Short Communication

Renal Infarction of Cannabis Users

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Abstract

Cannabis is the most widely consumed drug in the world, particularly among young subjects. A lot of complications are described after consumption of this drug particularly cardiovascular and cerebrovascular effect, including myocardial infarction, stroke and thromboangiitis obliterans. Renal infarction is uncommon. Herein, we report our experience of three young people with acute renal infarction.

ABBREVIATIONS

MRI: Magnetic Resonance Imaging; CT: Computing Tomography

INTRODUCTION

Cannabis arteritis is first described by Sterne in 1976 as a severe subacute distal arteriopathy due to Delta 9 tetrahydrocannabinol. After which many cases have been described due to an increase of cannabis consumption. Most observations describe thromboangiitis obliterans or Buerger’s disease. Renal artery stenosis was only described once in 1995 by Lambrecht et al.

MATERIALS AND METHODS

We report three cases of renal infarction after cannabis consumption.

Cases

Case 1: A 49-year-old man was admitted to our unit after three weeks of severe lumbar pain. He did not have medical history apart from a high consumption of cigarettes and cannabis every day (around 45 grams per day). Clinical examination showed a high blood pressure (199/127 mmHg) and a left lumbar pain. The rest of the clinical examination was normal, notably he did not have a fever. An abdominal computerized tomography (CT) showed an acute infarct of the upper pole of the left kidney without difference in renal size. CT angiography confirmed a stenosis of a left retro pyelicartery. All other abdominal arteries were unremarkable (Figure 1). The renal function was normal. (creatinine: 70 µmol/l, no proteinuria no hematuria). Laboratory tests of vasculitis (C-reactive protein, antinuclear antibodies, ant neutrophil cytoplasmic antibodies), infectious endocarditis (echocardiography) and coagulopathy (antithrombin III, free protein C, active protein C, protein S, TCA, TP and antiphospholipid anti-bodies and serum protein electrophoresis) were negative. There was no sign of embolic cardiac causes or fibro dysplasia.

The patient was successfully treated by angioplasty with stent in the retro pyelic artery. The artery pressure and pain reduced after this treatment. One week later the follow-up CT scan showed a stent thrombosis which needed recanalisation. After that, the patient did not present any other painful episode and a follow-up CT scan 1 month later revealed a homogenous enhancement of left renal parenchyma.

Case 2: A 53-year-old woman presented with iterative abdominal pain with vomiting. Her medical history showed she had chronic hepatitis C and had smoked cannabis (since she was a teenager). Her physical examination was normal except a right

Figure 1 (A) −CT angiography axial image: a left renal infarction is present on the retro pyelic area (white arrow) (B) Late arterial phase of a posteroanterior abdominal aortogram showing a left retropyelic artery stenosis (withe arrows) originating just below the renal arteries associated with hypo perfusion of the upper pole (black arrows).
lumbar pain on palpation. Renal function was normal without microscopic haematuria, or proteinuria. CT angiography showed a right retro pyelic artery stenosis with an ischemic area and post stenotic dilatation. Holter ECG and echocardiography were normal. Cryoglobulinemia, hepatitis C PCR, anti-nuclear – and anti-neutrophil cytoplasmic – anti bodies, beta 2 microglobulin were also negative. Thrombophilia tests with homocysteinemia were normal. She was treated by trans-arterial coil embolization with success.

Case 3: A 49-year-old woman was admitted with severe high blood pressure at 220/130 mmHg. Her medical history showed a coil embolization of the anterior intra-ventricular coronary artery due to a heart attack, an aortobifemoral bypass with mesenteric artery re-implantation and right ostial renal endariectomy for an aortic thrombosis with ostial right renal artery and upper mesenteric artery-stenosis and toxic consumption owing to cigarette and cannabis use. There was no history of arrhythmia or fibro dysplasia. There was an acute renal failure with creatinine at 227µmol/l, without proteinuria or hematuria. A renal ultrasound demonstrated a right renal thrombosis with an atrophic right kidney and a left renal artery stenosis. Magnetic Resonance Imaging (MRI) confirmed the diagnosis (Figure 2). Further screens for infectious endocarditis, vasculitis or hypercoagulability were negative. The patient was treated with coil embolization on the left renal artery, without recovery of the renal function, but a normalization of blood pressure. She did not have another vascular event.

Figure 2 (A) – Early arterial phase of a posteroanterior abdominal aortogram showing a left renal artery stenosis (B) - Gadolinium-enhanced T1-weighted MRI showed a right renal atrophy (white arrow) and pyelic dilatation secondary to right renal artery stenosis (C) MRI angiographic 3D reconstruction: a right ostial renal arterial thrombosis was present (white arrow)

DISCUSSION

Renal artery stenosis affects 1 to 5 % of people suffering from hypertension [1]. This disease was particularly prominent after the ages of 60-80. The most common symptom is lumbar pain with high blood pressure. Angiography confirms the renal infarction and is the gold standard. It may be due to various causes like atherosclerosis, arrhythmia, infectious endocarditis, traumatism, thrombophilia diseases [2,3] and autoimmune diseases like polyarteritis nodosa, Behcet disease, Takayasu disease or systemic lupus erythematosus. Finally cocaine consumption could also be responsible for a spasm of renal arteries. Nevertheless, in a significant number of cases, especially in 40-60 year-olds, no factors are found, like in our cases (3). Given the association of acute renal artery stenosis and cannabis consumption here, we suspected the potential role of cannabis consumption in the vascular symptoms. Indeed, cannabis is known for its vascular side effects. This drug is widely consumed with an estimated 125 to 203 million users worldwide [4]. The known side effect secondary to its consumption are neuropsychiatric –like cognitive decline and psychomotor retardation and vascular issues [5]. In fact, it is well known that cannabis can cause myocardial infarction, arrhythmia, hypotension pressure, stroke and above all thromboangiitis obliterans [4,6-10]. Delta 9 tetrahydrocannabinol (THC) seems to be the agent which causes neurologic and cardiovascular side effects [6]. Indeed, in 1976, Adams et al. described a decrease of the blood pressure after intravenous administration of delta 8 and delta 9 THC in the rat [11]. After this description, Wagner et al. demonstrated that low blood pressure could be explained by neurogenic vasopression induction when Delta 9 THC was fixed to a cannabinoid specific receptor localized on vascular wall [12,13]. However, the high blood pressure effect is still unknown.

Cannabis arteritis, a vascular effect due to cannabis consumption, was first described in 1960 by Sterne [14]. It often affects young adults. Many people do not have symptoms. The main symptom is the intermittent claudication (cramp-like leg pain). Secondary ulcers could appear on the toes also known as Raynaud’s phenomenon. After which necrosis lesions and gangrene occur. Some cases have shown associated venous thrombosis.

Moreover, one case of cannabis consumption associated with renal infarction was previously described by Lambrecht [15]. Because of this case, associated with the three cases described above, the potential role of cannabis consumption as a trigger of renal vascular disorders should be investigated.

However, cannabis arteritisal ways remains a diagnosis of elimination, with the need to eliminate other causes like thrombophilia, thromboembolic disease (arrhythmia), vasculitis, fibrodysplasia.

Finally, there is no specific treatment of cannabis arteritis. However, anticoagulants during the acute phase, followed by platelet aggregation inhibitors were the usual medical treatment. Endoscopic therapies are performed in cases of severe arterial stenosis with infarction, as seen in the cases above.

CONCLUSION

Cannabis arteritis is known to be progressive distal arteritis.
We present here three cases with renal infarction associated with cannabis consumption.

REFERENCES


