Late-Onset Coronary Vasospasm from 5-FU Chemotherapy

Elson S. Floyd College of Medicine

Marcos Arreola[1], Ivan Medvedev MD PhD[2], Kelly Paulson MD PhD[3]

Elson S. Floyd College of Medicine[1], Cardiology[2], Oncology[3]

INTRODUCTION

- 5-Fluorouracil (5-FU) based chemotherapy regimens have substantially improved colon cancer survival.
- 5-FU can cause immediate cardiac complications, including coronary thrombosis, coronary vasospasm, cardiomyopathy and cardiac arrest[1].
- Here we report and discuss the rare case of a patient who underwent 5-FU chemotherapy and developed coronary vasospasm both during infusion and approximately 36 hours after discontinuation.

CASE REPORT

A 50-year-old man with recently diagnosed metastatic sigmoid colon cancer initiated his first cycle of Folinic acid + 5-FU + Oxaliplatin (FOLFOX) chemotherapy. 24 hours into continuous home infusion of 5-FU, he developed substernal chest pain that radiated to his left shoulder. He took oxycodone with minimal relief; 5-FU infusion continued. 8 hours later symptoms worsened triggering 5-FU discontinuation and presentation to ED. Chest pain resolved within 10 minutes after 5-FU discontinuation. Upon arrival to the ED, EKG was performed that demonstrated diffuse repolarization changes and ST elevations in leads I and aVL, and mild elevations in leads II, III and aVF with T wave inversions (figure 1). Code STEMI was called, and coronary angiography performed with no evidence of obstructive coronary lesions but tortuous coronary anatomy. Transthoracic echocardiogram revealed new moderate to severe systolic dysfunction with global hypokinesis and a reduced ejection fraction (35%).

CASE REPORT CONTINUED

Patient was placed on a beta-blocker, lisinopril, and Lasix and symptoms and EKG changes fully resolved. Approximately 36 hours after 5-FU discontinuation patient suddenly developed malaise and diaphoresis followed shortly thereafter by a ventricular tachycardia pulseless cardiac arrest captured on telemetry monitoring. Code Blue was called, and CPR immediately initiated. Patient was successfully resuscitated and placed on amiodarone drip. EKG again demonstrated similar vasospastic changes as the presentation EKG, which subsequently resolved. The next morning, he complained of only chest tenderness from the CPR, but denied any dyspnea, palpitations or dizziness and was hemodynamically stable. He showed no significant changes in his symptoms or labs/imaging results for the next 5 days and was discharged home with a LifeVest (wearable defibrillator). Once recovered, he initiated alternate chemotherapy with partial remission. 3 months after the event, his ejection fraction returned to normal. He is now doing well more than 6 months later with no further cardiac events and return to full activities.

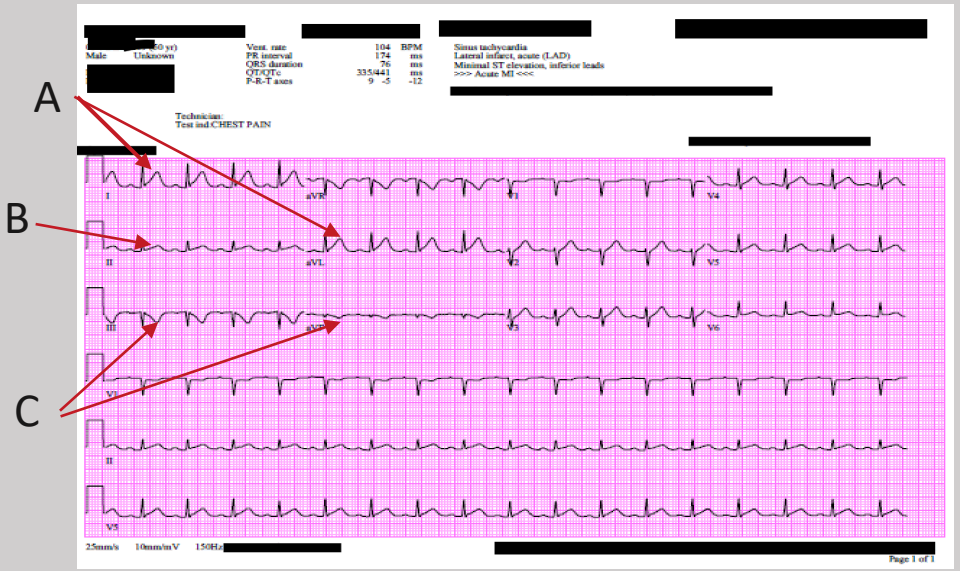

Figure 1: EKG showing ST elevations in leads I and aVL (A), mild ST elevations in lead II (B), and mild ST elevations with T wave inversions in leads III and aVF

DISCUSSION

- Vasospastic angina is characterized by episodes of chest “discomfort” at rest, nausea, diaphoresis, dizziness, dyspnea and palpitations and associated with transient ST-segment elevations on EKG.
- Coronary vasospasm is an uncommon but well described adverse consequence of 5-FU chemotherapy with unknown mechanism[1].
- Physicians should be aware of this complication and advise patients to immediately stop infusional 5-FU and seek emergency care for any potential cardiac symptoms.
- 5-FU vasospasm has not previously been to our knowledge reported to recur >24 hours after treatment without re-challenge[2,3,].
- In the present case, patient being on telemetry monitoring with immediate CPR and cardioversion led to an excellent long-term outcome.
- Clinicians should consider observation on telemetry for 48-72 hours and/or short-term life vest use for appropriate patients who develop significant 5-FU vasospasm.

REFERENCES

1. Jaya Kanduri, Luis Alberto More, et al. Fluoropyrimidine-Associated Cardiotoxicity. 2019 Nov; 37(4):399-405. Doi: 10.1016/j.ccl.2019.07.004. Epub 2019 Aug 26. [PubMed]
2. Jason M. Redman, Logan P. Rhea, et al. Successful 5-FU infusion re-challenge in metastatic colorectal cancer patient with CAD who experienced symptoms consistent with coronary vasospasm during first 5-FU infusion. Case Report. Vol 10, No 5. October 2019. [PubMed]
3. S S Akhtar, K P Salim, et al. Symptomatic cardiotoxicity with high-dose-5-fluorouracil infusion: A prospective study. Nov-Dec 1993;50(6):441-4.doi: 10.1159/000227226 [PubMed]