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CASE REPORT 1

DIABETIC KETOACIDOSIS, IN COGNITO

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Key words: chylomicronemia, pancreatitis, diabetes mellitus, hypertriglyceridemia.

INTRODUCTION:

Chylomicronemia syndrome is a rare disorder which can be potentially life threatening especially if combined with diabetic ketoacidosis. We present the case of a 29 year-old gentleman with known hypertriglyceridemia and diabetes mellitus that presented with acute pancreatitis and diabetic keto-acidosis. Treatment with continuous IV insulin, cessation of oral intake, naso-gastric decompression and fibrates decreased the triglyceride levels from 5071 mg/dL to 260 mg/dL by day 7. The patient was discharged symptom free with strict dietary intervention and close follow-up with an endocrinologist.

PRESENTATION:

A 29-year-old Latin American gentleman presented with acute-onset abdominal pain. He was admitted with progressively increasing epigastric pain, nausea and vomiting. His pain was described as severe, sharp and stabbing, and radiating to the chest, abdomen and back. His medical history was significant for hyperlipidemia, diabetes mellitus and umbilical herniorrhaphy. Six months prior to admission, the patient had noticed yellow non-pruritic papules on his upper extremities and was prescribed fenofibrate. The skin rash disappeared but reappeared when the patient discontinued his medications; he admitted to non-compliance with his home medications. He denied smoking, alcohol or recreational drug use.



On examination, the patient's BMI was 33.4. Vital signs on admit: Temperature 100.3 F, pulse 118 beats per minute, respirations 18/min, and blood pressure 123/79 mm Hg. Physical examination was significant for abdominal tenderness and voluntary guarding but no masses were evident on palpation. Several xanthomas were also noted on the patient's chest and upper extremities (see figure 1). Ophthalmic exam did not reveal lipemia retinalis.

Figure 1. eruptive xanthoma

ASSESSMENT:

Laboratory examination on admission revealed the following pertinent findings: white cell count $15.6 \times 10^3/\mu\text{L}$ with 2 bands, hemoglobin 16.8 g/dL, and platelet count $488 \times 10^3/\mu\text{L}$. His

electrolytes included a sodium of 136, potassium of 3.6, chloride of 96, bicarbonate of 25, a BUN of 16, a creatinine of 1.5, a serum glucose of 356, total protein of 6.9, albumin of 4.4, total bilirubin of 1.4, direct bilirubin 0.4, AST of 16, ALT 22, alkaline phosphatase 91, amylase of 1397 and lipase of greater than 800. The patient's serum was lipemic with elevated triglycerides 5071(normal<150 mg/dL). UA showed greater than 1000 glucose and >=80 ketones. Urine culture revealed a urinary tract infection with Group B Streptococcus. An abdominal X-ray revealed no ileus, obstruction or perforation. CT scan of the abdomen revealed mild pancreatitis without evidence of pancreatic necrosis, focal fluid collection or pseudocyst and an enlarged, fatty liver. Ultrasound of the abdomen revealed a hypoechoic edematous pancreas without cholelithiasis.

MANAGEMENT:

Conservative management was initiated with aggressive fluid rehydration, pain control and nothing by mouth. The patient's Ranson score on admission was positive for one criterion (glucose level, 356 mg/dL); however within 48 h the patient's Ranson score was positive for four criteria; hypocalcemia, hematocrit drop by 20%, increased base deficit and sequestration of fluids. On the day following admission, the patient's CO₂ content decreased from 25 to 13 and his anion gap increased to 22 with ketonemia. Lactic acid was 2 mg/dL. The patient developed diabetic ketoacidosis and was transferred to the ICU for higher level of care. In the ICU, the patient received intravenous fluid rehydration, Augmentin for Group B streptococcus UTI and insulin drip. His symptoms and laboratory values improved with treatment and a repeat CT abdomen revealed pancreatitis with interval increase in peripancreatic fluid without organizing fluid collection, abscess, or pseudocyst. The patient's triglyceride decreased to 260 mg/dL by day 7. On hospital day 8, the patient was discharged with planned follow-up with an endocrinologist for management of his hypertriglyceridaemia.

DISCUSSION:

Chylomicronemia syndrome is defined as the occurrence of chylomicronemia (serum triglycerides greater than 1000 mg/dl) with eruptive xanthoma, lipemia retinalis, and/or abdominal symptoms (2). The incidence is rare, but is increasing as obesity and diabetes are becoming more prevalent; genetic and environmental causes together make up most cases of chylomicronemia syndrome. The etiology of chylomicronemia is impaired triglyceride metabolism and can be categorized into primary versus secondary causes. The primary causes in adults include familial deficiency of lipoprotein lipase (LPL), familial deficiency of apolipoprotein (apo) C-II, and familial inhibitor of LPL (3). Secondary causes include but are not limited to insulin resistance states such as diabetes and obesity, excess alcohol ingestion, HIV, Cushing's, hypothyroidism, and certain medications such as antiretrovirals, glucocorticoids, tamoxifen, and hydrochlorothiazide.

As what occurred with our patient, acute pancreatitis is a serious complication of untreated hypertriglyceridemia. Chylomicronemic patients with abdominal pain should be considered a medical emergency because of the possibility for acute pancreatitis. This usually occurs in patients with uncontrolled diabetes. These patients should be hospitalized, hydrated with intravenous fluids and should receive nothing by mouth. Insulin should be administered to help lower the chylomicron level. As an outpatient, the patient should be started on fibrates and n-3-polyunsaturated fatty acids. The patient should also receive and understand the necessity of long term lifestyle changes including a very low fat diet with carbohydrate moderation.

Unfortunately our patient was an uncontrolled diabetic, and not only did he develop pancreatitis with chylomicronemia syndrome, but he was also diagnosed with diabetic ketoacidosis and transferred to the ICU and started on an insulin drip. It is very important for prompt diagnosis of DKA in acute pancreatitis or vice versa. Acute pancreatitis worsens the severity of DKA by increasing vascular volume depletion and affecting glucose homeostasis making control of the hyperglycemia more difficult. In DKA, once ketosis is controlled, oral feedings are resumed; however in a patient with concomitant pancreatitis, eating may worsen the situation requiring close monitoring for ARDS, pancreatic necrosis, infection or pseudocysts (6). It is believed that transiently high triglycerides in patients with DKA may lead to

acute pancreatitis; however acute pancreatitis can also lead to DKA. The complexity of diabetic ketoacidosis, hypertriglyceridemia, and acute pancreatitis occurring concurrently requires aggressive management with very close monitoring.

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Case Report 2

A Homeless Man with “dizziness”: Not always a secondary gain

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A 65 year old homeless Caucasian man with a medical history of non-insulin dependent Diabetes Mellitus, hypertension, and dyslipidemia presented with an acute syncopal episode. He was a Vietnam War Veteran but was non-compliant with followup at VA system. The patient stated that he had been feeling dizzy for approximately 24 hours, but denied any vertiginous sensation. While walking down the street his dizziness worsened and he fell from standing and lost consciousness for an undetermined amount of time. EMS was called and he was brought to the Memorial Hermann Emergency Department. He denied any prodromal symptoms associated with the loss of consciousness. However, he did report persistent dizziness and headache, as well as a history of erectile dysfunction for the past 3 years. He had never sought medical attention for them. Pertinent findings on exam were orthostatic hypotension and dry mucous membranes. In addition, left sided periorbital scars, difficulty with left lateral gaze, left sided facial droop, and asymmetric smile, all of which he reported were persistent since trauma in his childhood. Other positive findings include bilateral 1+ lower extremity pitting edema to mid-calf, erythema and excoriations on the dorsal aspects of both feet, unsteadiness on standing, and decreased vibratory sensation in the left lower extremity. Examination of the external auditory canal and tympanic membranes revealed no abnormalities. The remainder of the neurological exam was within normal limits.

A CT of the head showed no acute hemorrhage or neoplasm. MRI/MRA of the brain ruled out an acute ischemic stroke. Carotid Doppler ultrasound showed no calcified plaques or significant stenosis. The patient was hydrated with normal saline and his hypertension was managed with non-nodal blocking agents, but his orthostatic hypotension and dizziness persisted. A Tilt-table test was positive for vasodepressive neurogenic syncope and his EKG is shown in Fig. 2.

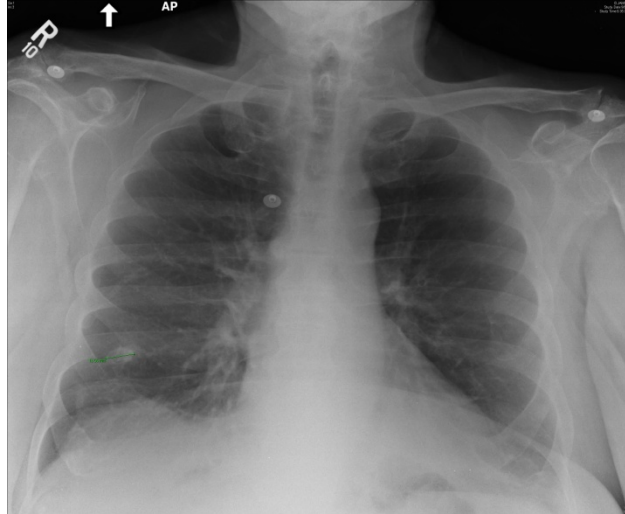


Figure 1. PA chest radiograph showing no causes for acute syncope.

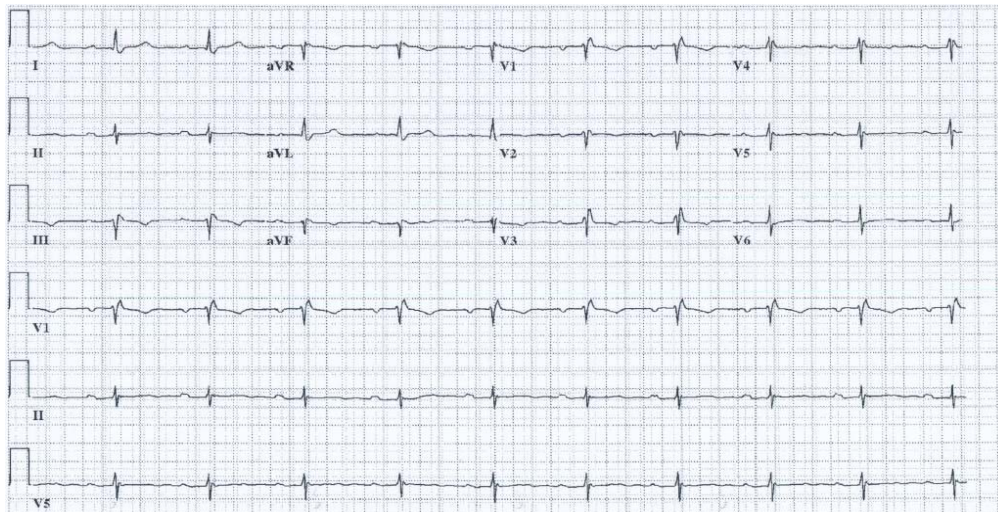


Figure 2. EKG showing Trifascicular Heart Block consisting of a first degree AV block, right bundle branch block with left axis deviation indicating an accompanying left anterior fascicular block.

Due to the patient's coexisting trifascicular heart block and autonomic neuropathy likely due to longstanding poorly controlled diabetes, it was difficult to define the exact etiology of his acute syncope. However, the combined findings of autonomic neuropathy, low voltage EKG, and conduction defects, the diagnosis of Systemic Amyloidosis was highly likely. He was then transferred to the VA Hospital where he received an Electrophysiologic study and dual chamber pacemaker for the trifascicular heart block. He will be receiving workup for Systemic Amyloidosis as an outpatient.

Discussion –

Trifascicular heart block is defined as conduction disturbances in the right bundle branch and either the left anterior fascicle or the left posterior fascicle, along with a prolonged P-R interval. It is diagnosed based on EKG findings. Progression to complete heart block is believed to be infrequent, with one study reporting an incidence of progression of 1% and it is believed that most deaths associated with trifascicular heart block are due to cardiac arrhythmias (1). Many studies have attempted to identify prognostic indicators associated with sudden death in patients with chronic bifascicular and trifascicular heart blocks. These studies have investigated the usefulness of prolonged PR interval and

presence of symptoms such as syncope as predictive indicators of sudden death. Thus far, however, these studies have not been able to identify a reliable predictor of sudden death (2).

Treatment of trifascicular heart block begins by identifying and correcting any reversible causes of conduction impairment. These reversible causes can include: infectious endocarditis, myocarditis, electrolyte disturbances, neuromuscular disorders, beta-blockers, calcium channel blockers, and cardiac glycosides. If no reversible cause is found, treatment consists of avoidance of AV nodal blocking agents and placement of a permanent pacemaker (3). Dual-chamber pacing is currently preferred due to the loss of atrio-ventricular synchrony as seen with single-chamber pacing.

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Case Report 3

Dyspnea in a patient with Wegeners Granulomatosis.

Musa Yilmaz, M.D.

64 year old Indian woman with past medical history of Hypertension, Diabetes mellitus- Type 2, Wegeners Granulomatosis was referred from nephrology clinic with chief complaint of fever 102° F and mild shortness of breath on minimal exertion for one week. She denied cough, phlegm, sneezing, rhinorrhea, dysuria, abdominal pain, chest pain, headache, nausea, vomiting or diarrhea. She had oral thrush which started three weeks ago after she began cyclophosphamide and prednisone for treatment of Wegener's granulomatosis. She denied any sick contact or travel history. Physical examination was remarkable for low grade fever (99.9° F), O2 sat. 98% in room air, tachypnea, mild wheezing in bilateral bases of the lungs. Significant lab results were- wbc: 1.0 k/cmm, seg: 89%, lym: 2, 2%, AST: 342, ALT: 167, ALP: 144. Blood and urine cultures were negative, RPR was non reactive, Toxoplasma IgG <0.5, Toxoplasma IgM<0.100, HBsAg: Negative, Anti-HCV: Negative, Anti-HcAg: Negative, Anti-HAV IGM: Negative, Cryptococcal Ag in serum: Negative, Histoplasma Quantitative Antigen In Urine: Negative and HIV: Negative.

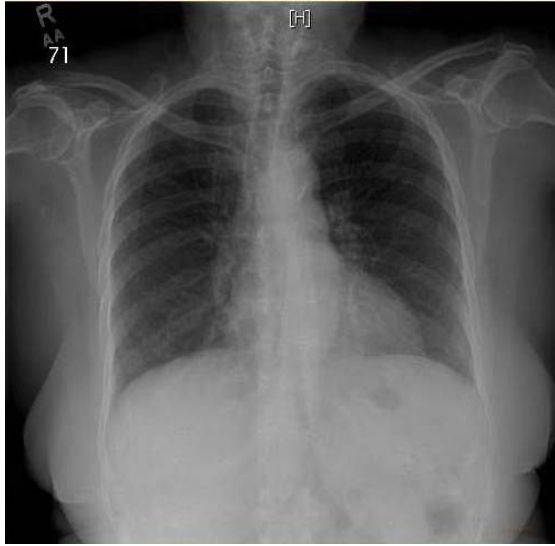


Figure 1

Figure 2

As seen in figure 1 and 2, Chest X-ray and CT was unremarkable at that time.

CMV viral quantitation is >6.6 log copies/mL or $>3,900,000$ copies/ML so we started to treat patient with IV gancyclovir. However patient continued to be febrile inspite of CMV treatment and her dyspnea progressed and her O₂ sat decreased to 88-90% in 5 days. Bronchoalveolar lavage was done and DFA was positive for pneumocystis carinii. Patient started on TMP-SMX treatment immediately and fever, shortness of breath started to resolve within the first day.

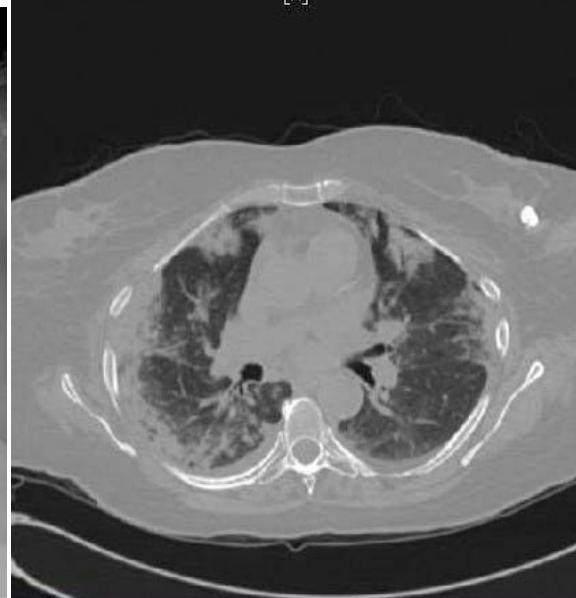


Figure 3

Figure 4

Chest X-ray (figure 3) showed peripheral patchy alveolar opacities throughout the right lung and left upper lobe. Chest CT (figure 4) was remarkable for interval development of bilateral multifocal air space opacities.

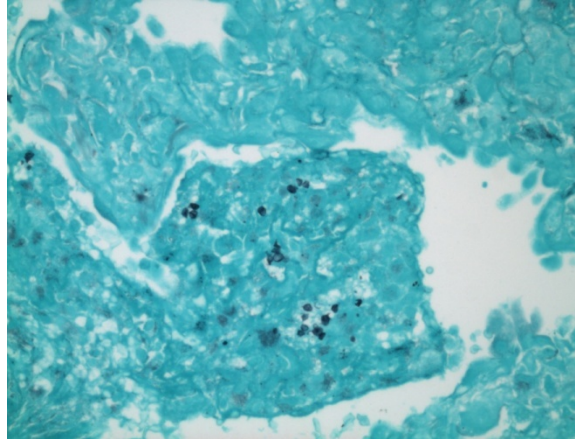


Figure 5 the lung biopsy of the patient showing PCP microorganisms on Giemsa stain

Discussion:

Pneumocystis jirovecii (formerly *carinii*) is a fungus causing pneumonia mainly among patients with an impaired immune system, such as those infected with the human immunodeficiency virus (HIV), patients with malignant disease, following organ transplantation or collagen vascular disease patients receiving immune suppressive medications. Primary infection is probably largely asymptomatic (1). Symptomatic disease is rare and limited to immunocompromised individuals. PCP usually presents with progressive shortness of breath. Nonproductive cough, low grade fever and in physical examination often reveals normal or near normal findings in lungs auscultation, tachypnea, tachycardia and hypoxemia is found most of the time. *Pneumocystis pneumonia* (PCP) is also an emerging problem among patients on immunosuppressive medications for autoimmune inflammatory disorders (AID). As seen in this case the disease presents acutely and bronchoalveolar lavage may be required for diagnosis. Despite treatment with intravenous antibiotics, PCP carries a worse prognosis in AID patients than HIV positive patients. The overall incidence of PCP in patients with AID remains low, although patients with Wegener's granulomatosis are at particular risk (2). Prophylaxis of PCP is needed for patients with Wegener's granulomatosis, in case of cyclophosphamide or high-dose of methotrexate use except for rheumatoid patients, if a simultaneous treatment by corticosteroids and immunosuppressant agent is required, if a prolonged corticosteroid treatment (> 2 months) is used with dose of prednisone-equivalent > 16mg per day or > 20mg per day > 1month associated with one or more risk factors of PCP among advanced age, malnutrition or lymphopenia (3).

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