



## Case Report

## Unusual complication of coronary angiogram: Spinal epidural hematoma

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## ABSTRACT

Coronary angiogram is considered a relatively safe procedure but unusual complications do occur. Such an unusual case was happened post radial artery approach angiogram leading to severe co-morbidity to patient. We are reporting this case of a female patient who developed acute spinal epidural hematoma two hours after coronary angiogram.

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## 1. Introduction

Coronary angiogram (CAG) has been considered as a relatively safe procedure. Though complications of CAG are mainly vascular but rarely neurological complications do occur. We are reporting a case of spontaneous spinal epidural hematoma (SSEH) after CAG which is a very unusual complication.

## 2. Case report

A 62-year-old female presented in outpatient department with history of chest pain along with ST segment coving and T wave inversion in I, II, III, aVF, aVL, V2-6 of ECG leads (not suggestive of specific coronary territory). There was no past history of hypertension, diabetes, smoking, spine trauma, or operation. Her troponin-I was positive. 2D echocardiography was normal and was diagnosed as non-ST elevation myocardial infarction (NSTEMI) and was put on dual antiplatelet and atorvastatin. Heparin was not given considering the suspicion of myopericarditis. CAG was planned after one week. CAG was done through right radial approach. As a protocol of radial CAG, the patient received diltiazem, nitroglycerin, and unfractionated heparin 5000 units before procedure. CAG showed proximal ectatic left anterior

descending artery with mild plaquing. There was no flow limiting lesion seen in any coronary arteries. No abnormal coagulation parameters were observed on blood investigations including liver function test, coagulation profile, or platelet count.

Two hours after CAG, she developed sudden severe back pain and weakness in both lower limbs. Neurologists diagnosed paraplegia and advised magnetic resonance imaging (MRI). Spinal MRI showed a large posterior epidural collection extending from C3 (cervical)- to L1 (lumbar) level (maximum thickness of around 11 mm) causing severe compression and displacement of cord anteriorly. The collection was isointense on T1w (T1-weighted) and hyperintense with few heterogeneous areas on T2w (T2-weighted) images, suggestive of blood products (Fig. 1).

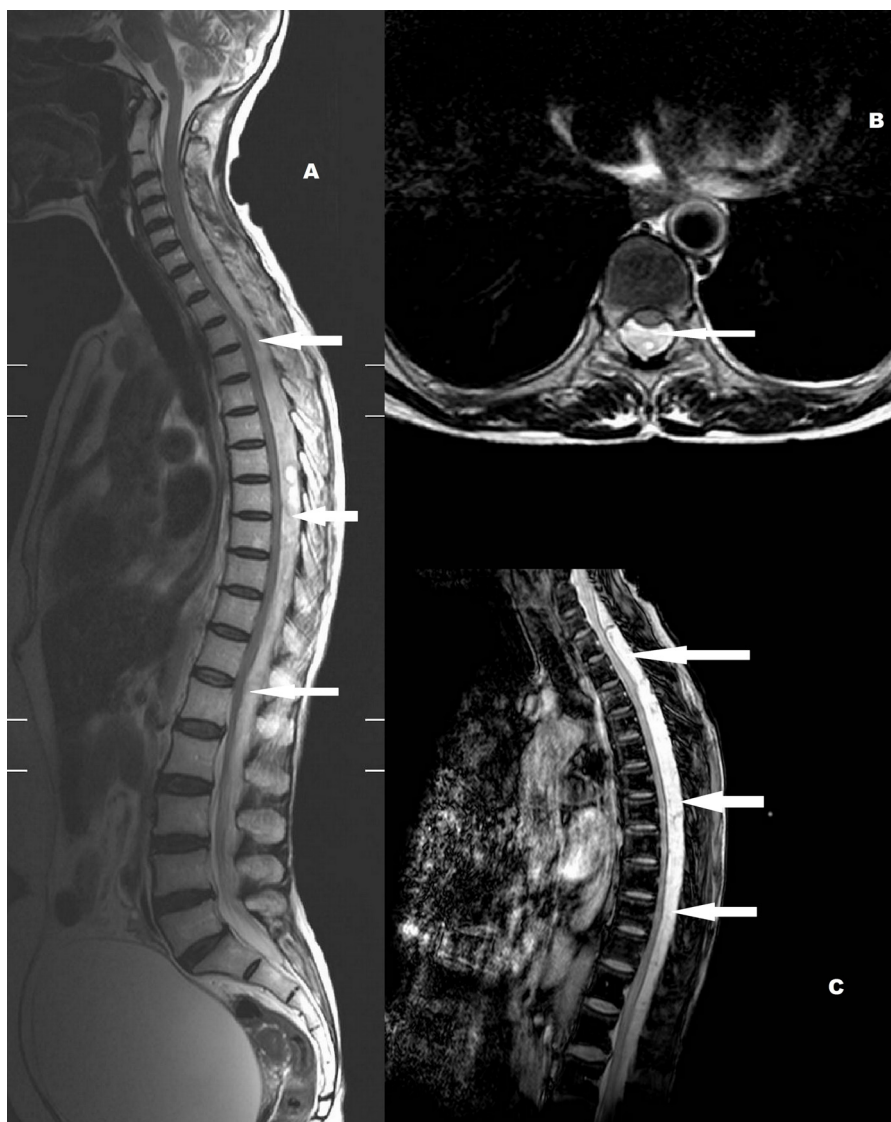
She underwent an emergency spinal cord decompression surgery. A right-sided hemi-laminectomy was performed in three places – cervical, dorsal, and lumbar. Nearly 500 ml blood was drained from epidural space and the spinal cord was decompressed. No abnormal vascular malformations were observed. The patient recovered from general anesthesia with no complications, but her neurological symptoms did not change much except some sensory improvement occurred on 5th post-operative day. The patient was discharged from hospital after rehabilitation and advice to continue physiotherapy at home.

## 3. Discussion

Spontaneous spinal hematomas were first described by Schiller and colleagues<sup>1</sup> more than 60 years ago. Several causes have been identified, including acquired and congenital clotting

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**Fig. 1.** (A) T1w-coronal section of spine MRI shows a large posterior epidural isointense collection extending from C3- to L1 level (white arrow). (B and C) T2w-axial and coronal section of spine MRI shows hyperintense with few heterogeneous areas signal (white arrow).

abnormalities and underlying vascular malformations. Among the acquired coagulopathies, those associated with use of aspirin, warfarin, tissue plasminogen activators, and heparin have been implicated.<sup>1</sup> It is not known how many patients develop SSEH who have taken anticoagulants or undergone thrombolytic therapy or coronary catheterization. In the present case, SSEH occurred after coronary catheterization which is rarely recorded in literature. In this patient, anticoagulant (heparin) use may be related with SSEH progression which was already present or started de novo after the procedure. In this patient, there was no other risk factor like hypertension, vascular malformation, or any long-term use of anticoagulants.

Some controversies exist about the origin of SSEH. Most researchers assert that it originates from the epidural venous system; however, an arterial source has been more persuasively proposed when considering the relatively acute progression of SSEH. In this patient, capillary ooze was noted intraoperatively. Usually, SSEH presents with sudden, severe neck or back pain that tends to progress to neurological manifestations.<sup>2</sup> Immediate surgical decompression of the neural structures is the treatment of choice before the neurological deficit progresses.<sup>2</sup> Mortality is

correlated with a high frequency of cervical or cervicothoracic hematomas. Patients with cardiovascular disease and those undergoing anticoagulant therapy also have a poor prognosis.<sup>3</sup> Newly developing or sustained back pain during acute coronary syndrome (ACS) treatment should not be neglected and should not be regarded as an atypical symptom of ACS. We believe that an aggressive imaging study including a spinal MRI should be performed for patients who complain of persistent neck or back pain while undergoing coronary interventions.

#### 4. Conclusion

SSEH is a rare complication; however, it can result in severe mortality or morbidity unless treated in time. So during cardiac intervention, it is wise to look for any neurological symptoms in order to deal with them as early as possible thus preventing the associated mortality and morbidity.

#### Conflicts of interest

The authors have none to declare.

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