Acute Treatment of Methanol-Induced Optic Neuropathy

Dear Editor,

In April 2023, the Damari Community Ophthalmology Research Center released clinical practice guidelines for the acute treatment of methanol-induced optic neuropathy in Farsi[1] in response to ongoing outbreaks of methanol intoxication in Iran. Incidents were reported in the Bandar Abbas, Ahvaz, Ardabil, and Arak provinces in 2022 and most recently in Karaj on June 13, 2023. The ban on producing, distributing, and consuming standard alcoholic beverages in Iran has led to the consumption of homemade and illicit products, which may be contaminated with methanol.[2] Methanol intoxication is prevalent in developing countries and Southeast Asia, particularly among the lower socioeconomic strata, through accidental oral consumption of contaminated alcohol from illegal domestic production.[3] Methanol is a toxic alcohol widely used as a solvent or denaturant in various industrial processes.[4]

Ingestion of methanol can cause a wide range of adverse effects, including neurological symptoms such as dizziness, agitation, mania, amnesia, decreased level of consciousness, and seizures. Gastrointestinal symptoms include nausea, vomiting, anorexia, abdominal pain, gastrointestinal hemorrhage, diarrhea, liver function abnormalities, and pancreatitis. Methanol poisoning can also cause blurred vision, photophobia, visual hallucinations, and even blindness. Severe poisoning can lead to electrolyte imbalances, metabolic acidosis, kidney failure, hematuria, rhabdomyolysis, cardiopulmonary failure, and death.[5]

As mentioned, blindness is one of the consequences of methanol poisoning, which is devastating for the individual, their family, and the community. Methanol is metabolized in the body to formate or formic acid, which is neurotoxic and can lead to long-term or irreversible visual impairment and loss of optic nerve function.[6]

The guidelines were developed based on evidence-based expert consensus for healthcare professionals in response to recurring outbreaks. The intended audience for these guidelines includes responsible physicians and consultants in emergency and intensive care and poisoning in hospitals (for the 1st 2 weeks after exposure). Contributions were received from national ophthalmology opinion leaders, who are acknowledged below. The document is 10 pages long, but the core is a two-page detailed guide on the advanced pharmacotherapy of intoxication, covering dosage, precautions, contraindications, and drug interactions. Follow-up and supportive measures are also covered; specifically, intravenous erythropoietin and methylprednisolone administration are detailed. The guidelines recommend emergent 10,000 units of erythropoietin intravenously every 12 h for 3 days in 1–2 h and 250 mg of methylprednisolone every 6 h (or 500 mg every 12 h) for 3 days in 1 h, promptly after optic nerve toxicity confirmation (for the detailed protocol, refer to the guideline text).

The contributors did their best to collect the strongest and most relevant evidence and cited and labeled the recommendations by their strengths and relevance. However, it should be noted that no published peer-reviewed randomized clinical trial exists. The authors recommend that the guidelines' pharmacotherapy outline be adopted in a provisional randomized controlled trial for the enrollment of future victims.

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Conflicts of interest

There are no conflicts of interest.

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