

**Control Number:** 77

**Abstract Category:** Clinical Case Challenge in Cardio-Oncology

**Title:** ST-Segment Elevation Myocardial Infarction in the Setting of Differentiation Syndrome

## **ABSTRACT BODY**

### **Background and Purpose**

Differentiation syndrome is a life-threatening complication in patients with acute promyelocytic leukemia (APL) undergoing therapy with arsenic trioxide or all-trans retinoic acid (ATRA). It has been shown that differentiation syndrome is associated with a pro-coagulation state that can lead to thrombosis and acute coronary syndrome (ACS).

### **Case Description and Outcomes**

A 59 year old female without significant past cardiac history presented with newly diagnosed APL and was initiated on ATRA and idarubicin. The hospitalization was complicated by the development of differentiation syndrome on day 3 of the treatment regimen for which the patient was started on dexamethasone and broad-spectrum antibiotics. On day 15, the patient developed substernal chest discomfort associated with dyspnea. An electrocardiogram was obtained that demonstrated ST elevations and new Q-waves in the inferior leads II, III, and aVF. Troponin I was elevated at 0.107 ng/mL. A CT scan was obtained which excluded a pulmonary embolus and the patient was sent emergently for left heart catheterization with possible percutaneous coronary intervention (PCI). The patient was deemed not a candidate for anti-platelet or anti-coagulation therapy due to anemia and thrombocytopenia. The procedure revealed a 100% thrombosis in the right posterior descending vessel with TIMI grade 1 flow. Given the patient's ongoing treatment for APL and persistent thrombocytopenia, the patient was deemed high risk for bleeding complications and PCI was deferred.

### **Discussion**

This case demonstrates the potential for ACS in the setting of differentiation syndrome complicating the treatment of hematologic malignancies with agents such as arsenic or ATRA. There are significantly higher arterial and venous thrombosis rates in patients with differentiation syndrome when compared to those without this complication.<sup>1</sup> Clinicians should be aware of the potential for ACS in the setting of differentiation syndrome and an aggressive evaluation for ischemic heart disease should occur in the appropriate clinical context. In addition, although treatment of ischemic heart disease in patients with ongoing thrombocytopenia can be challenging, employing appropriate risk mitigation strategies can often allow for safe and effective management of these patients.

### **References**

1. Sanz MA, Montesinos P. How we prevent and treat differentiation syndrome in patients with acute promyelocytic leukemia. *Blood*. 2014;123(18):2777-2782.