- High plasma chylomicrons are hydrolyzed by lipase and trigger FFA release. That causes activation of trypsinogen and causing capillary damage via free radicals in the pancreas
- Hypertriglyceridemia is an uncommon cause of acute pancreatitis accounting for 1-4% of cases
- DKA and co-existing acute pancreatitis occurs in 10-15% of cases.
- Managing DKA in these patients may prove to be difficult due to lipemic blood, as in this patient.

Treatment:

- Insulin infusion is generally effective in lowering TG levels
- Plasmapheresis has been known to lower severe hypertriglyceridemia, although there is little evidence

Prognosis:

- Morbidity <1%, however consequences due to acute pancreatitis or more severely lipidemia retinalis are possible
- no conclusion exists as to whether hypertriglyceridemia-induced pancreatitis is more severe in DKA

Resources

Hahn SJ, Park J, Lee JH, Lee JK, Kim K-A. 2010. Journal of Korean Medical Science
Seth A, Rajpal S, Saigal T, et al. 2014. Clinical Medicine Insights Gastroenterology.
Kumar P, Sakwariya A, Sultania AR, Dabas R. 2017. Journal of Laboratory Physicians.

Implication

Patients with acute DKA can also have concomitant acute pancreatitis in up to 15% of cases and should be considered in cases of severe abdominal pain. Severe pancreatitis can in turn lead to hypertriglyceridemia.