

## Case Report

# Methamphetamine Abuse Retinopathy: a Case Report

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### Abstract

Methamphetamine is one of the most addictive drugs and its usage has spread all over the world in recent decades. Methamphetamine abuse causes mental and physical problems such as psychosis and stroke and also can cause perpetual and temporal ocular diseases like episcleritis, scleritis, retinopathy, retinal vasculitis, endophthalmitis and panophthalmitis. A few cases of ocular involvement caused by amphetamines abuse have been reported. Here we present a case of retinopathy caused by inhaling methamphetamine in a 46 years old male.

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## Introduction

Methamphetamine is a sympathomimetic drug that belongs to amphetamines group. It can stimulate nervous system by affecting monoaminergic pathways in peripheral and central nervous system, and is abused in different ways like intravenous injection, inhalation and smoking <sup>1</sup>. It should be noted that the last two ways are more common <sup>2</sup>. Methamphetamine abuse in pregnancy period can cause disorders in ocular evolution of fetus <sup>3</sup>. Inhaling methamphetamine can cause central retinal artery obstruction, amaurosis fugax, temporal blurred vision, intraretinal bleeding, sudden vision loss and crystalline retinopathy <sup>2-4</sup>. When used via smoking it is known as “ice” which might cause recurrent, chronic and bilateral corneal ulcers <sup>3</sup>. Here we present a case of retinopathy caused by inhaling methamphetamine in a 46 years old male.

The present case report was approved by our institutional ethics committee and written consent was obtained from the patient.

## Case Report

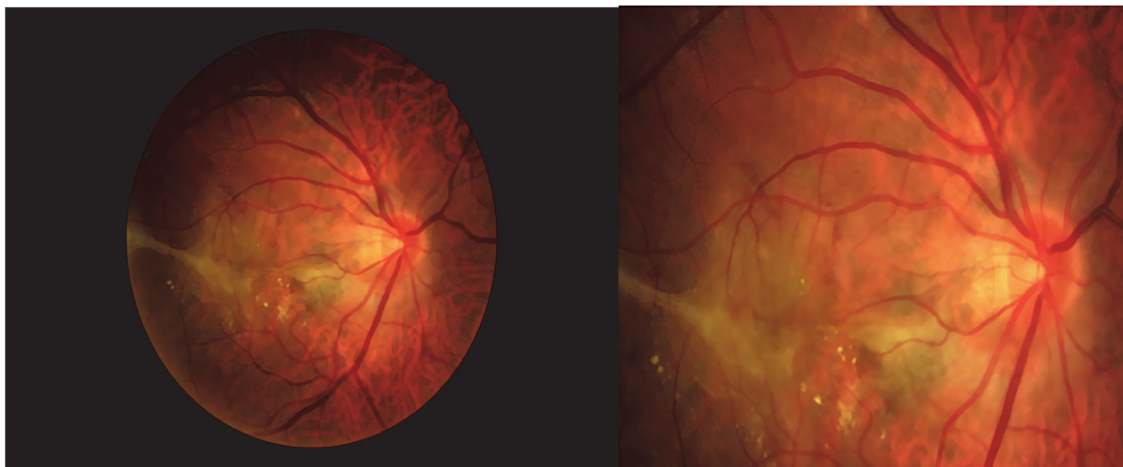
A 46 years old married man; who was a plumber claimed that his visual acuity had reduced

gradually during four months before visiting our ophthalmology clinic. At first the patient was examined in general ophthalmology section and then was referred to special retina section of our clinic.

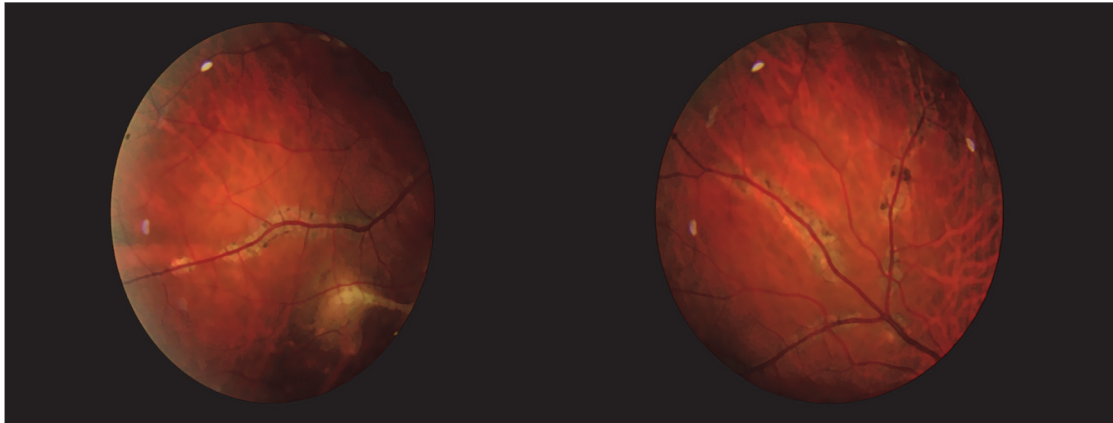
The right and the left eye best corrected visual acuity were 1.5 LogMAR and 0.1 LogMAR respectively. Tissue around eyes and movements of eyes were normal in examination. In microscopic slit-lamp examination the cornea and the anterior chamber of the right eye was normal, with no sign of inflammation or existence of cell or flare. In examining the lens, he had cataract (NS +1), vitrea was clear, Marcus Gunn sign was negative and intra ocular pressure was 16 mmHg. Examination of the left eye was normal and there was no noticeable finding. The patient was examined by another ophthalmologist one month before visiting us and a single dose injection of intravitreal Bevacizumab was performed; which had no effect on visual recovery.

In fundus photography of the right eye we observed venous dilatation and white precipitate around the retinal vasculature (Figure 1) and peripheral vascular sheathing (Figure 2).

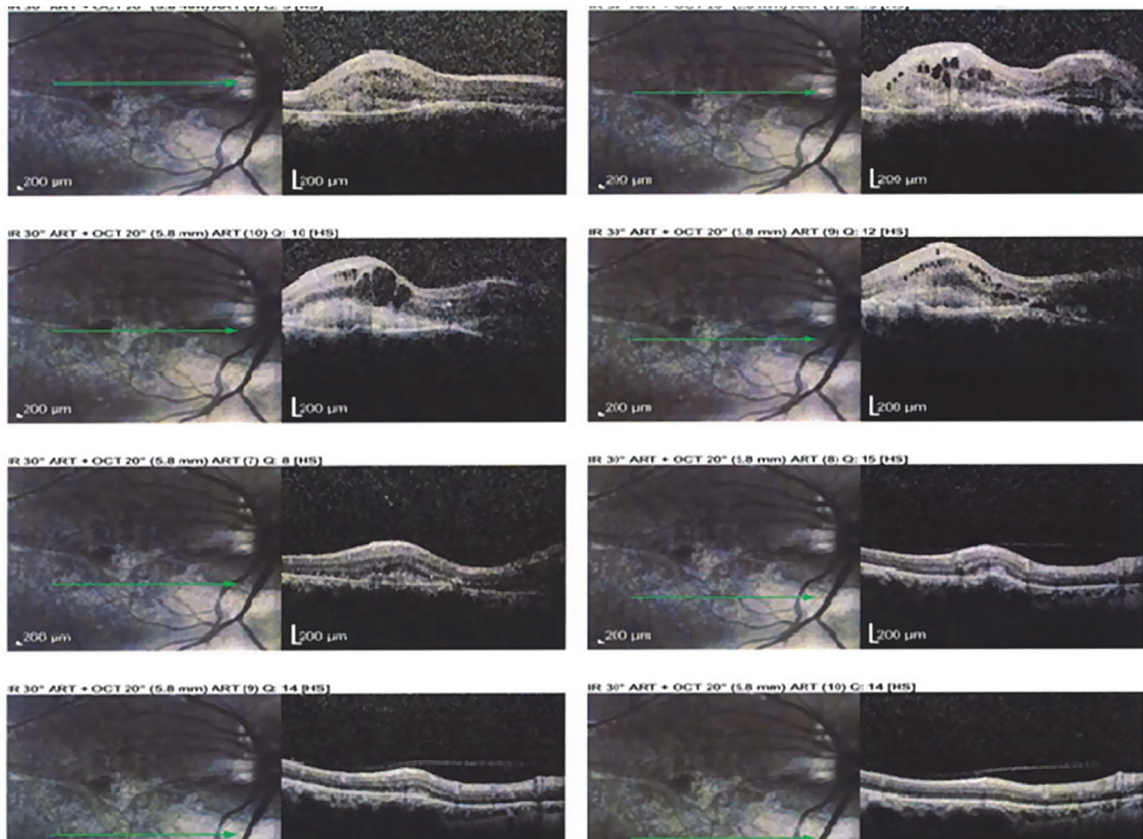
Figure 3 shows macular optical coherence



**Figure 1: Fundus photography of the right eye. This Figure shows venous dilatation and white precipitate around the retinal vasculature**



**Figure 2: Fundus photography of the peripheral right eye. This Figure shows peripheral vascular sheathing**



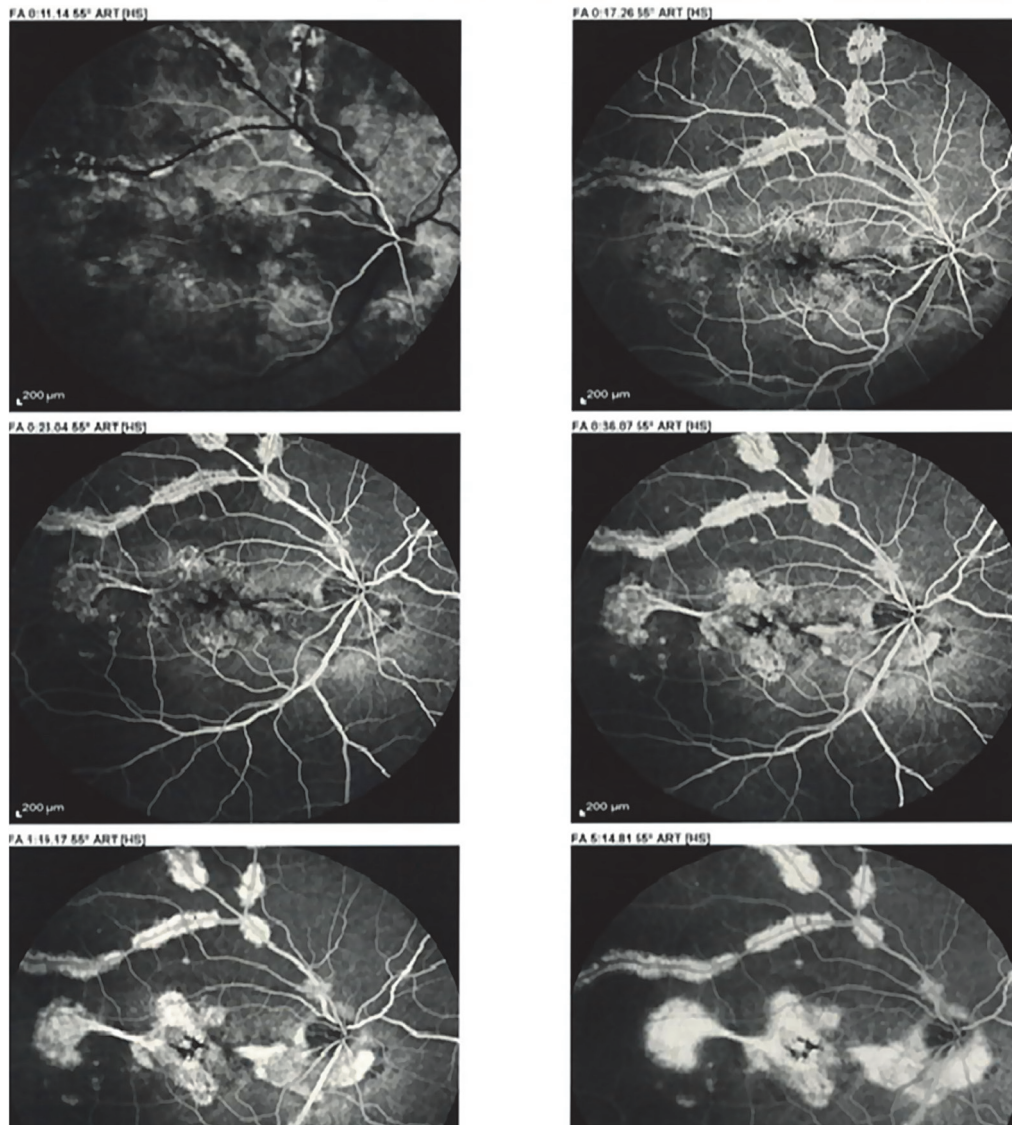
**Figure 3: OCT of patient's right eye in different sections showing irregularity of retinal layers, intraretinal cyst and numerous parts of hyper reflectivity**

tomography (OCT) of patient's right eye in different sections. Irregularity of retinal layers, intraretinal cyst and numerous parts of hyper reflectivity can be seen in this picture.

Figure 4 shows the fluorescein angiography of the patient's right eye in different times.

Numerous hyperfluorescent parts around vasculature are observable.

The following laboratory tests were requested for the patient: complete blood count, erythrocyte sedimentation rate, C reactive protein, anti-nuclear antibody,



**Figure 4: Fluorescein angiography of the patient's right eye indicating numerous hyper fluorescent parts around vasculature**

rheumatoid factor, angiotensin converting enzyme, purified protein derivative (2 mm) test, hepatitis B surface antigen (HBs Ag) test, toxoplasma antibody test, human immunodeficiency virus antibody test, venereal disease research laboratory, chest X-ray, and electrocardiogram. The results were all normal with no positive finding. Through a more detailed history taking, patient revealed that he had abused methamphetamine. The patient was treated with prednisolone 80 mg daily over a 10 week period. The ocular

inflammation improved but relapsed 2 times during the steroid tapering. Over a 6 months period of gradual tapering, inflammation was controlled leaving periretinal gliosis and macular pigmentary changes.

### Discussion

Most side effects of amphetamine are the result of sympathetic effects of drug, which cause extensive contraction of retinal vessels and vasospasm and also high blood pressure. Methamphetamine causes necrotizing angiitis

in small and medium retinal vessels, which has an important role in damaging the retina<sup>3</sup>. From clinical and histopathology perspectives, these findings are similar to other vasculitis like panarteritis nodosa and it is difficult to differentiate them. The treatment includes stopping drug abuse and long term use of corticosteroids, which will be gradually tapered. Differential diagnosis include Eales disease, idiopathic papillophlebitis, intermediate uveitis, acute retinal necrosis, frosted branch angitis, idiopathic retinal vasculitis, aneurysms, and neuroretinitis (IRVAN), Behcet's disease, systemic lupus erythematosus, sarcoidosis, Susac syndrome,

toxoplasmosis chorioretinitis and syphilitic chorioretinitis.

### Conclusion

In cases of sudden vision loss with similar findings to our case drug abuse should be considered and a detailed history of probable drug abuse should be taken.

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### Footnotes and Financial Disclosures

#### Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.