

# Recurrent Chest Pain due to a Huge Left Main Aneurysm: A Case Report

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## Abstract

Coronary artery aneurysms (CAAs) are rare, and aneurysms of the left main coronary artery are extremely rare. Atherosclerosis is the main cause of CAAs.

An 87-year-old man with atypical chest pain of 1 month's duration presented to a hospital. Physical examinations of the patient's cardiopulmonary system and vital signs were unremarkable. Electrocardiography showed a right bundle branch block and an atypical ST-segment elevation in the inferior leads. Coronary angiography demonstrated a huge aneurysm in the left main without any clots. Additionally, there were no remarkable findings in cardiac monitoring and spiral chest computed tomography scanning. Ultimately, after he received nitroglycerin,  $\beta$ -blockers,  $Ca^{++}$  channel blockers, Aspirin (ASA), and clopidogrel (Plavix), his pain was relieved.

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## Introduction

Despite their generally low prevalence, coronary artery aneurysms (CAAs) are more common in the right, left circumflex, and left anterior descending coronary arteries, respectively, than in the other coronary arteries. The occurrence of a CAA in the left main coronary artery (LMCA) is an extremely rare event.<sup>1</sup> Atherosclerosis constitutes the main cause of aneurysms, with other causes including traumas, polyarteritis nodosa, systemic lupus erythematosus, syphilis, and idiopathy.<sup>2</sup> No definitive treatment has been yet proposed for CAAs despite their potential complications such as rupture, thrombosis, embolization, and dissection.<sup>3</sup>

We herein describe an 87-year-old man with atypical chest

pain, electrocardiographic (ECG) changes, and a huge left main aneurysm in his coronary angiography.

## Case Report

An 87-year-old man with severe and atypical recurrent chest pain presented to the Emergency Department of Imam Hossein Hospital. The patient had not used any medications despite his history of mild recurrent chest pain over the previous month. He had no history of diabetes mellitus, hypertension, or smoking. On physical examination, the heart and lungs were normal; in addition, he had a blood pressure of 125/80 mmHg, a pulse rate of 60 beats per minute, a body temperature of 37 °C, and a respiratory rate

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of 12 breaths per minute. Transthoracic echocardiography yielded no significant findings, and the ejection fraction was 55%. ECG on admission and the following day showed a right bundle branch block and an atypical ST-elevation in the inferior leads without dynamic changes (Figures 1 & 2).

Table 1 presents the results of the patient's laboratory tests. Angiography showed patent epicardial coronary arteries and a 22×16×14 mm saccular aneurysm at the very proximal portion of the left main coronary artery (Figure 3). Further examinations suggested no significant atherosclerosis, and

coronary angiography illustrated no significant calcification. Moreover, no carotid or abdominal bruits were heard, and the peripheral arteries had a normal pulse. No diseases or infection was also observed in the connective tissues (Table 1). Furthermore, cardiac monitoring showed no arrhythmia within 72 hours of admission. In addition, spiral chest computed tomography scanning did not suggest remarkable data (Figure 4). Administration of nitroglycerin,  $\beta$ -blockers,  $Ca^{++}$  channel blockers, Aspirin (ASA), and clopidogrel (Plavix) ultimately alleviated his chest pain.

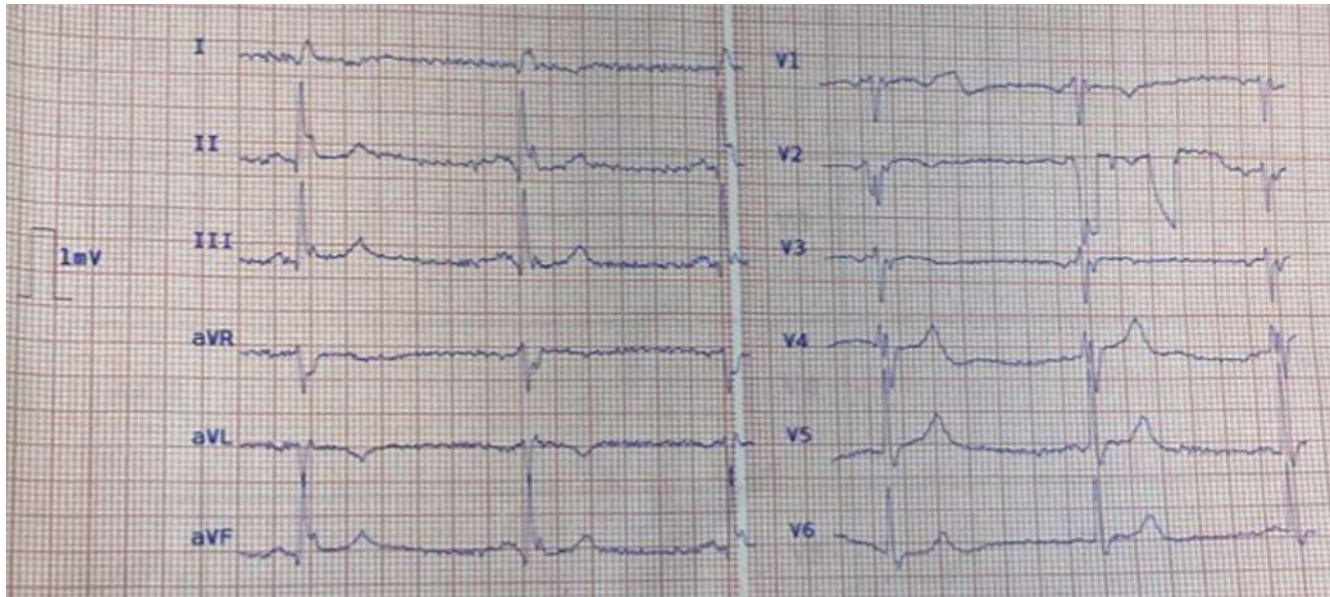


Figure 1. The electrocardiogram taken on admission shows a right bundle branch block and an ST-elevation in the inferior leads.

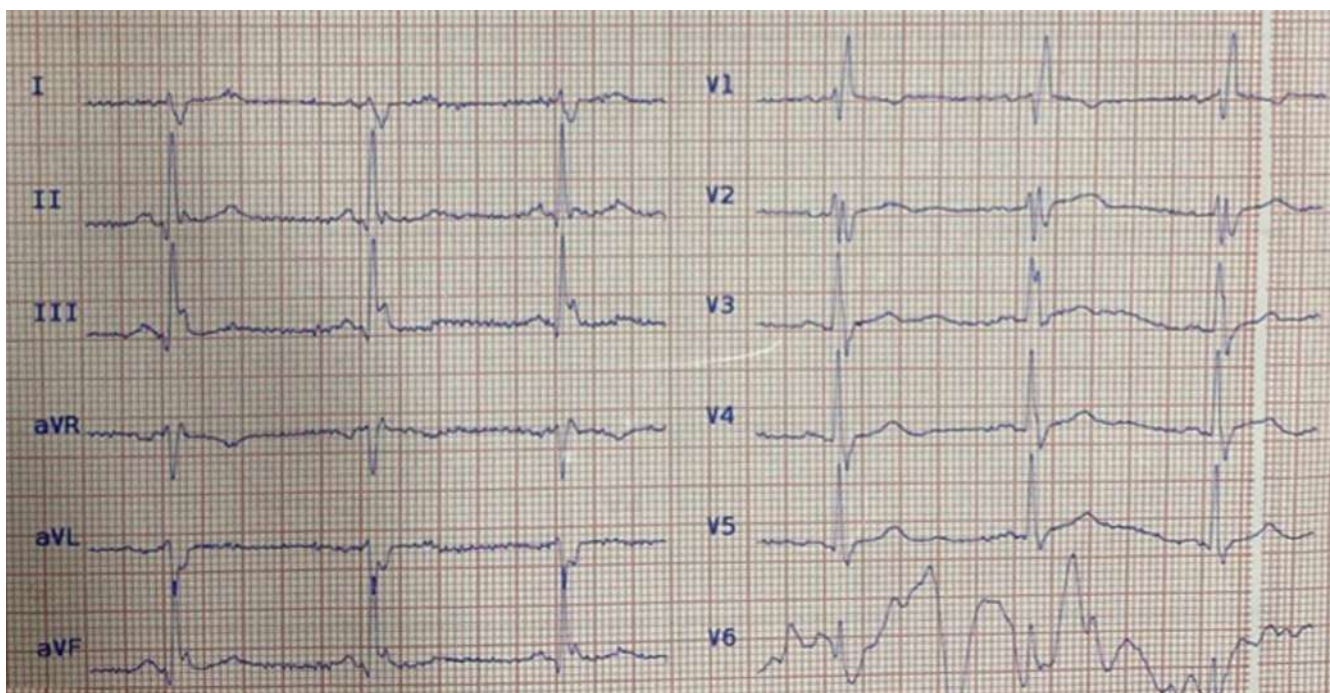


Figure 2. The second electrocardiogram taken in the next 24 hours reveals no dynamic changes, in favor of ischemia.



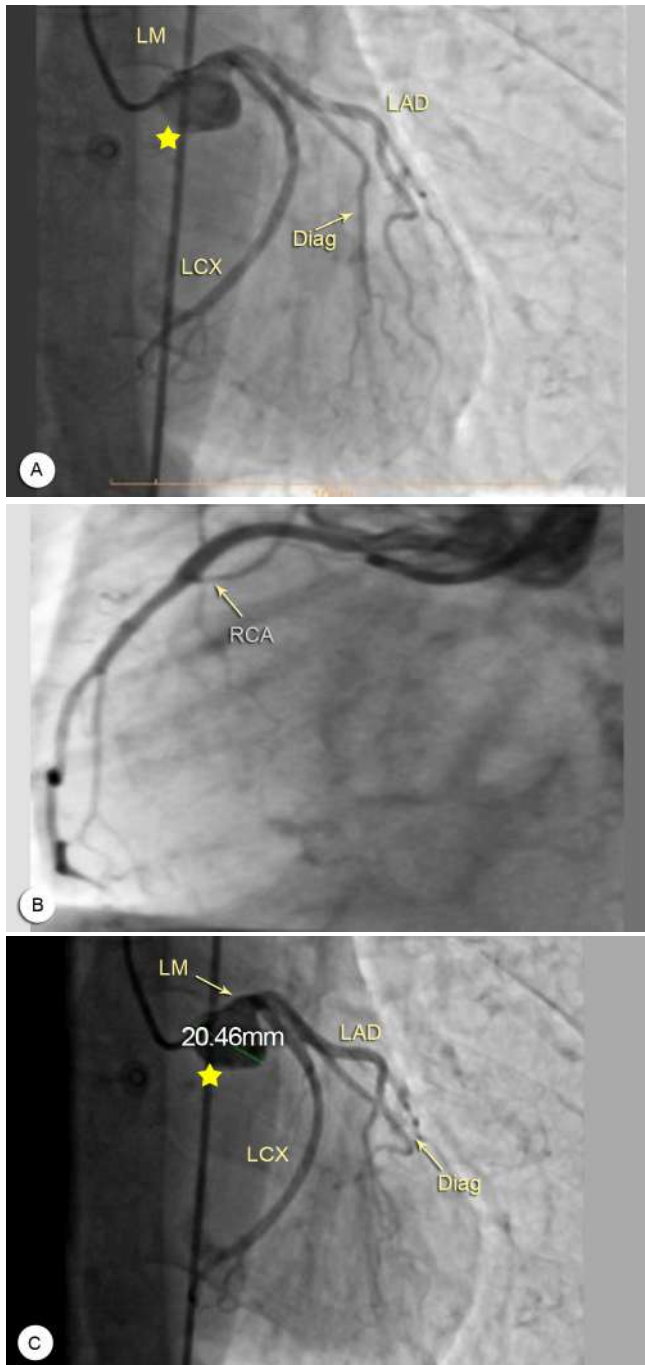


Figure 3. Three views of the patient's coronary angiography demonstrate the left and right coronary systems.

- A) The image presents the right anterior oblique (RAO) caudal view with a huge aneurysm (\*) in the left main artery origin without clot and stenosis in the left anterior descending (LAD), left circumflex (LCX), and diagonal (Diag) arteries.
- B) The left anterior oblique (LAO) caudal view demonstrates the right coronary artery (RCA) without stenosis.
- C) The RAO caudal view shows a huge aneurysm (\*) in the left main artery (LM) origin (D=20.46mm) without clot and stenosis in the LAD, the LCX, and the Diag.

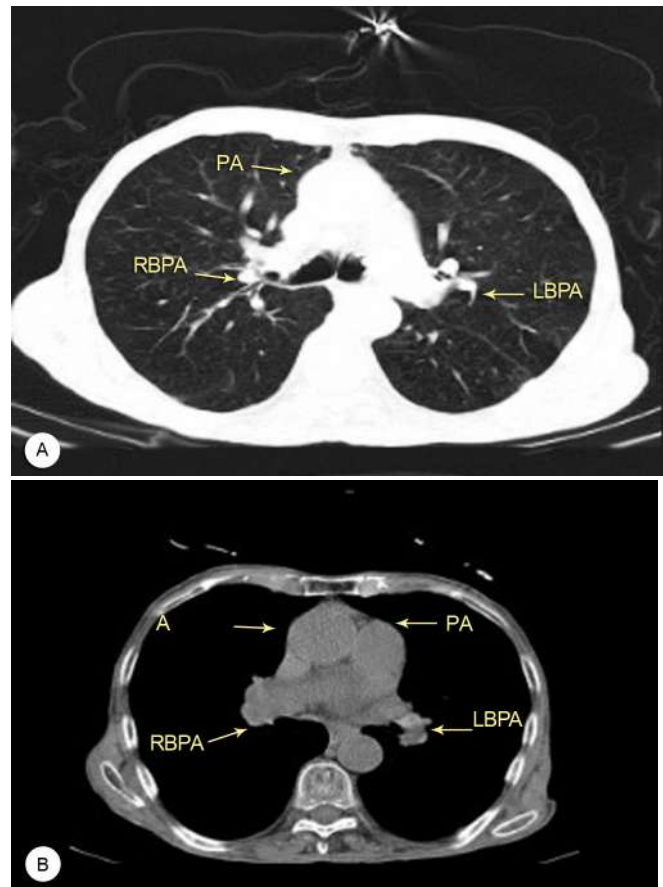


Figure 4. Two views of the patient's chest computed tomography scan demonstrate normal pulmonary parenchymal (A=parenchymal view), as well as the main PA and its branches (B=mediastinal view).

PA, Pulmonary artery; RBPA, Right branches of the pulmonary artery; LBPA, Left branches of the pulmonary artery; A, Aorta

## Discussion

The prevalence of CAAs ranges between 0.15% and 4.9% in patients undergoing angiography.<sup>3</sup> Aneurysms are defined as an over 50% increase in the diameter of the largest coronary arteries and limited spherical or saccular dilation.<sup>4</sup> The main complications of CAAs include rupture, thrombosis, and embolization.<sup>3</sup> Although CAAs are generally asymptomatic, they can cause angina pectoris, dyspnea, edema, myocardial infarction, and sudden death.<sup>5</sup> No definitive strategies have been yet reported for remission in CAAs; nevertheless, operations were proposed in cases with aneurysms 3 to 4 times their normal size.<sup>6</sup> The causes of CAAs include atherosclerosis, congenital malformation, Marfan syndrome, mycosis, endocarditis, Kawasaki disease, history of balloon angioplasty, syphilis, polyarteritis nodosa, systemic lupus erythematosus, Ehlers–Danlos syndrome, scleroderma, traumatic injuries, Takayasu arteritis, rheumatic fever, different genetic

Table 1. Laboratory results of the patient at the post-CCU award

Laboratory Tests	Results	Normal range
PT (s)	13	10.5-13.5
PTT (s)	36	26-40
RBC	$4.01 \times 10^6$	$(3.9-5.8) \times 10^6$
Hemoglobin (g/dL)	12.6	12-16
Hematocrit (%)	37	35-50
MCV (fl)	92.2	80-100
MCH (pg)	31.4	27-32
MCHC (g/dL)	34	31.5-35
Platelet	167000	150000-450000
Troponin	-	Negative
Creatinine (mg/dL)	0.8	0.7-1.4
Urea (mg/dL)	41	17-43
Triglycerides (mg/dL)	38	< 200
LDL (mg/dL)	46	< 130
HDL (mg/dL)	45	$\geq 35$
FBS (mg/dL)	75	70-115
K <sup>+</sup> (mq/L)	4.1	3.8-5
ESR (mm/h)	32	-
CRP	negative	-
ANA	negative	-
Anti dsDNA	negative	-
VDRL	negative	-

CCU, Coronary care unit; PT, Prothrombin time; PTT, Partial thromboplastin time; RBC, Red blood cell; MCV, Mean corpuscular volume; MCH, Mean corpuscular hemoglobin; MCHC, Mean corpuscular hemoglobin concentration; LDL, Low-density lipoprotein; HDL, High-density Lipoprotein; FBS, Fasting blood sugar; ESR, Erythrocyte sedimentation rate; CRP, C-reactive protein; ANA, Antinuclear antibody; dsDNA, Double-stranded DNA; VDRL, Venereal disease research laboratory

syndromes, and idiopathy.<sup>7</sup> Although the present case was thoroughly examined to find the exact etiology of his condition, no definite etiology was ultimately confirmed. Thus, his atypical recurrent chest pain over the previous month could be a lead for the differential diagnosis of rare coronary aneurysms. Moreover, blood stasis in aneurysms renders vessels prone to thrombus formation.<sup>8</sup> However, we could not find any clot in our patient's coronary arteries under angiography. The high speed of the blood flow in the LMCA compared with the other coronary arteries in the same condition, thus, appeared to lower the risk of clot formation. Chen et al<sup>9</sup> described a 22-year-old man with an aneurysm in the LMCA and the left circumflex and a clot in the latter coronary artery. No clots were, however, reported in the LMCA of a 66-year-old man with a huge LM aneurysm,<sup>10</sup> which is consistent with the present report, suggesting no clots in the LMCA of the case with no history of risk factors. Moreover, certain points about our case distinguish it from the case reports cited above: not only was the size of the aneurysm in our case much larger, but also the site of the aneurysm was ostioproximal and atypical recurrent chest pain was the key finding.

## Conclusion

Left main coronary artery aneurysm constitute a rare disease that can be diagnosed through angiography. Furthermore, atypical recurrent chest pain can suggest an aneurysm, and the risk of thrombus is lower in left main coronary artery aneurysm than in other types of coronary artery aneurysms.

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