Large intracoronary thrombus, do we know how to handle it?

Gran trombo intracoronario, ¿sabemos manejarlo?

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ABSTRACT

Large intracoronary thrombi are a rare cause of NSTEACS/STEACS, and their management in cases of acute coronary syndrome (ACS) remains a therapeutic challenge. Various pharmacological and interventional strategies are employed to reduce thrombotic burden. We present the case of a 60-year-old man with a large intracoronary thrombus as the cause of his acute ischemic event, resolved through medical and percutaneous treatment.

Keywords: intracoronary thrombus, acute coronary syndrome, antiplatelet therapy, anticoagulation, coronary angiography.

RESUMEN

Grandes trombos intracoronarios suelen ser una causa extraña de SCASEST/SCACEST y su manejo en el seno del SCA sigue siendo un reto terapéutico donde diversas acciones tanto farmacológicas como intervencionistas se plantean para reducir la carga trombótica. Presentamos el caso de un varón de 60 años con un gran trombo intracoronario como causante del cuadro agudo isquémico del paciente y su resolución mediante tratamiento médico y percutáneo.

Palabras clave: trombo intracoronario, síndrome coronario agudo, antiagregación, anticoagulación, coronariografía.

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INTRODUCTION

Intracoronary thrombi are a rare but significant cause of acute coronary syndromes (ACS), both with ST-segment elevation (STEACS) and without it (NSTEACS). Management of these cases remains a therapeutic challenge, as large thrombi pose specific risks during percutaneous coronary intervention (PCI), such as distal thrombus migration or the no-reflow phenomenon. In these cases, implementing both pharmacological and interventional strategies to reduce thrombotic burden is crucial. Here, we report the case of a 60-year-old male patient who presented with ACS secondary to a large intracoronary thrombus, and we describe its resolution through medical and percutaneous treatment.

CLINICAL CASE

We present the case of a 60-year-old man, a smoker without other known cardiovascular risk factors, who came to the Emergency Room with typical central chest pain resolved after administering morphine chloride 3 mg, sublingual nitroglycerin/caffeine citrate, and aspirin 300 mg. The initial ECG showed no signs of acute ischemia, and the enzymatic curve was positive (high-sensitivity troponin I 344→565.7), leading to the patient›s admission to the Intensive Care Unit.

He was asymptomatic and his evolution was good. An echocardiogram revealed no significant abnormalities. The following day, cardiac catheterization revealed a large-diameter circumflex artery with an obtuse marginal branch and a very ectatic segment (>5 mm) with distal occlusion (TIMI 0), and an image of a large thrombus inside it **(Figure 1A)**. Given the lack of distal flow and the risks associated with thrombus manipulation, including possible distal or systemic migration, percutaneous coronary intervention (PCI) on the distal circumflex artery using a 2.0 conventional balloon was the selected alternative. This achieved vessel reopening and restoration of antegrade flow (TIMI 2–3) **(Figure 1B)**, with a slight lesion beyond the aneurysmal area. The other vessels were in good health, so the procedure was concluded.

Initial treatment included triple antiplatelet therapy with aspirin 100 mg/day, clopidogrel 75 mg/day, and intravenous tirofiban for 24 hours. After discontinuing tirofiban, the patient received anticoagulation with enoxaparin 6000 IU every 12 hours, which was maintained throughout hospitalization.

During the remainder of his stay in the Department of Cardiology, the patient remained asymptomatic without complications. Upon discharge, and after clinical assessment, dual antiplatelet therapy (aspirin + clopidogrel) was continued alongside oral anticoagulation with rivaroxaban 20 mg/day for an additional four weeks.

Four weeks later, the patient was readmitted for a scheduled follow-up catheterization, which showed complete resolution of the thrombus, persistence of the distal lesion, and good antegrade flow (TIMI 3) **(Figure 2)**. Based on this, oral anticoagulation was discontinued, and dual antiplatelet therapy was maintained.

According to current guidelines, PCI remains the preferred treatment option in patients with STEACS or NSTEACS[1], However, the management of large intracoronary thrombi in cases of acute coronary syndrome (ACS) remains a therapeutic challenge. Various pharmacological and interventional strategies are employed to reduce thrombotic burden.

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Figure 1. *A: Large-diameter circumflex artery with an obtuse marginal branch and a very ectatic segment (>5 mm) with distal occlusion (TIMI 0), and an image of a large thrombus inside it. Figure 1B: Distal circumflex artery after PCI with a conventional 2.0 balloon, which successfully reopened the vessel and restored antegrade flow.*

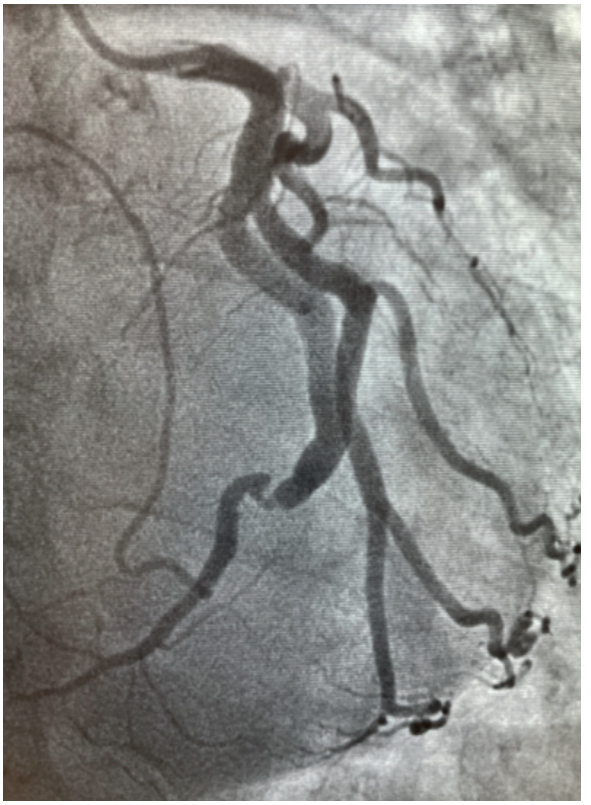

Figure 2. *Circumflex artery with total resolution of the associated thrombus.*

Two critical issues arise in this case: immediate management during PCI and long-term pharmacological therapy[2].

Regarding PCI for intracoronary thrombi, the approach varies depending on thrombus size. For small thrombi (TG 0–2), direct stenting may be considered. In cases of large intracoronary thrombi (TG 5), such as in this patient, PCI can be challenging due to the risk of distal or systemic migration, no-reflow, or embolization of non-culprit vessels[3]. Antegrade flow assessment is essential; when absent, mechanical aspiration thrombectomy or distal balloon intervention can be attempted to restore flow. However, there is no ideal approach, and management must be individualized based on patient condition and operator experience[4].

On the other hand, regarding antithrombotic treatment, dual antiplatelet therapy seems to be the best alternative as it provides clear benefit by reducing thrombotic burden and improving clinical outcomes. Potent P2Y12 inhibitors (ticagrelor or prasugrel) are preferred due to their rapid action and superior clinical and angiographic outcomes. Clopidogrel is also an alternative, particularly for elderly patients with high bleeding risk and socioeconomic constraints[5]. Glycoprotein IIb/IIIa inhibitors also seem to effectively dissolve intracoronary thrombi and restore TIMI flow. Current guidelines recommend their use for no-reflow phenomena, thrombotic complications, or intracoronary thrombi[6]. The most commonly used agents are abciximab and tirofiban, with no clear superiority between them. Some small-scale studies suggest intracoronary abciximab may outperform intravenous options in cases without increased hemorrhagic events; however, further evidence is needed to expand its use[7].

As for long-term anticoagulation in patients with large intracoronary thrombi, there is limited literature available. Published cases have used subcutaneous enoxaparin, warfarin, or new direct oral anticoagulants (NDOACs). In this case, given the patient's preference for oral therapy and limited access to INR monitoring, rivaroxaban 20 mg/day for four weeks was the chosen alternative. After confirming successful resolution of the thrombus, anticoagulation was discontinued[8].

CONCLUSION

Large intracoronary thrombi remain a challenge in the treatment of acute coronary syndromes, requiring a multidisciplinary approach that combines interventional strategies and antithrombotic therapies. In this case, the combination of percutaneous intervention with a conventional balloon to restore coronary flow, along with initial intensive

treatment with clopidogrel, aspirin, tirofiban, and enoxaparin, followed by anticoagulation with rivaroxaban, resulted in complete thrombus resolution with favorable clinical outcomes. This case underscores the importance of tailoring treatment to the patient's condition and the characteristics of the thrombus.

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