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## Case Report

# Spontaneous multi-vessel dissection associated with mid-menstrual cycle estrogen surge presenting as an acute myocardial infarction: A caution to be vigilant



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## ARTICLE INFO

## Article history:

Received 16 April 2014

Accepted 2 May 2014

Available online 23 May 2014

## Keywords:

Spontaneous

Dissection

Mid-menstrual

Estrogen surge

## ABSTRACT

We are reporting the case of a middle aged female who presented with an acute anterior wall myocardial infarction on the thirteenth day of menstrual cycle (the timing of peak estrogen surge during a menstrual cycle of average duration). The patient was thrombolysed initially. Subsequent to the initial resolution of the symptoms immediately after lysis, the patient developed recurrence of symptoms and ECG showed the occurrence of re-infarction. The angiogram revealed a spontaneous multi-vessel dissection involving left main, left anterior descending (LAD) artery and left circumflex artery extending from the left main downwards without any obvious predisposition. The arteries were laden with thrombus and percutaneous intervention was initially impossible. The patient was given an infusion of abciximab following the thrombus burden reduced enabling an intervention. The patient underwent successful stenting from LMCA to LAD and has been asymptomatic and has maintained stent patency at 3 months of follow up. The correlation of spontaneous coronary artery dissection with mid-menstrual estrogen surge has never been discussed previously and is an important consideration in management of young females who present with idiopathic coronary syndrome and illustrates the role of diagnostic angiogram before the administration of thrombolytic therapy in such cases.

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## 1. Background

Spontaneous coronary artery dissection (SCAD) is a rare entity of unexplained pathophysiology which can be predisposed by trauma, cardiac surgery, coronary diagnostic and therapeutic

intervention, or may be seen along with aortic dissection. SCAD was first described in 1931, during autopsy analysis of a 42-year-old woman who had died of a myocardial infarction.<sup>1</sup> The total number of cases reported with SCAD is probably an underestimate due to a high incidence of sudden death.<sup>2</sup> The overall incidence which has been reported in various

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<http://dx.doi.org/10.1016/j.jicc.2014.05.001>

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angiographic series probably around 0.2%<sup>1</sup> with a majority of the cases have been reported to occur in young women (70%) of which 30% of the cases were seen in the peripartum period<sup>1</sup> which could possibly be correlated to the occurrence of hormonal changes, hemodynamic stress and changes in auto-immune status.<sup>1–4</sup> SCAD most often involves the left anterior descending coronary artery (LAD) which reported a prevalence of about 60% of cases.<sup>1</sup> Involvement of the other arteries is relatively uncommon in comparison to the LAD.

The association of SCAD with hormonal changes has been described but the association with menstrual cycle and ovulation has never been described before and this fact is important to be discussed and recognized by all primary care physician who deal with cases presenting with acute coronary syndrome (ACS) so that they may recognize this entity early and direct the patients towards appropriate management rather than blindly treating such patients as any other case of ACS.

## 2. Case description

A 35-year-old previously asymptomatic patient presented with complaints of an acute onset chest pain since the last 3 h without any obvious predisposing factor in the form of physical or emotional stress. The patient was diagnosed on the basis of the electrocardiogram as an acute anterior wall myocardial infarction and was subsequently thrombolysed with streptokinase by her primary care physician as the patient was within the window period and the facility of percutaneous intervention was not available at that center or in the near vicinity.

The patient stabilized with the treatment and the ST segments settled and the pain was relieved subsequent to which the patient was put on medical therapy including anti-platelets and anti-coagulants. The patient had not been referred for emergency diagnostic angiogram as the patient was haemodynamically and electrically stable.

The patient on the next day of the hospitalization developed another episode of chest pain of similar intensity and the ECG showed the changes of re-infarction in the territory of the same artery. The patient was immediately referred for an emergency angiogram to our center.

## 3. Investigations

The diagnostic angiogram surprisingly revealed spontaneous multi-vessel dissection involving the LMCA, LAD and the LCX and the entire LMCA and LAD was full of thrombus. At this moment it was not possible for us to have performed an angioplasty in the presence of an entirely dissected LMCA and LAD which was also laden with thrombus (Figs. 1 and 2, Videos 1, 2) and so even crossing a wire across the artery was impossible and there was a high possibility of entering the false lumen which could have complicated the matters further and could have led to perforation and closure of the LCX as well and the patient would have arrested on table or would have landed in cardiogenic shock. Besides this the fact that the artery was laden with thrombus also made it



**Fig. 1 – RAO caudal view shows the dissected arteries laden with thrombus.**

impossible for a stent to be deployed and a flow in the artery was impossible to be achieved and the dissection was also a hindrance in the use of thrombosuction catheters and devices.

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jicc.2014.05.001>.

The serum estrogen levels on the day of admission were 962 pg/ml which was much higher than normal levels while that after 4 days at the time of discharge were 412 pg/ml which



**Fig. 2 – LAO caudal view still image showing the dissection of the LMCA, LAD and LCX.**

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