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Clinical case

Severe renal failure and thrombotic microangiopathy induced by malignant hypertension successfully treated with spironolactone

Insuffisance rénale sévère et microangiopathie thrombotique induite par l'hypertension artérielle maligne efficacement traite par la spironolactone

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Abstract

Malignant hypertension can cause thrombotic microangiopathy (TMA) characterized by hemolytic anemia and thrombocytopenia. On the other hand, severe hypertension is sometimes associated with hemolytic uremic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP). Distinguishing these entities is important because of therapeutic implications. Plasmapheresis should be initiated as soon as possible if we are dealing with TTP. We describe the case of a 30-year-old man referred to our hospital with malignant hypertension, severe renal failure and TMA: haemoglobin = 9 g/dL, total bilirubin = 0.4 mg/dL, haptoglobin ≤ 10 mg/dL, platelet count = 59,000/μL and schistocytes on peripheral smear. He required initiation of hemodialysis. Additionally, we considered that the possible cause of TMA was malignant hypertension according to the presence of hypertensive retinopathy and thrombocytopenia which remitted only with blood pressure control, hence, plasmapheresis was not given. Renal function did not improve and the patient remained chronic hemodialysis. Intensive therapy for hypertension with a combination of antihypertensive drugs including spironolactone successfully lowered his blood pressure without developing hyperkalemia.

Keywords: Malignant hypertension; Severe renal failure; Thrombotic microangiopathy; Spironolactone

Résumé

L'hypertension maligne peut provoquer une microangiopathie thrombotique (TMA) caractérisée par une anémie hémolytique et une thrombocytopénie. D'autre part, une hypertension sévère est parfois associée au syndrome hémolytique et urémique (SHU) ou au purpura thrombocytopénique thrombotique (TTP). Distinguer ces entités est important en raison des implications thérapeutiques. La plasmaphérèse doit être initiée dès que possible si nous traitons avec TTP. Nous décrivons le cas d'un homme de 30 ans référé à notre hôpital avec hypertension maligne, insuffisance rénale sévère et TMA : hémoglobine = 9 g/dL, bilirubine totale = 0,4 mg/dL, haptoglobine ≤ 10 mg/dL, numération plaquettaire = 59 000/μL et schistocytes sur frottis périphérique. Il a nécessité l'initiation de l'hémodialyse. En plus, nous avons considéré que la cause possible de la TMA était l'hypertension maligne selon la présence d'une rétinopathie hypertensive et d'une thrombocytopénie qui se limitait uniquement au contrôle de la pression artérielle, d'où l'absence de plasmaphérèse. La fonction rénale ne s'est pas améliorée et le patient est resté en hémodialyse chronique. Un traitement intensif pour l'hypertension avec une combinaison de médicaments antihypertenseurs, y compris la spironolactone abaissé avec succès sa pression artérielle sans développer d'hyperkaliémie.

Mots clés : Hypertension maligne ; Insuffisance rénale sévère ; Microangiopathie thrombotique ; Spironolactone

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1. Introduction

Thrombotic microangiopathy (TMA) is characterized by the presence of microangiopathic hemolytic anemia and thrombocytopenia along with organ dysfunction, and pathologically, by the widespread formation of microthrombi [1]. TMA syndrome is divided into primary TMA and secondary TMA [2]. The syndromes of primary TMA have defined abnormalities that require specific treatment, such as thrombotic thrombocytopaenic purpura (TTP), haemolytic uremic syndrome (HUS) and atypical HUS (aHUS) [3]. However, secondary TMA is caused by some underlying disease, such as infection, collagen disease, malignant hypertension (MHTN), pre-eclampsia, systemic infections, autoimmune disorders, hematopoietic stem cell or organ transplantation, and disseminated intravascular coagulopathy [2].

Malignant hypertension is the clinical syndrome of severe elevations in blood pressure and funduscopic hypertensive retinopathy, including bilateral flame-shaped hemorrhage and papilledema [4]. Distinguishing between the MHTN with renal failure and TTP can be challenging because of therapeutic implications. Plasmapheresis is beneficial in TTP, but of no benefit in TMA associated with MHTN [5].

Despite the availability of a vast range of antihypertensive agents, MHTN continues to be a significant clinical challenge [6]. Angiotensin-converting enzyme inhibitors (ACE-Is) or angiotensin receptor blockers (ARBs) are recommended for the treatment of MHTN [7]. However, the efficacy of mineralocorticoid receptor antagonists (MRAs) has not yet been studied.

We report the case of a 30-year-old man who developed features of TMA with severe renal failure requiring dialysis initiation in the setting of malignant hypertension that was successfully treated with multiple medications including spironolactone, an MRAs.

2. Case presentation

A 38-year-old African man, without medical history. He had not seen a primary care physician for many years. He denied substance abuse. He did not take any over-the-counter or prescription medications.

He was admitted to another hospital, his symptoms included shortness of breath for one week, nausea and stomachache for the past 2 weeks. His blood pressure was 250/160 mmHg and an SpO2 of 86% during oxygen macronebulization at 10 L/minute.

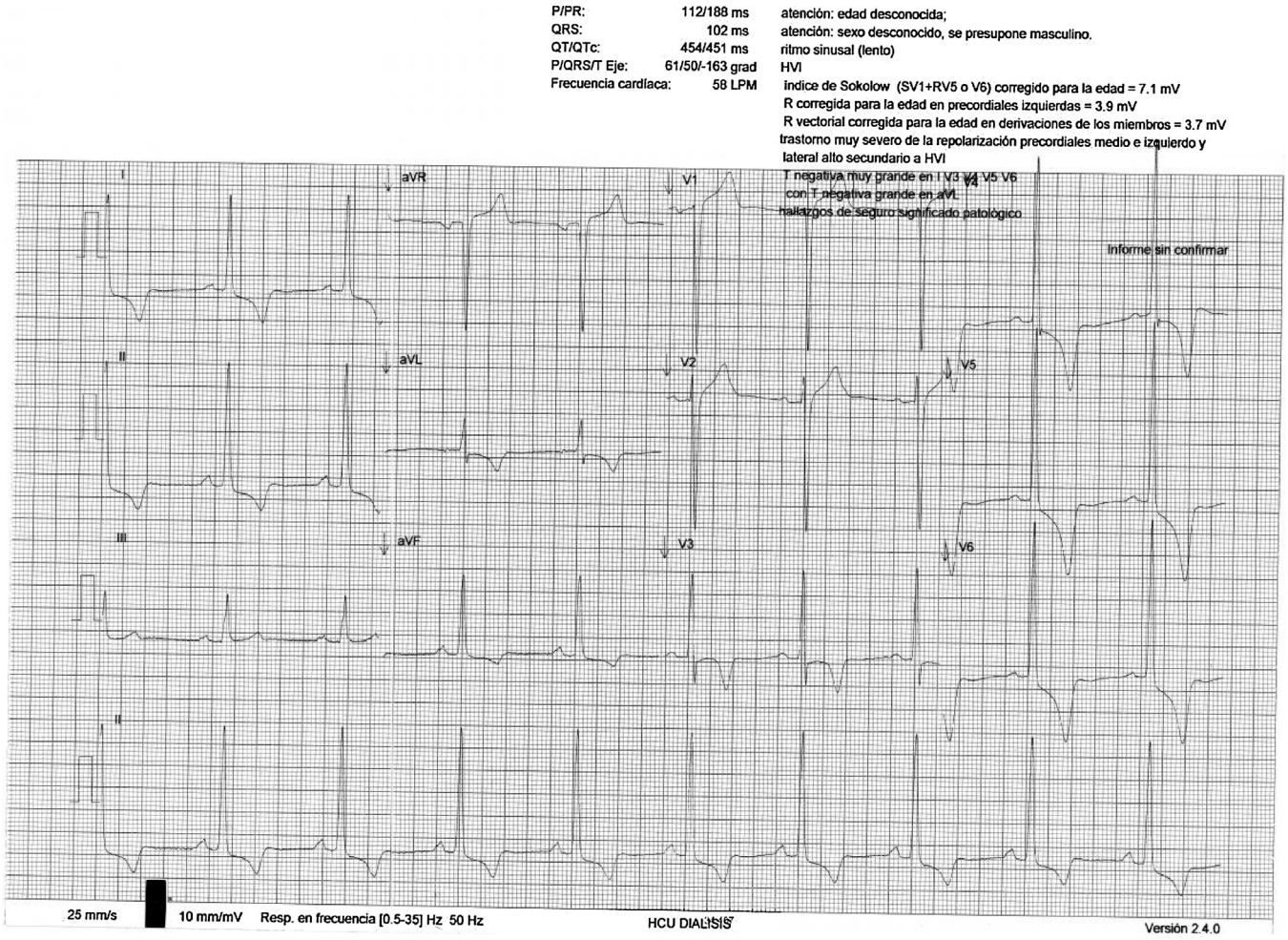

Fig. 1. Electrocardiogram suggests the presence of left ventricular hypertrophy.

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