

Left ventricular thrombus occurring shortly after cocaine consumption complicated by acute stroke

Published on 21.01.2018

DOI: 10.1594/EURORAD/CASE.15368

ISSN: 1563-4086

Section: Cardiovascular

Area of Interest: Head and neck Cardiac

Procedure: Diagnostic procedure

Imaging Technique: MR-Diffusion/Perfusion

Imaging Technique: Echocardiography

Special Focus: Ischaemia / Infarction Embolism /

Thrombosis Case Type: Clinical Cases

Authors: Dr Abdalazeem Ibrahim, Dr Amjed Eljaili

Patient: 32 years, male

Clinical History:

A 32-year-old male patient with no past medical history presented with slurred speech and dysphasia after taking cocaine a few hours prior to admission. Physical examination revealed normal vital signs, neurological examination revealed merely expressive dysphasia, other clinical examination findings were unremarkable.

Imaging Findings:

CT brain which has not shown significant abnormality.

MRI brain showed increased signal in parieto-occipital cortex with corresponding low ADC map indicating restriction of diffusion (white arrow), consistent with an acute infarct in the left occipital lobe.

Transthoracic echocardiography showed pedunculated mobile thrombus present at the apex of left ventricle (white arrow) measuring 36x12 mm with preserved left ventricular systolic function.

Repeated echocardiography in two months time showed significant reduction in the size of left ventricular thrombus. Follow-up cardiac MRI shows normal biventricular size and function with mild hypokinetic apical anterior and apex.

Discussion:

Background:

Cocaine-induced acute myocardial infarction associated with left ventricular thrombus is well-described [1, 2].

Regardless of the consideration of the thrombo-embolic event, the cardiac imaging plays a very important role in excluding cardiac involvement. Because cocaine carries a high risk of platelets activation and formation resulting in thrombosis promotion [3].

Cocaine is a powerful sympathomimetic which dramatically increases oxygen demand by blocking the reuptake of norepinephrine and dopamine at the presynaptic adrenergic terminals. Also, cocaine induces a significant increase of myocardial oxygen demand due to increased heart rate, systemic arterial pressure and left ventricular contractility. This will lead to reduction in coronary blood flow and luminal diameter which increases the chance of myocardial infarction [4].

There is a risk of spread of the left ventricular thrombus following an acute myocardial infarction through systemic circulation, especially when the thrombus is pedunculated and mobile [5] as typically demonstrated in our case where the echocardiography has shown a pedunculated mobile thrombus at the apex of the left ventricle.

Clinical Perspective:

The largest risks of left ventricular thrombus are a stroke or major organ loss due to systemic ischaemia, which usually depends on the morphological appearance of the left ventricular thrombus [2].

Approximately about 20% of patients presented to the accident and emergency department with a history of cocaine consumption, having developed cardiovascular complications [6].

Radiological Perspective:

CT brain was normal, MRI brain showed left temporo-parietal and occipital cortex acute infarct.

Echocardiography showed preserved left ventricular systolic function with extensive left ventricular apical thrombus. A short period after cocaine consumption complicated by an acute stroke, he was diagnosed with left ventricular thrombus.

Cardiac magnetic resonance imaging (CMR) is an important means in diagnosis acute left ventricular thrombus. Early recognition of left ventricular thrombus is vital in preventing other major complications such as congestive heart failure, systemic embolisation, severe left ventricular dilatation and systolic dysfunction.

Outcome:

Patient was treated subsequently with anticoagulation, beta blocker, statin and ACEI. He had a good recovery during the following period.

Take Home Message:

1-The diagnosis of left ventricular (LV) thrombus and its prompt recognition are vital in preventing other major complications. Cardiac magnetic resonance imaging (CMR) is a cornerstone in the diagnosis of acute LV thrombus. However echocardiography remains excellent bedside test.

2-Cocaine is considered a pro-thrombotic agent due to its effects of increasing platelet aggregation.

3-Large LV thrombus is often associated with large infarct size, severe apical asynergy, severe LV dysfunction, LV aneurysm which is typical to our presented case.

Differential Diagnosis List: Left ventricular thrombus occurred shortly after cocaine consumption complicated by acute stroke, Acute stroke, Acute myocardial infarction

Final Diagnosis: Left ventricular thrombus occurred shortly after cocaine consumption complicated by acute stroke

References:

Curtis M. Saue (1991) Recurrent Embolic Stroke and Cocaine-Related Cardiomyopathy. Stroke 22:1203-1205

(PMID: [1926265](#))

Espinola-Zavaleta, NG, Vargas-Barron, J, Vazquez-Neira, J, Romero-Cardenas, A, and Keirns (1998) Echocardiographic diagnosis of biventricular thrombi in a cocaine-induced myocardial infarction. Echocardiography 15(5):499-502. (PMID: [11175070](#))

Benzaquen, BS, Cohen, V, and Eisenberg, MJ. (2001) Effects of cocaine on the coronary arteries. American heart journal (PMID: [11526352](#))

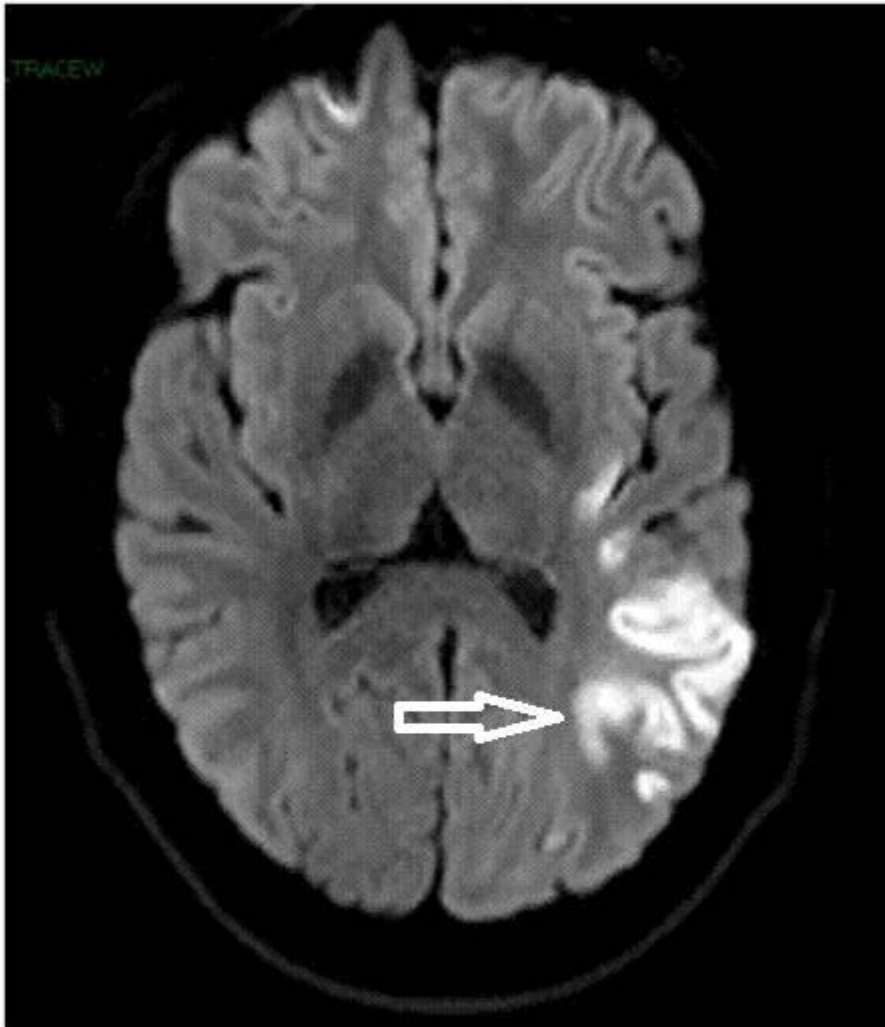
Jaffe BD, Broderick TM, Leier CV. (1994) Cocaine-Induced Coronary-Artery Dissection. N Engl J Med 330(7):510-1. (PMID: [8289869](#))

Early, GL, Ballenger, M, Hannah, H 3rd, and Roberts (2001) Simplified method of left ventricular thrombectomy. Ann Thorac Surg 72(3):953-4. (PMID: [11565702](#))

Lange RA, Hillis LD (2001) Cardiovascular complications of cocaine use. N Engl J Med 345(19):1432 (PMID: [11484693](#))

Figure 1

a

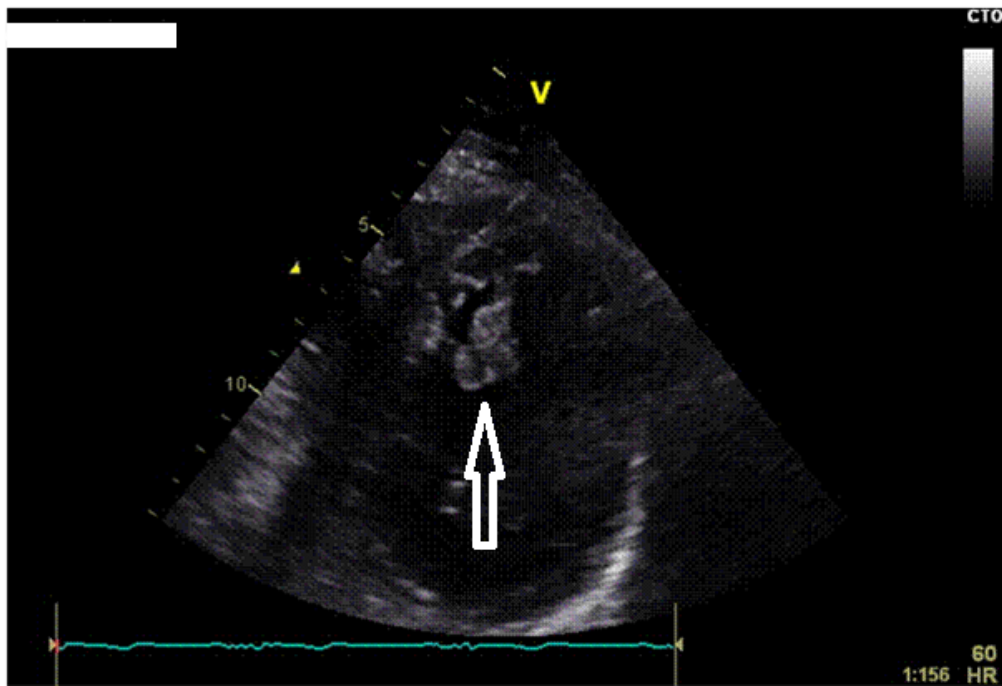


Description: Showing increased signal in parieto-occipital cortex with corresponding low ADC map indicating restriction of diffusion (white arrow) consistent with an acute infarct in the left occipital lobe.

Origin: Ysbyty Gwynedd, Radiology Department

Figure 2

a



Description: ECHO showed pedunculated mobile thrombus present at the apex of left ventricle (white arrow) measuring 36x12 mm. **Origin:** CARDIOLOGY DEPARTMENT ,ySBYTY gWYNEDD