

## Letter to the Editor

# Acute Delirium after Coronary Angiography Due to Coronary Perforation

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Neurological events are among the rare complications encountered following coronary angiography with an estimated rate of approximately 0.6% [1,2] and among these neurological events is acute delirium. The main reported causes for post-coronary angiography acute delirium are cerebrovascular stroke (whether ischemic or hemorrhagic), central nervous toxicity caused by contrast agents or cholesterol emboli from atheroembolism during guide wire manipulation. Herein, we describe a case where acute delirium was the initial presenting feature of an underlying coronary perforation that has progressed to cardiac tamponade.

A 71-year-old gentleman with a medical history of hypertension and hyperlipidemia but no prior history of dementia presented to the emergency department with chest pain after shoveling snow and found to have non-ST segment elevation myocardial infarction. Coronary angiography revealed a totally occluded left circumflex coronary artery and drug-eluting stent was deployed followed by TIMI 3 flow. One hour after the procedure, the patient became confused with disorientation to place and time and agitated. Neurological examination revealed no focal neurological deficits and a computed tomography scan of the brain showed no intracranial hemorrhage or evident ischemic stroke. He started developing low grade fever (37.6 C) without a clear infectious cause and received acetaminophen without improvement of his symptoms. This patient has no prior history of dementia, lives with his wife and is totally independent and he was alert and oriented and cooperative prior to the procedure. Nine hours after the procedure, the patient went into a cardiac arrest and return of spontaneous circulation ensued following 1 round of cardiopulmonary resuscitation. However, he required 3 pressers to maintain his blood pressure. An immediate echocardiogram was demonstrated anterior and lateral pericardial effusion with right atrial and right ventricular diastolic collapse

suggesting cardiac tamponade. These findings were absent on the initial echocardiogram performed on the same day 2 hours prior to coronary angiography. We suspected cardiac tamponade due to a possible coronary perforation and the patient was transferred to the cath-lab and indeed pericardiocentesis retrieved hemorrhagic pericardial fluid which was followed by gradual improvement of the patient's hemodynamic and resolution of delirium.

Acute delirium is characterized by a fluctuation in the level of consciousness, is more common in those with underlying dementia and is independently associated with length of hospital stay, cognitive impairment after discharge healthcare costs and mortality [3]. Obviously, in post-coronary angiography delirium, one has to first exclude cerebrovascular events. Another reported cause is contrast medium-induced neurotoxicity which is thought to be related to the osmolality, lipid solubility, viscosity, and ionic characteristic of the contrast agent [4]. Contrast medium opens tight capillary connections and crosses the blood-brain barrier thereby affecting the neuronal membrane [5]. A third cause of alteration of the mental status after coronary angiography is cholesterol embolization which is a systemic atheroembolism syndrome caused by distal showering of cholesterol crystals from aortic atheromatous plaques affecting various organs including the brain with an estimated incidence of 1.4% [6]. Atheroembolism usually happens within hours to days [7] but may occur up to 16 weeks following the vascular intervention [8]. Herein, acute delirium shortly after coronary angiography was the initial presenting feature of underlying coronary perforation complicated by cardiac tamponade. Delirium in this instance is probably caused by a reduction in cerebral perfusion. We therefore recommend that in patients with unexplained post-coronary angiography delirium to rule out mechanical complications related to cardiac catheterization.

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