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Case Report

Case report of ecstasy-induced renal venous thrombosis

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Abstract

The use of 3,4-methylenedioxymethamphetamine, also known as MDMA or ecstasy, has been associated with vascular and end-organ damage. This case report describes, with histological evidence, the development renal venous thrombosis presenting with acute kidney injury following oral ingestion of 3,4-methylenedioxymethamphetamine (ecstasy).

Keywords: ecstasy; renal; thrombosis; venous

Introduction

This case describes the development of acute kidney injury following oral ingestion of 3,4-methylenedioxymethamphetamine (ecstasy) with histological demonstration of venous thrombosis.

Case report

A 22-year-old man presented with acute bilateral loin pain and was referred by his general practitioner for a urological consultation with suspected renal stones. He was on no regular medication, and at the beginning of his admission, he denied taking any recreational drugs. However, later on, he admitted taking ecstasy 1 day prior to his admission.

When examined, he was apyrexial but hypertensive with a blood pressure of 145/95 mmHg. His cardiovascular, respiratory and abdominal examinations were normal. Initial biochemical investigations showed evidence of acute kidney injury with a creatinine of 189 μmol/L. A creatinine of 73 μmol/L was documented 4 years previously. Other biochemistry results were Na 138 mmol/L, K 4.2 mmol/L and urea 7.7 mmol/L. Anti-neutrophil cytoplasmic antibodies (ANCA) and anti-nuclear antibodies (ANA) were negative; complement and immunoglobulins were normal. His urine dipstick was positive for both blood and protein. The protein–creatinine ratio was 92 mg/mmol. Renal ultrasound showed normal-sized kidneys and no renal stones.

Given the unexplained acute kidney injury with significant proteinuria and haematuria, he underwent ultrasound-guided renal biopsy. Over the next 3 days of admission, his renal function continued to improve, and his proteinuria started to disappear (Table 1).

Renal biopsy histology: A small vein at the corticomedullary junction was occluded by thrombus with evidence of early organization (Figure 1). Glomeruli, tubules and a small artery present appeared normal. There was no evidence of glomerulonephritis or tubulointerstitial nephritis.

A renal Doppler ultrasound did not show a thrombus in the main renal vein bilaterally. His renal function normalized, and his proteinuria resolved. Thrombophilia screen including antiphospholipid antibodies was negative. He was discharged with the diagnosis of acute kidney injury due to renal venous thrombosis induced by ecstasy.

Discussion

3,4-Methylenedioxymethamphetamine, also known as MDMA or ecstasy, is an amphetamine derivative. Its use has been associated with different organ failure such as acute kidney injury and fulminant hepatic failure [1]. The vascular effects of MDMA are poorly defined. Firstly, vasoconstriction caused by MDMA is described in animal models with effects such as increase in mean blood pressure [2], cutaneous vasoconstriction [3] and coronary artery vasoconstriction [4]. Moreover, necrotizing vasculopathy was described in a case report of a patient who used MDMA 10 days prior to presentation with acute kidney injury resulting in chronic renal failure [5]. Necrotizing vasculopathy was also reported in two transplanted renal grafts taken from the same donor who regularly used ecstasy; both grafts

Table 1. Progression of renal function with proteinuria during admission

Admission day	Creatinine (μmol/L)	Protein–creatinine ratio (mg/mmol)
1	189	92
2	254	101
3	215	39
4	128	
10	106	

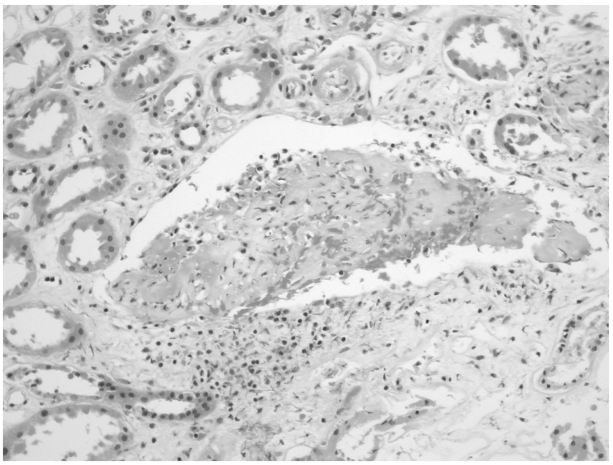

Fig. 1. A small vein at the corticomedullary junction was occluded by thrombus with evidence of early organization.

failed within the first week due to necrotizing graft vasculopathy [6]. Finally, there have been case reports of extra-renal venous thrombosis associated with the use of ecstasy such as a case of cerebral venous thrombosis in a 22-year-old woman who ingested one tablet of ecstasy prior to presentation with headache and photophobia [7]. Although MDMA can cause disseminated intravascular coagulation [1], venous thrombosis could also be a result of hyperthermia and dehydration induced by MDMA. We describe a case of acute kidney injury most likely caused by renal venous thrombosis induced by ecstasy ingestion. The venous thrombosis involved small intra-renal veins, evident on renal biopsy, but did not include the main renal veins. This is supported by the degree of the acute kidney injury and the resolution of both the injury and the proteinuria.

Conflict of interest statement. None declared.

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