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Case Report Open Access

Prolonged Cardiac Arrest and Localized Thoracic Spinal Cord Ischemia

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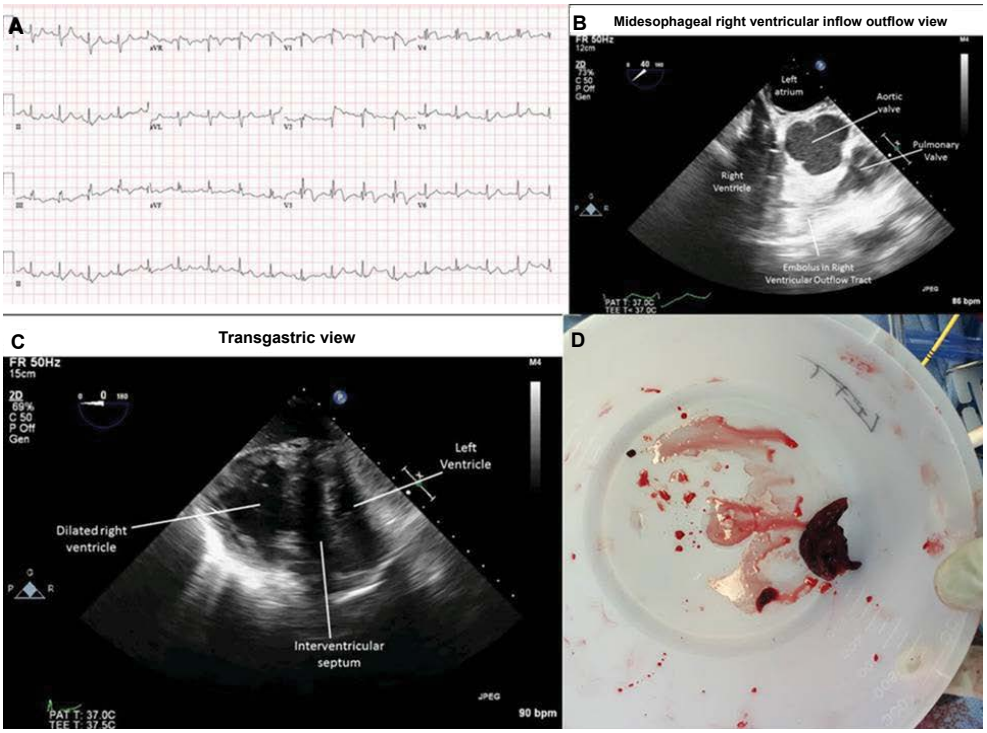

Figure 1: This figure displays EKG, transesophageal echocardiographic images and the surgical specimen A) Electrocardiogram showing the ST and T wave changes in lead V1- V4; B) A mid-esophageal aortic valve short-axis view demonstrating echogenic embolic material in the Right Ventricular Outflow Tract (RVOT); C) A transgastric two chamber view displaying a dilated right ventricle, flatted interventricular septum which is due to right ventricular pressure overload; D) Shows the retrieved pulmonary embolus from pulmonary arteries and right ventricular outflow tract.

A 29-year-old man presented to the emergency with a sudden onset of shortness of breath and syncope. Electrocardiogram showed a right bundle branch block, ST elevation in leads V1-V4 (Figure 1A). A transthoracic echocardiography showed an embolus in transit at the inferior vena cava and right atrial junction. He had two episodes of Pulseless Electrical Activity (PEA), lasting 2 and 62 minutes. ACLS protocol [1] was followed and LUCAS device was used to provide chest compressions. Multiple epinephrine [2] and atropine boluses were administered in addition to tissue plasminogen activator. With no signs of circulation and resuscitation chart review, a single dose of vasopressin (40 IU) intravenously

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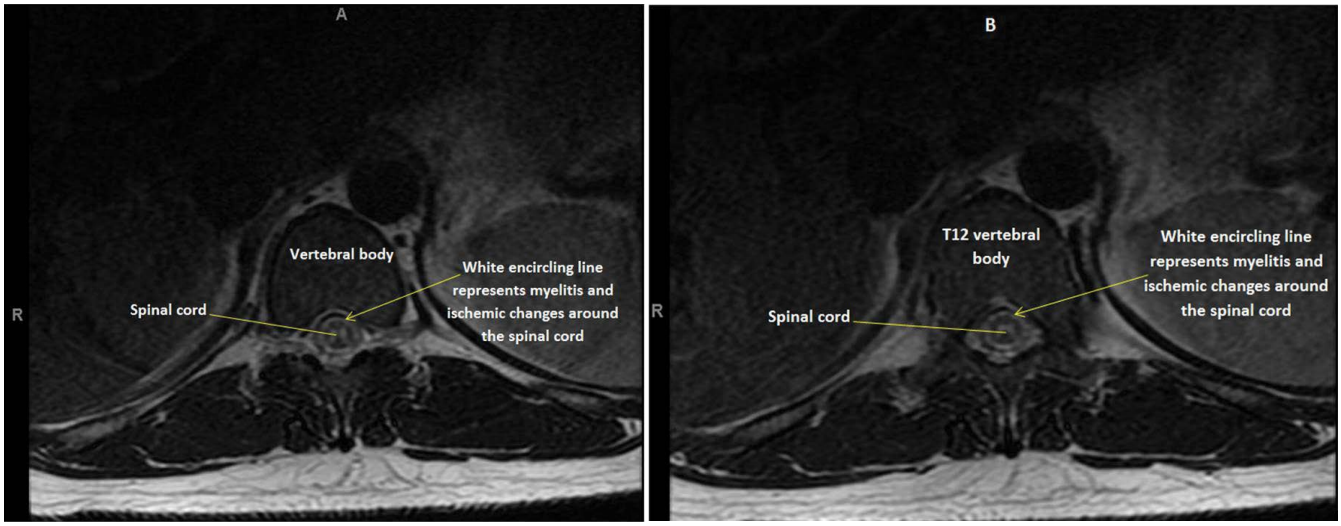

Figure 2: A,B) This figure displays MRI image at the level of T12 and L1 vertebrae. Myelitis is shown around the spinal cord as white encircling line. Patient suffered paraplegia which prompted us to do the MRI thoracic spine.

was administered by anesthesia team [3,4]. A Return of Spontaneous Circulation (ROSC) was observed. Later patient underwent a sternotomy and pulmonary embolectomy on cardiopulmonary bypass in the operating room. Transesophageal echocardiography also showed an echogenic material in the RVOT (Figure 1C) in addition to dilated right ventricle (Figure 1D) and flattened interventricular septum. Embolic material was retrieved from the Right Ventricular Outflow Tract (RVOT) and bilateral distal pulmonary arteries (Figure 1B).

Patient was transferred to the ICU and hypothermia protocol was used. He was extubated on day three and a neurological exam revealed bilateral lower extremity motor deficit. An MRI of the spine showed an abnormal increased T2, STIR signal in the central gray matter of the spinal cord from T9 to T12 vertebral level (Figure 2A and Figure 2B). Short TI Inversion Recovery (STIR) is a global and homogenous method to null the signal from fat, to distinguish the two tissue components. Increased STIR signal reflects a prolonged ischemic episode. After three months of rehabilitation, patient was seen walking with a cane and currently undergoing physiotherapy until today. This is a rare case of survival after an hour of resuscitation. Powerful chest compressions were helpful and administering vasopressin was instrumental in achieving ROSC. However, motor paralysis and localized spinal cord changes were unexpected which resolved over period of few months.

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