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### **The Shocking truth: a case of persistent atrial fibrillation cardioversion with domestic electrical shock**

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**IMPACT/DISCUSSION:** Pancreatic NET are rare, indolent tumors with clinical presentation dependent on type of hormone production. With a serotonin-secreting NET, carcinoid syndrome may also be present, with diarrhea, wheezing, and elevated levels of urinary serotonin metabolite 5-HIAA. Chylous ascites in our patient is an exceptional complication of pancreatic NET caused by local lymphatic compression by tumor. Metastasis may occur to liver or peritoneum, the disease-specific survival being worse with peritoneal spread (HR 2.9). Our case illustrates the importance of aggressive staging as findings of metastases can impact management and prognosis. In addition to traditional CT, MRI, and EUS imaging modalities, we also pursued complete analysis of ascitic fluid and utilized a specialized, NET-somatostatin receptor targeted whole body scan. Somatostatin analogue-labeled (Ga-68 DOTATATE) PET/CT is highly sensitive and specific for diagnosis and localization of NET, but is not widely available. Treatment of NET is targeted at the tumor itself and consequences of excess hormone. Pancreatic NET and chylous ascites are remarkably responsive to dietary modification, diuretics, and somatostatin.

**CONCLUSION:** - Prognosis and management of NET depends on extent of metastases and type of hormone secreted.

- Chylous ascites from mechanical compression of lymphatics is a rare complication of NET.

- Thorough physical examination, urine and ascitic fluid studies, biopsy of tumor, and NET-targeted functional imaging can expedite diagnosis and treatment.

#### **THERAPEUTIC CONUNDRUM: MASSIVE PULMONARY EMBOLISM (PE) COMPLICATED BY INTRA-ABDOMINAL HEMORRHAGE**

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**LEARNING OBJECTIVE #1:** Recognize right ventricular RV failure complicating PE

**LEARNING OBJECTIVE #2:** Describe the role of Extracorporeal Membrane Oxygenation (ECMO) in management of PE in unstable patients

**CASE:** 55 year old female with history of hypertension presented with dizziness and dyspnea since 5 days. She reported 35 pounds weight gain, increase in abdominal girth along with irregular menses over last 6 months. Admission vitals: pulse 110 bpm, BP 90/48 mmHg, respiratory rate 20/min and saturation 97% on 2 L nasal cannula oxygen. Physical exam was significant for abdominal distension.

Lab findings: Hb 6 g/dl, platelet 150 k/mm<sup>3</sup>. CT scan of chest, abdomen and pelvis showed bilateral PE with massive clot burden and RV distention and a large 30 cm intra-abdominal mass. TTE confirmed RV strain with flattening of interventricular septum and McConnell's sign with RV free wall akinesis. US Doppler of lower extremities showed thrombus in left popliteal vein. Given patient's anemia, thrombocytopenia and tumor, initial decision was made to treat the PE conservatively with heparin drip however after 2 days patient became unstable. Repeat imaging showed large volume of intra-abdominal bleeding. Patient required emergency laparotomy for intra-abdominal bleed. Due to concerns of RV dysfunction combined with an acute bleed with hemodynamic disturbances of general anesthesia and large volume resuscitation, peripheral veno-arterial extra-corporeal membrane oxygenation (VA-ECMO) was initiated immediately prior to emergency laparotomy to stabilize the patient's RV dysfunction. During laparotomy, a 35 cm pelvic tumor with 5 L of bloody fluid was removed with total abdominal hysterectomy and bilateral salpingo-oophorectomy. She was started on low dose heparin on post-operative day (POD) 1. Daily TTEs showed gradual improvement of RV function. On POD 6, ECMO was discontinued. Embolectomy was not done as RV function improved. Patient remained hemodynamically stable, transitioned to oral anticoagulation (AC) and discharged after 2 weeks. Tumor pathology was granulosa cell tumor of ovary.

**IMPACT/DISCUSSION:** Treatment modalities for unstable PEs: Systemic AC has varying effects on RV support in acute period. Systemic thrombolysis has relatively high bleeding, stroke risk and little immediate RV support. Catheter based therapies are not efficacious in unstable patients with

questionable immediate RV support. Surgical embolectomy is effective for immediate and long term RV recovery and survival but requires AC for cardiopulmonary bypass which in setting of acute bleed could prove catastrophic. ECMO has been shown to be safe and effective means of supporting RV in setting of acute PE, especially in unstable patients. ECMO decompresses RV and provides mechanical circulatory support permitting clot resolution and RV recovery.

**CONCLUSION:** This case highlights successful use of ECMO to treat RV failure caused by acute PE in setting of life threatening intra-abdominal bleed when thrombolytic therapy or surgical embolectomy are not feasible.

#### **THE SHOCKING TRUTH: A CASE OF PERSISTENT ATRIAL FIBRILLATION CARIOVERSION WITH DOMESTIC ELECTRICAL SHOCK**

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**LEARNING OBJECTIVE #1:** Recognize patients can convert to normal sinus rhythm from atrial fibrillation with domestic electrical shocks resulting in symptomatic improvement.

**LEARNING OBJECTIVE #2:** Understand management for patients who come in after suffering a domestic electrical shock.

**CASE:** An 82-year old Caucasian female with a past medical history of coronary artery disease, percutaneous transluminal coronary angioplasty stent in her left anterior descending artery, hypertension and persistent atrial fibrillation with preserved left ventricular systolic function (Ejection Fraction=50%) presented to the clinic with reported improvement of her persistent atrial fibrillation symptoms following a witnessed electric shock while attempting to change a lightbulb in her home. She was scheduled for electrical cardioversion a week later. She reported the incident over the phone to her physician and was advised to present to the clinic for immediate evaluation. The patient reported relief from both palpitations and shortness of breath and an improved energy level immediately after the shock. She had been managed for her atrial fibrillation with rate control therapy (atenolol) and warfarin therapy for anticoagulation. Physical examination revealed regular pulse in bilateral upper and lower extremities, and normal first and second heart sounds. An ECG was performed which confirmed the patient was in normal sinus rhythm. The patient was advised to continue warfarin anticoagulation. The patient was reevaluated in four weeks with her cardiologist and repeat ECG confirmed normal sinus rhythm. An ECG at her six month follow up displayed continued normal sinus rhythm.

**IMPACT/DISCUSSION:** This case illustrates an unusual incident of electrical conversion of atrial fibrillation to sinus rhythm by domestic low-voltage electric shock. Atrial fibrillation is typically managed with either rate control or rhythm control, or less commonly catheter ablation and pacing. Sinus rhythm is typically achieved by either electrical or pharmacologic cardioversion, with electrical cardioversion typically very successful, showing success rates of up to 95% with biphasic shock. Electrical cardioversion through a light bulb socket, to our knowledge, has yet to be reported in the literature. Several, unsuitable for in-hospital use techniques for atrial fibrillation conversion have been reported including: jumping off a ladder or into a cold water tank or grasping an electric cattle fence. One report cites accidentally hitting the stretcher transporting the patient to the intervention room heavily against the door frame, resulting in sinus rhythm.

**CONCLUSION:** Providers should be aware of the possibility of cardioversion in a patient with atrial fibrillation with non-traditional techniques including domestic electrical shock. This is particularly true for the internist admitting a new patient presenting with a similar history.

#### **THE TALE OF A BLOODY KNEE: A RARE PRESENTATION OF ACQUIRED HEMOPHILIA**

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