

# Subacute myocardial infarction in the patient with giant coronary artery aneurysm

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## SOUHRN

Aneurysma koronárních tepen je poměrně vzácné onemocnění s odhadovanou incidencí 0,3–5,3 %, které ohrožující pacienta závažnými komplikacemi zahrnujícími infarkt myokardu, embolizaci a rupturu. Optimální léčba těchto stavů je stále předmětem výzkumu a diskusí. O terapii aneurysmat koronárních tepen bylo dosud publikováno relativně málo kazuistik, proto prezentujeme pacienta s obrovským aneurysmatem koronárních tepen, který byl vyšetřen a léčen v naší nemocnici.

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## ABSTRACT

Coronary artery aneurysms are rare conditions with estimated incidence of 0.3% to 5.3% threatening the patient with severe complications including myocardial infarction, thromboembolism and rupture. Optimal treatment of this condition still remains subject of discussion. Quite few reports of the coronary artery aneurysm treatment have been published, thus we would like to introduce a case of giant coronary artery aneurysm diagnosed in our hospital.

## Introduction

Coronary artery aneurysm (CAA) is defined as a dilatation of coronary artery, which exceeds the diameter of adjacent segments of the normal coronary artery or the diameter of the patient's largest coronary vessel by 1.5 times.<sup>1</sup> CAA is described as giant when its diameter exceeds more than 4 times the diameter of the reference vessel or is higher than 8 mm.<sup>2</sup> The estimated incidence of CAA varies from 0.3 to 5.3% and has been rising since coronary angiography has become routine and frequent examination method.<sup>3</sup> Typical etiological agents for CAA formation are atherosclerosis, Kawasaki disease, coronary artery trauma during percutaneous coronary intervention, polyarteritis nodosa, systemic lupus erythematosus, rheumatic fever and syphilis.<sup>1,4</sup> CAAs develop predominantly on the left anterior descending artery (LAD) because of the higher wall stress and turbulent blood flow during systole.<sup>5</sup>

The golden standard for the CAA diagnosis is coronary angiography. Intravascular ultrasound is recommended for better anatomical assessment of the CAA.<sup>6</sup> The typical

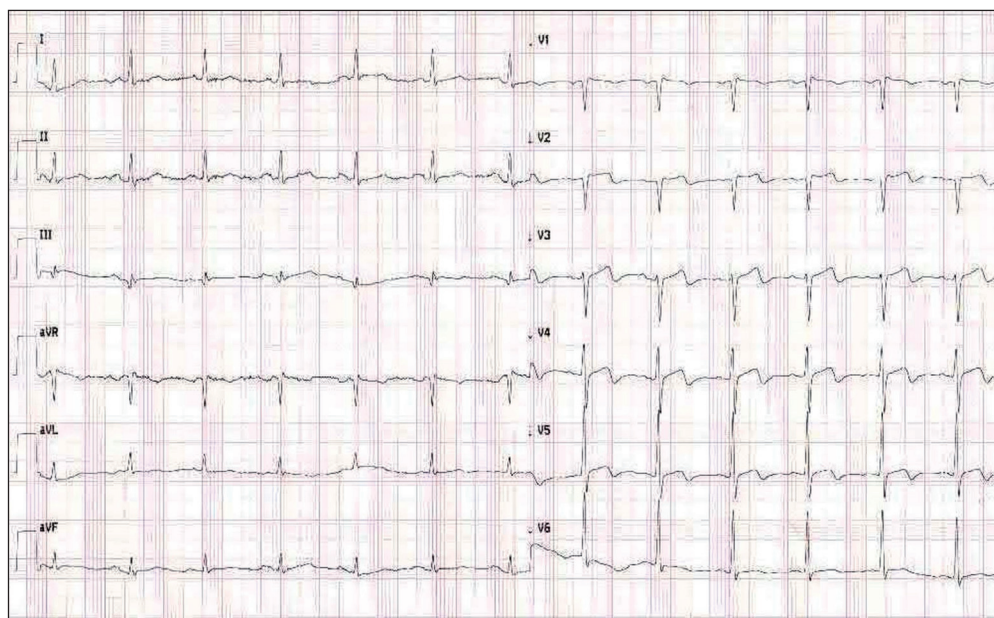
complications of CAA include angina pectoris, myocardial infarction, thrombosis and thromboembolism, arteriovenous fistulae formation, rupture and vasospasm. Consensus on optimal CAA treatment has not been reached yet.<sup>7</sup> Medical treatment includes antiplatelet and/or anti-coagulant therapy. Mini-invasive percutaneous treatment includes stent-assisted coil embolisation of the CAA.<sup>8</sup> In patients with severe coronary artery stenosis, fistula formation, compression of the cardiac chambers and rapidly increasing size of the CAA, surgical treatment is recommended.<sup>9</sup>

## Case report

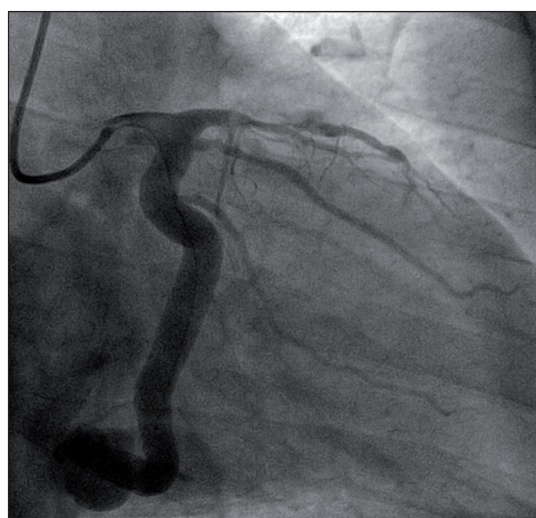
Fifty-four-year-old man was referred to our cardiology department because of the history of typical chest pain and shortening of breath for 2 weeks and electrocardiographic (ECG) finding of Q waves on the anterior left ventricular (LV) wall (Fig. 1). So far, he was healthy without any symptoms of angina pectoris. There was not any severe

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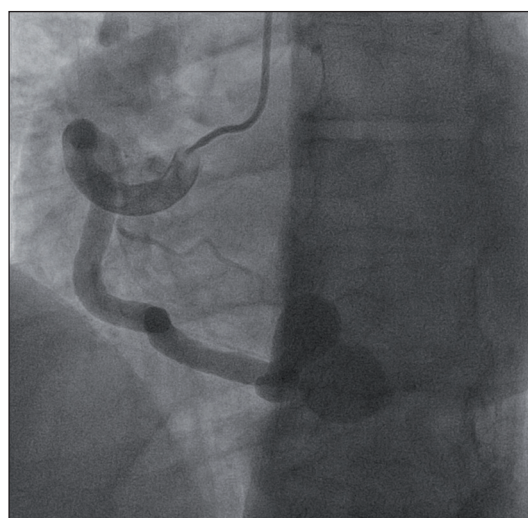
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**Fig. 1 – Electrocardiographic finding upon arrival to the hospital. Subacute Q-wave myocardial infarction of the anterior left ventricular wall.**



**Fig. 2 – Coronary angiography. Ectatic left main coronary artery and left circumflex coronary artery with the diameter of nearly 15 mm. The left circumflex coronary artery leads to a huge aneurysm drained to the coronary sinus. Subtotal stenosis of the left anterior descending coronary artery.**



**Fig. 3 – Coronary angiography. Ectatic right coronary artery with the diameter of about 10 mm leading to the aneurysm.**

systemic disease in his personal and family history. He was a moderate smoker. The patient underwent coronary angiography with a finding of ectatic left and right coronary arteries – the diameter of the left main (LMCA) and left circumflex (LCx) coronary artery was nearly 15 mm (Fig. 2) and the diameter of the right coronary artery (RCA) was around 10 mm (Fig. 3). The diameter of the LAD was 3.5 mm and there was subtotal stenosis of LAD after the first diagonal branch detachment. The blood from ectatic RCA and LCx was flowing into a giant aneurysm, which was drained to the coronary sinus.

For the proper anatomical orientation and assessment of the patient's prognosis, a set of further examination was performed. The patient underwent duplex sonogra-

phy of the carotids and abdominal aorta with physiological finding of small atherosclerotic wall plaques. Computerized tomography (CT) angiography of the abdominal aorta with normal finding and CT of the heart with 3D reconstruction was performed (Fig. 4). After excluding a systemic connective tissue disease, a delayed percutaneous coronary intervention (PCI) on the subtotal stenosis of LAD with implantation of 1 drug eluting stent was performed (Fig. 5). There were no complications after the intervention and the patient was discharged from the hospital three days after PCI. He was advised to stop smoking, take long-term dual antiplatelet therapy and regularly check coronary risk factors (blood pressure, serum lipoproteins, glycaemia).

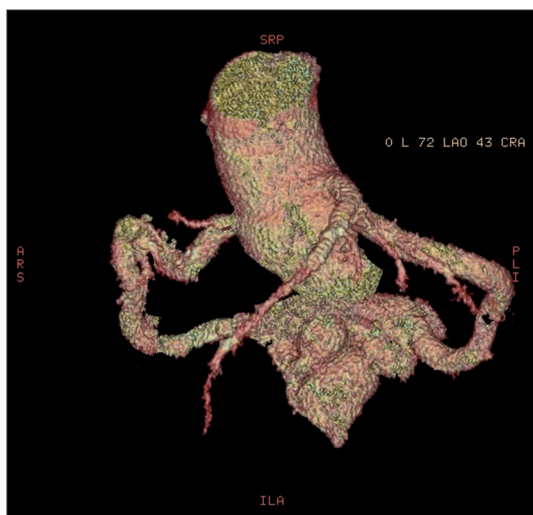


Fig. 4 – CT angiography. Ectatic right and left circumflex coronary arteries leading to the huge aneurysm, which is drained to the coronary sinus and right atrium.

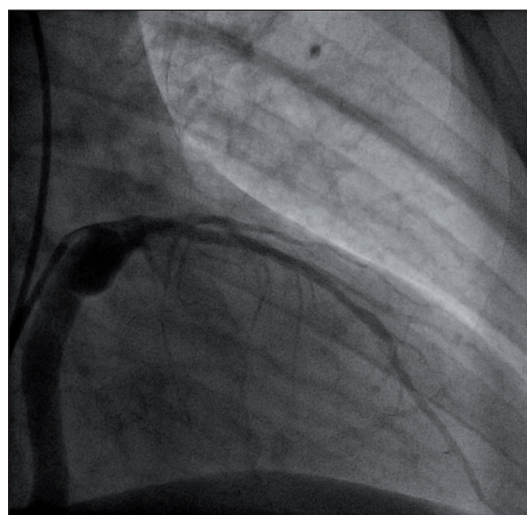


Fig. 5 – Coronary angiography. Left anterior descending artery with implanted stent.

## Discussion

After diagnostic coronary angiography, further examinations were performed to get both the proper anatomical orientation, as well as to exclude systemic vascular disease. No signs of systemic vascular disease were detected on ultrasound and CT examinations, so the next step was to set the proper treatment procedure. Consensus on optimal treatment of CAAs has not been reached yet. The CAA prognosis still remains unclear – according to some studies, CAA has an independent effect on long-term mortality rate. It has been estimated, that CAA, as an independent predictor of mortality, has an overall 5-year survival of 71%.<sup>10</sup> Another group of experts claims that the prognosis is affected only by the degree of overall coronary atherosclerosis and not by the presence of the aneurysms.<sup>1</sup> Aggressive modification of coronary risk factors is recommended in all patients with CAA, whether or not obstructive coronary artery disease is present.<sup>10</sup> Patient himself wanted possible less invasive treatment, so after taking patient's opinion into consideration, PCI on LAD stenosis with following optimal medical treatment was indicated.

## Conclusion

The case report of giant coronary artery aneurysm was presented. Because of the stable patient's condition, after excluding systemic disease and successful percutaneous treatment of the LAD stenosis, conservative treatment with regular follow-ups was recommended. After 6 years of follow-up, regarding the coronary artery disease and CAA, the patient remains asymptomatic. Repeated coronary angiography should be performed, and in case of angina pectoris occurrence or increasing size of the CAAs, surgical treatment should be indicated.

## Conflict of interest

The authors declare that they have no conflict of interest.

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