Letter to Editor

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Enhancing Scholarly Methanol Poisoning Reports by Utilizing a Standard Diagnostic Tool

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Dear Editor

Methanol poisoning (MP) has posed a significant economic and health challenge in Iran. During the COVID-19 pandemic, when healthcare resources and personnel were limited, our nation experienced surges in methanol-related poisonings due to misinformation circulating in the community about the supposed beneficial properties of methanol in preventing or treating COVID-19 [1, 2]. Despite its widespread outbreaks, our educational system is plagued by persistent incompetence caused by the lack of appropriate diagnostic tests, which arises from both academic negligence and the lack of support from officials. The present letter to the Editor addressed this critical health issue and would subsequently propose a practical solution to rectify the situation.

Numerous studies were conducted in Iran and shed light on the intricate consequences following MP. The rationale behind the enrollment of patients with methanol toxicity even at Hospitals affiliated with esteemed universities such as Shiraz University of Medical Sciences, was to maintain a high level of suspicion [3, 4]. This approach, which has been upheld for decades, is now being scrutinized. Diagnosing methanol toxicity is often not clear-cut and can at times be challenging. Thus, the statistics might be underreported [2]. The presence of a triad consisting of visual disturbances, abdominal pain, and metabolic acidosis serves as a significant indicator of MP [5]. Visual disturbances, particularly, are strongly suggestive of methanol poisoning, caused by the formation of formate metabolites, and might manifest up to 72 hours post-ingestion. Consequently, they might be absent in patients who presented to the hospital in the early hours following alcohol ingestion [1]. In addition, metabolic acidosis is a gradual process, that can occasionally last between 16 to 24 hours after methanol consumption [1]. A complicated case has been reported, in which a patient was brought to the emergency department with putamen necrosis following MP and normal arterial blood gas analysis [6, 7]. The absence of an initial rise in the anion gap following methanol consumption does not rule out the diagnosis of MP. Moreover, an early indicator that might suggest MP is an elevated osmolality gap. Nonetheless, an increased osmolality gap is not particularly reliable or exclusive to MP [1]. In these scenarios, clinicians

are confronted with a suspected case of methanol poisoning, which compels them to conduct additional ancillary tests and provide proper patient treatment.

The diagnosis of MP in the outbreak studies seemed to have not been fully elucidated. The process of patient selection was uncertain and required clarification. Researchers and academics will find that the studies are based on patients who were admitted after ingesting an alcoholic beverage and later developed clinical symptoms typically associated with MP, including reduced consciousness, seizures, abdominal pain, blurred vision, and metabolic acidosis. This diagnostic approach is consistent with suspected methanol poisoning; however, it could also be observed in cases of other toxic alcohols or might be absent in the early stages of methanol intoxication. Although the presence of these symptoms strongly indicates methanol poisoning, their combination alone does not provide a conclusive diagnosis. Given the reported alcohol consumption history, clinical observations, medical assessments, and the presence of metabolic acidosis, methanol poisoning is considered a tentative diagnosis [8]. A breakdown of the inclusion criteria, such as the confirmatory test, is essential to ensure that the research methodology is reliable.

Definitive confirmation of MP requires measuring methanol levels in blood using gas or liquid chromatography, which is regrettably not possible even in renowned medical centers [2-4]. The lack of comprehensive laboratory examinations for confirming methanol toxicity is the *Achilles Heel* of the MP studies. To take a step forward in improving the validity of further studies on this toxic riddle, two newly launched rapid bedside methanol detection tools are recommended. Both of these tools were reported in 2021, that could be utilized by researchers and healthcare professionals [9, 10]. For instance, Van den Broek *et al.,* developed a noninvasive and simple-to-use breath detector that can confirm methanol intoxication in 2 minutes [9]. Similarly, Hovda *et al.,* tried to respond to this diagnostic challenge by inventing a test strip that could detect methanol from a drop of blood in 3 minutes [10].

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