

Recurrent simultaneous two-vessel very late stent thrombosis

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SOUHRN

Kontext: Trombóza stentu má katastrofální důsledky. Nová generace lékových stentů (drug eluting stent, DES) přinesla významné zlepšení účinnosti a hlavně bezpečnosti. Velmi pozdní trombóza stentu je sice vzácnou komplikací, ale ještě vzácnější je velmi pozdní trombóza stentu současně ve dvou tepnách při použití DES druhé generace.

Kazuistika: V roce 2018 byl do naší nemocnice přijat 43letý muž pro infarkt myokardu bez elevací úseků ST (non-ST elevation myocardial infarction, NSTEMI) pro významné změny na proximálních segmentech ramus interventricularis anterior (RIA) a ramus circumflexus (RCx) řešené implantací dvou DES. Po dvou letech bez problémů byl muž znovu přijat do nemocnice pro infarkt myokardu přední stěny s elevací úseku ST (ST-elevation myocardial infarction, STEMI). Koronarografie prokázala významné stenózy dvou dříve ošetřených tepen. Byla provedena primární perkutánní koronární intervence (percutaneous coronary intervention, PCI) s implantací stentů uvolňujících sirolimus do RIA a RCx. Pacient následně užíval kyselinu acetylsalicylovou v dávce 100 mg a clopidogrel v dávce 75 mg denně po dobu jednoho roku. V dubnu roku 2021 se pacient dostavil na oddělení urgentního příjmu pro nepolevující svíravou bolest na hrudi. Elektrokardiogram prokázal infarkt přední stěny myokardu s elevací úseku ST. Během dvou hodin od nástupu symptomů byl muž převezen na katetrizační sál. K našemu překvapení byla zodpovědná léze přítomna na stejných dvou tepnách. Do RIA jsme implantovali stent 4 × 25 mm uvolňující sirolimus a léze na RCx byla ošetřena non-compliantním balonkem 3 × 20 mm nafouknutým na 14 atm.

V obou případech pacient užíval jako antiagregační léčbu kyselinu acetylsalicylovou po 12 měsících duální antiagregační léčby. Až na citové vypětí předcházející oběma příhodám nebyl zjištěn žádný spouštěcí faktor. **Závěr:** Velmi pozdní trombóza stentu v důsledku složitých mechanismů představuje příhodu s katastrofálními důsledky. Tato kazuistika popisuje vzácnou formu rekurentní, velmi pozdní trombózy stentu a je ve shodě s nedávno publikovanými doporučenými postupy (guidelines), v nichž se navrhuje vytvořit kategorii pacientů s vysokým rizikem ischemie, kteří vyžadují dlouhodobou duální antiagregační terapii.

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ABSTRACT

Background: Stent thrombosis is catastrophic. New-generation drug eluting stents (DES) had a significant improvement in the efficacy and especially safety. Very late stent thrombosis is a rare complication, however, even rarer is to have a simultaneous two-vessel very late stent thrombosis with second-generation DESs.

Case presentation: A 43-year-old male was admitted to our hospital in 2018 because of non-ST elevation myocardial infarction (NSTEMI) due to significant lesions on the proximal left anterior descending (LAD) and the circumflex (Cx) arteries treated with the implantation of two drug eluting stents. After 2 years of wellbeing, he was readmitted because of an anterior ST-elevation myocardial infarction (STEMI). Coronary angiography showed severe stenosis of the two previously treated arteries. Primary percutaneous coronary intervention (PCI) was done by the implantation on the LAD and on the CX of sirolimus-eluting stents. 100 mg aspirin and 75 mg clopidogrel were administered to the patient then for one year. In April 2021, the patient consulted the emergency department because of a continuous oppressive chest pain. ECG showed an anterior STEMI. He entered the catheterization laboratory with 2 h of total delay since symptom onset. To our surprise, the culprit lesion was on the same two vessels. We implanted on the LAD a sirolimus-eluting stent 4 × 25 mm and the Cx lesion was treated with a non-compliant balloon 3 × 20 mm inflated at 14 atm. On both episodes, the patient was on single antiplatelet therapy with aspirin after 12 months of DAPT, and no triggering factor had been identified except for a severe emotional distress preceding both events.

Conclusion: VLST is a catastrophic event due to complex mechanisms. This case describes a rare form of recurrent VLST and is in line with the recent guidelines that recommend identifying a category of patients with high ischemic risk needing a prolonged double antiplatelet treatment.

Keywords:

Case report

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Case presentation

A 43-year-old male was admitted to our hospital in 2018 because of non-ST elevation myocardial infarction (NSTEMI) due to significant lesions on the proximal left anterior descending (LAD) and the circumflex (Cx) arteries treated with the implantation of two drug eluting stents. The patient was diabetic and a heavy current smoker.

At the time, echocardiography showed a non-dilated ischemic cardiomyopathy with a severely altered ejection fraction at 30%. He was put on dual antiplatelet therapy (DAPT) consisting of 100 mg aspirin and 75 mg clopidogrel to pursue for one year.

After 2 years of wellbeing, he was readmitted because of an anterior ST-elevation myocardial infarction (STEMI). Coronary angiography showed severe stenosis of the two previously treated vessels with total occlusion of the Cx artery (Figs 1 and 2).

Primary percutaneous coronary intervention (PCI) was done by the implantation on the LAD and on the CX of sirolimus-eluting stents.

100 mg aspirin and 75 mg clopidogrel were administered to the patient then for one year.

In April 2021, the patient consulted the emergency department because of a continuous oppressive chest pain. ECG showed an anterior STEMI (Fig. 3). At clinical interview, the patient reported to have not completely quit smoking and to assume aspirin, statins, and beta-blockers. Clopidogrel had been stopped, as indicated, few days before this event. At clinical examination, heart rate was at 125 bpm, arterial pressure was 100/60 mmHg. He entered the catheterization laboratory with 2 h of total delay since symptom onset. To our surprise, the culprit lesion was on the same two vessels (Fig. 4). Thrombolysis in Myocardial Infarction (TIMI) flow Grade 2 was restored after positioning a floppy guidewire.

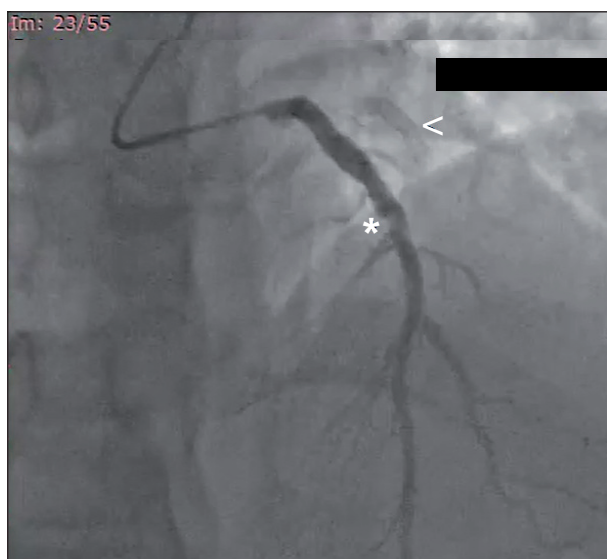


Fig. 1 – Coronary angiography (cranial view) showing thrombus on the LAD (*) and total occlusion of the CX (<).



Fig. 2 – Coronary angiography (caudal view) showing total occlusion of the CX (<).

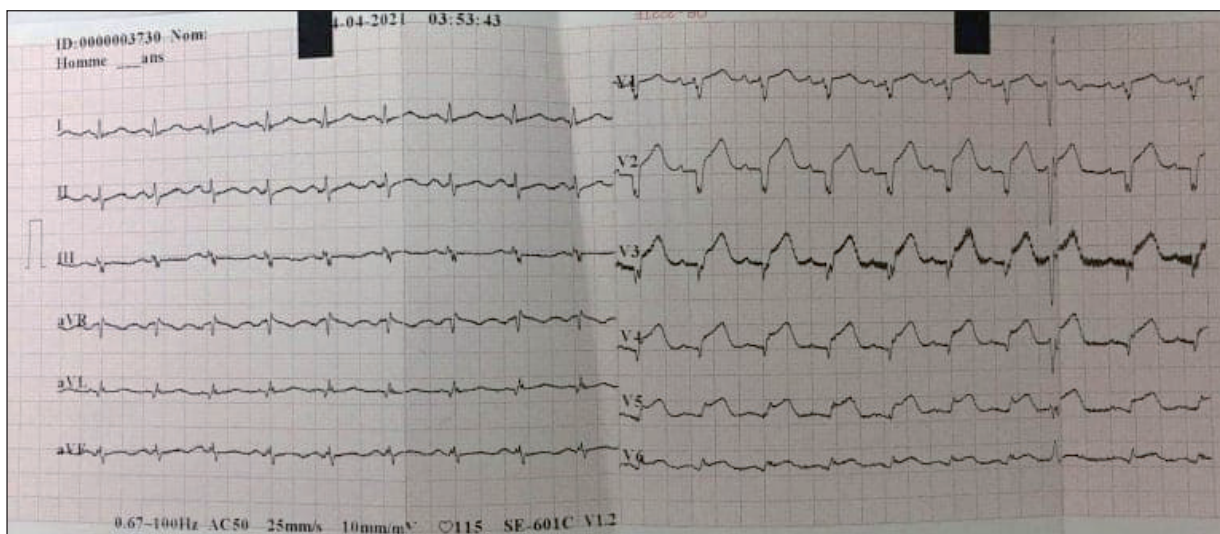


Fig. 3 – ECG showing an ST elevation in the anterior leads.

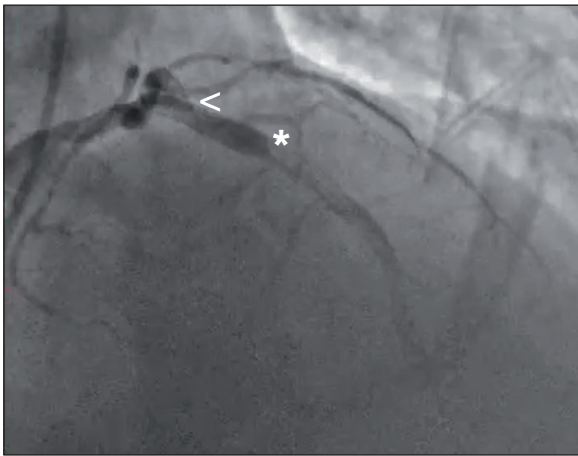


Fig. 4 – Coronary angiography (cranial view) showing total occlusion of the LAD (*) and CX (<).



Fig. 5 – Final result of the percutaneous coronary intervention on the RAO caudal view.

Downstream therapy with abciximab was initiated, and aspiration of the thrombus was successfully performed obtaining a TIMI flow Grade 3, clinical improvement, and complete ST-segment resolution. OCT showed well deployed stents. The intervention led to the implantation on the LAD of sirolimus-eluting stent 4 × 25 mm then. The CX lesion was treated with a non-compliant balloon 3 × 20 mm inflated at 14 atm (Fig. 5).

The patient was discharged on Day 6 with standard medical therapy and the indication for indefinite continuation of the DAPT with ticagrelor 180 mg and aspirin 100 mg daily.

On both episodes, the patient was on single antiplatelet therapy with aspirin after 12 months of DAPT, and no triggering factor had been identified except for a severe emotional distress preceding both events. Aspirin resistance testing could not have been tested but smoking is believed to be the main reason for these events.

Discussion

Acute STEMI secondary to stent thrombosis is a catastrophic event with 20% to 40% risk of mortality.^{1,2} Usually it happens during the first 30 days after stent implantation.^{2–4} The Academic Research Consortium classifies stent thrombosis as early (0–30 days of stent deployment), late (31 days–1 year) or very late (after 1 year).^{5,6}

New-generation drug eluting stents (DES) had a significant improvement in the efficacy and especially safety with lower rates of very late stent thrombosis (VLST).^{7,8}

Very late stent thrombosis is a rare complication,⁹ however, even rarer is to have a simultaneous two-vessel very late stent thrombosis with second-generation DESs. Puri et al.¹⁰ reported a patient with simultaneous two-vessel VLST and some authors have also reported simultaneous VLST in three coronary vessels^{11,12} but to our knowledge this is the first reported case of recurrent simultaneous VLST with DESs.

The mechanism of very late stent thrombosis is not fully understood. A lot of factors are related to the risk of developing it, including procedure related factors such as incomplete expansion, multiple stents, dissection, and late stent malapposition. Lesion related factors: bifurcation and vein graft lesions, multivessel disease, and patient related factors as the presence of renal disease, prior history of myocardial infarction, current smoking, discontinuation of dual antiplatelet therapy (DAPT), and dia

Conclusion

VLST is a catastrophic event due to complex mechanisms. This case describes a rare form of recurrent VLST and is in line with the recent guidelines that recommend identifying a category of patients with high ischemic risk needing a prolonged double antiplatelet treatment.

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