

A rare case of toxic optic neuropathy secondary to consumption of neem oil

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A 35-year-old female was referred to our hospital with bilateral loss of vision of two days duration. She gave history of consumption of about 150 ml of neem oil five days back. Examination revealed no perception of light in both eyes. Both pupils were dilated and sluggishly reacting to light. Her fundus examination showed bilateral hyperemic, edematous discs and also edema extending along the superior and inferior temporal vascular arcade. Magnetic resonance imaging (MRI) scan showed bilateral putaminal regions with altered signal, hypointensities in T1-weighted images, hyperintensities on T2-weighted, images and hyperintense on Fluid Attenuation Inversion Recovery (FLAIR) images suggestive of cytotoxic edema due to tissue hypoxia. Her vision improved to 20/200 in both eyes with treatment after two months. This is the first case report of such nature in the literature to the best of our knowledge.

Key words: Disc edema, neem oil, putamen, toxin-induced encephalopathy, Toxic Optic Neuropathy Secondary to Consumption of Neem Oil

Neem oil (also known as Margosa oil) is a deep yellow oil with an unpleasant taste and smell. It is an extract of the seed of the Neem tree (*Azadirachta indica A. Juss*) a native tree of India but now widely distributed throughout Indo-Malaysia.^[1]

Consumption is usually accidental, rarely suicidal or may be due to nasal instillation for common cold in children as practiced in southern parts of India. Even small doses of neem oil are known to cause severe metabolic acidosis along with seizures which can be refractory with known late neurological sequelae.^[2] The diagnosis is based on patient history and neuro-ophthalmological findings.^[3]

We report a rare case of toxic optic neuropathy secondary to neem oil consumption associated with neurological manifestations.

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Case Report

A 35-year-old female patient presented with bilateral visual loss of two days duration (on 16.12.2009) with history of consumption of about 150 ml neem oil five days back (12.12.2009) in an attempted suicide, for which she was taken to the nearby government hospital. She was admitted and treated with induced vomiting after about 2-3 hours of consumption. Patient was asymptomatic for about 48 h in the hospital. Later patient noticed sudden bilateral visual loss and was referred to us for further ophthalmic evaluation.

Ophthalmic examination revealed no perception of light in both eyes. Anterior segment examination revealed bilateral 6-mm, dilated and sluggishly reactive pupils. Rest of her anterior segment examination was normal. Her fundus examination showed bilateral, hyperemic and edematous discs with extension of edema along the superior and inferior temporal arcuate fibers for about 2-3 disc diopters from the disc margins. The veins around the disc were mildly dilated and tortuous [Fig. 1 and 2]. The rest of the vitreous, fundus examination revealed no abnormal findings. Neurological examination showed exaggerated deep tendon reflexes and an extensor bilateral plantar reflex.

Complete hemogram was within normal limits, Venereal Disease Research Laboratory (VDRL), HIV1 and 2 were non-reactive. A magnetic resonance imaging (MRI) scan showed bilateral putaminal regions with altered signal, hypointensities in T1-weighted images, hyperintensities on T2-weighted images and hyperintense on Fluid Attenuation Inversion Recovery (FLAIR) images suggestive of cytotoxic edema due to tissue hypoxia [Fig. 3 and 4].

Medical therapy was initiated which included methyl prednisolone 1 g intravenously (IV) for three days followed by oral prednisolone 50 mg /day for 11 days along with 1000 µg vitamin B12 (injection methyl cobalamin – 1000 µg intramuscularly) every five days for eight weeks.

Patient did not show any visual improvement after one week of treatment but pupillary reactions improved. During her subsequent follow-up after about 15 days her vision in both eyes improved to counting fingers 1/2 meters and at one month follow-up vision was 20/200 in both eyes and pupillary reactions were normal in both eyes. Her fundus examination showed reduced disc edema [Fig. 5 and 6]

At two months follow-up her vision remained 20/200 in both eyes and injection methyl cobalamin 1000 µg intramuscular was continued.

Discussion

Neem oil, also known as Margosa oil is obtained from the neem plant (*Azadirachta indica A. Juss*). Neem oil is extracted from oil seed kernels. It contains neutral oils such as palmitic and stearic acids. The active ingredients are terpenoids such as azadirachtin, nimbin, picrin and sialin. It also contains aflatoxin, but in very low concentrations. Azadirachtin is attributed with the pesticide action of neem oil. It is used as an insecticide for arthropod pests.^[1]



Figure 1: Right Eye Fundus picture showing disc edema, venous tortuosity with extension of edema along the superior and inferior arcades for about 2-3 disc diopters from the disc margins

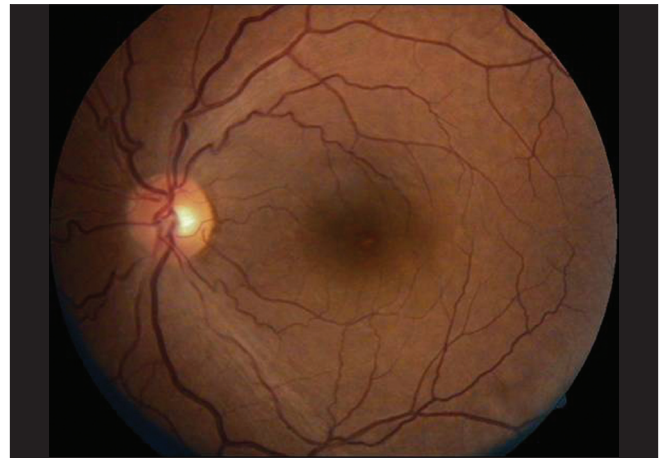


Figure 2: Left Eye Fundus picture showing disc edema, venous tortuosity with extension of edema along the superior and inferior temporal arcades for about 2-3 disc diopters from the disc margins

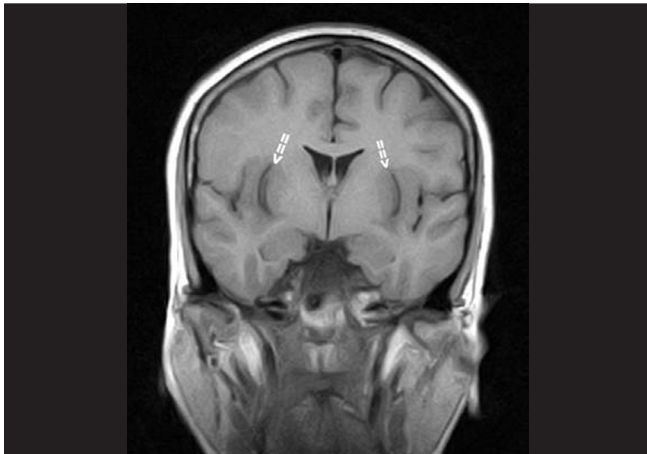


Figure 3: Bilateral putaminal regions showed altered signal hypointensities in T1W images

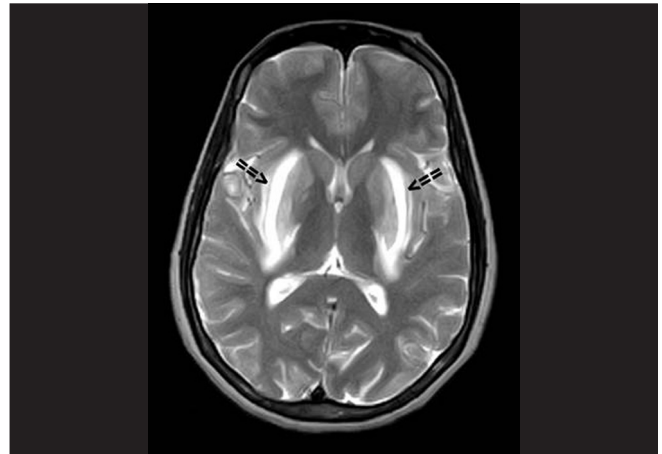


Figure 4: Hyperintensities on T2W images



Figure 5: Right Eye Fundus picture showing reduced disc edema



Figure 6: Left Eye Fundus picture showing reduced disc edema

Neem oil is used as a traditional medicine in India for various diseases like headache, gastrointestinal disorders, as a male contraceptive, menstrual disorders, asthma etc.

Neem oil poisoning causes vomiting which occurs within minutes to hours following ingestion of the oil. Drowsiness and tachypnea with acidotic respiration followed by recurrent

generalized seizures are the other clinical features. The seizures are usually associated with loss of consciousness and coma.^[4]

In our case, patient had bilateral toxic optic neuropathy. Patient had consumed 150 ml of neem oil which had the following contents: Neem oil kernel extract in solvent methanol containing 0.15%, Azadirachtin – 60%, Emulsifier-5%, treated Neem oil – 35%.

No specific antidote is available. Gastric lavage is not recommended. Treatment is primarily symptomatic.^[5] She had bilateral toxic optic neuropathy with exaggerated deep tendon reflexes and extensor plantar reflex. MRI scan findings were suggestive of acute toxic encephalopathy and it can be considered as a possible etiology for bilateral toxic optic neuropathy.^[6] We treated her with injection IV methyl prednisolone 1 g per kg body weight for three days based on case reports on methanol poisoning.^[7]

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