

Control Number: 5

Abstract Category: Clinical Case Challenge in Cardio-Oncology

Title: 5 fluorouracil induced coronary thrombosis

ABSTRACT BODY

Background and Purpose

5-Fluorouracil (5-FU) is considered to be the backbone of colorectal cancer (CRC) systemic therapy since the great majority of recommended regimens include its administration. However, there are a few reports showing direct cardiac toxicity of the drug, causing elevated troponins by direct heart injury or coronary thrombosis. The drug use in patients with coronary artery disease (CAD) is a challenge especially when they develop chest pain. We report a patient with known stable CAD and new episode of chest pain after 5-FU injection for CRC treatment.

Case Description and Outcomes

This is a 51-year-old man with a past medical history significant for CAD with previous coronary bypass surgery, asymptomatic from a cardiac standpoint, and CRC in chemotherapy with 5-FU who presented at emergency department with chest discomfort and acute onset shortness of breath. According to the patient, he went to his outpatient chemotherapy and minutes after the infusion of the drug he developed anterior chest pain, sharp, associated with nausea, vomiting and cold sweats. He was hypoxemic and hypotensive. Initial troponin was positive, and his ECG did not show any signs of acute ischemia. He was intubated and sent to intensive care unit. Repeated ECG did not show acute signs of ischemia. Echocardiogram was performed showing signs of wall motion abnormalities in the apical and lateral leads with an ejection fraction of 35% comparing to 50% in a previous recent echocardiogram. Cardiology was consulted, and as patient's condition was deteriorating with increased needs of vasopressors, it was decided to proceed with left heart catheterization. In the heart catheterization, an acute complete occluded saphenous graft to marginal branch of circumflex artery was found and a stent was placed. After heart catheterization, vasopressors were weaned off and repeated echocardiogram showed ejection fraction of 45%. Patient was extubated and discharged home one week later asymptomatic.

Discussion

The chemotherapeutic agent 5-FU is a fluoropyrimidine antimetabolite agent key to several chemotherapy regimens, particularly in the treatment of gastrointestinal tract adenocarcinomas. Unfortunately 5-FU also has poorly defined cardiotoxic effects with various studies demonstrating direct endothelial cardiotoxicity, arterial vasospasm, and coronary thrombosis. The precise etiology and pathophysiology of 5-FU cardiotoxicity is still unknown however clinically significant coronary vasospasm causing myocardial ischemia is the most commonly suspected mechanism. Experimental evidence also supports a direct toxic effect of 5-FU on the coronary endothelium and a hypercoagulable state which together precipitate acute thrombotic events that is especially higher when the medication is given as a bolus. With the demonstrated efficacy of 5-FU based chemotherapeutic regimens more patients may expect to receive these agents in the future. Thus it is important for clinicians to be aware of the various rare, but potentially serious, adverse cardiac effects including cardiac thrombosis

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