Received 02 July 2023 | Accepted 20 July 2023
DOI: https://doi.org/10.4038/sljon.v10i1.145

SLJoN

PICTURE STORY

# Rapid onset doxycycline induced intracranial hypertension

**Shanika Nandasiri[1], Nimali Senadheera[1], Darshana Wijegunasinghe[1]**

[1]Colombo North Teaching Hospital Sri Lanka.

**Correspondence**

Shanika Nandasiri
Colombo North Teaching Hospital
Ragama, Sri Lanka.

Email: dulanjaleen@gmail.com

https://orcid.org/0000-0002-9655-0810

## INTRODUCTION

Doxycycline is a commonly used antibiotic and is generally considered safe. However, it has been rarely implicated in causing intracranial hypertension (IH).[1] The onset of IH is usually reported after several weeks to months of treatment.[2] We report a patient with IH developed within days of commencing doxycycline therapy.

## CASE REPORT

A previously healthy 18-year-old male was admitted to hospital with a two-day history of headache and diplopia. He had recently been treated for leptospirosis when he presented with fever, myalgia, thrombocytopenia with a history of potential exposure to leptospirosis, and tested positive for Leptospira IgM antibodies. He had received intravenous cefotaxime for one day, followed by a five-day course of oral doxycycline 100 mg twice daily. On the 5$^{th}$ day of doxycycline therapy, he experienced a subacute onset generalized headache with pulsatile tinnitus in the right ear. Two days later, he developed diplopia. He did not have vomiting, vertigo or limb weakness.

On examination, the patient was conscious, oriented and had a body mass index (BMI) of 27kg/m$^2$. He was afebrile with no signs of meningism. Neurological examination revealed a right-sided sixth nerve palsy and bilateral grade IV papilloedema [Figure 1]. His visual acuity, colour vision and visual fields were normal. He did not have focal neurological deficits and his systemic examination, including the blood pressure, was unremarkable.

His full blood count, erythrocyte sedimentation rate, C-reactive protein were within normal limits. Gadolinium-enhanced magnetic resonance imaging (MRI) of the brain and MR venography were normal. On cerebrospinal fluid (CSF) manometry, the opening pressure was 450 mm$H_2O$ (normal range <250mm$H_2O$). CSF composition was normal.

The patient was diagnosed with doxycycline-induced IH. Treatment involved discontinuing doxycycline, therapeutic removal of 30 ml of CSF and initiating acetazolamide 250 mg twice daily. At two-weeks follow-up, his symptoms had completely resolved. Repeat fundal photography after one month showed resolution of papilloedema [Figure 1].

**KEYWORDS**
Leptospirosis, drug induced intracranial hypertension, doxycycline induced intracranial hypertension

This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

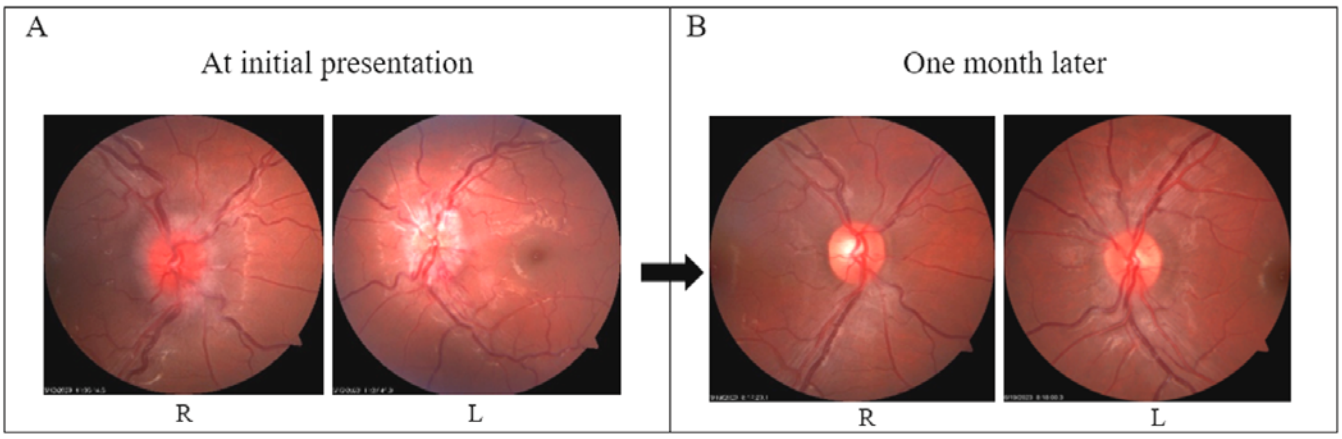


**FIGURE 1** **Comparison of fundal appearances on presentation and one month after interventions.**

## DISCUSSION

Medication-induced IH is a recognized complication, frequently described with vitamin A, tetracycline antibiotics (such as minocycline and doxycycline), recombinant growth hormone, and lithium. It occurs less frequently with many other medications.[3]

In our patient, the typical presentation of headache, diplopia, pulsatile tinnitus, and bilateral papilloedema was in keeping with IH. The involvement of the sixth nerve was a false localizing sign. Normal MRI brain, venography and CSF analysis excluded secondary causes, while the temporal relationship with doxycycline use and symptom resolution upon discontinuation supported the diagnosis of doxycycline-induced IH. Notably, the onset of symptoms in our case occurred unusually early, only five days after initiating doxycycline therapy. The exact mechanism by which doxycycline induces IH remains uncertain, but it is suggested that it may impede CSF absorption.[2,3]

Doxycycline is frequently used in Sri Lanka for the treatment and prevention of leptospirosis and its use is widespread during epidemics. This case is reported to highlight a rare but serious adverse effect of a commonly used medication at an unusually early time point after initiating treatment.

## REFERENCES

1. Lochhead J, Elston JS. Doxycycline induced intracranial hypertension. *BMJ*. 2003;326(7390):641-2. doi:10.1136/bmj.326.7390.641.

2. Digre KB. Not so benign intracranial hypertension. *BMJ*. 2003;326(7390):613-4. doi:10.1136/bmj.326.7390.613.

3. Tan MG, Worley B, Kim WB, et al. Drug-Induced Intracranial Hypertension: A Systematic Review and Critical Assessment of Drug-Induced Causes. *Am J Clin Dermatol*. 2020;21(2):163-72. doi:10.1007/s40257-019-00485-z.