Patterns of carbon monoxide poisoning and its association with delayed neuropsychiatric sequela at a tertiary hospital in Riyadh, Saudi Arabia.

Nesrin Alharthy¹, Ms.Aljohara Alanazi²*, Jawaher Albuniyan³, Rakad Alshaibani⁴, Alreem Almoqaytib⁵, Bedour Alharbi⁶, Winnie Philip⁷, Amani Alenazi⁸, Abdullah Alshibani⁹

1. Riyadh, Saudi Arabia.
2. Riyadh, Saudi Arabia.
5. Riyadh, Saudi Arabia.

Correspondence to: Aljohara Alanazi
*Riyadh, Saudi Arabia.
Email: johara.al3nzi@gmail.com
DOI: 10.24911/SJEMed.72-1711752859

Background:
Carbon Monoxide (CO) is one of the most common environmental causes of acute intoxication globally. It occurs due to impaired tissue oxygenation which has a detrimental impact on systems with high oxygen demands such as cardiovascular and neurological systems. It can lead to Delayed Neuropsychiatric Sequelae (DNS) which may develop in 2-40 days after remission of acute CO poisoning. DNS is defined by recurrent-transient neurological, cognitive, or psychological manifestations. This study intended to explore the development of DNS for patients exposed to CO intoxication in Saudi Arabia.

Methods:
A retrospective descriptive cross-sectional study conducted in subjects who were diagnosed with CO poisoning at King Abdulaziz Medical City (KAMC) and King Abdullah Specialist Children’s Hospital (KASCH) in Riyadh during the period from January 2016-December 2021. Patient demographics, vitals, diagnostic tests, and oxygen therapy at initial presentation documented. Patient records were reviewed at 2-40 days following CO poisoning for development of DNS. The type of DNS and the onset were documented. Ethical approval obtained from King Abdullah International Medical Research Center (KAIMARC).

Results:
A total of 85 patients diagnosed with CO poisoning and met the inclusion criteria. 76% adults with an average age of 32.36 (SD± 15.20) and 51% were males. The majority of the incidents occurred in winter season (76%), especially in enclosed spaces (84%). 25% of the patients were smokers. Only 5 (6%) of patients developed DNS. Common symptoms included dizziness, nausea, and decreased visual acuity in 40% of cases. (80%) of DNS manifestations occurred at 2-10 days after initial incident. Statistics showed that BMI (p-value = 0.021) and age (p-value = 0.029) were significantly associated with COHb level. Furthermore, there was no statistically significant association between gender, age, BMI, type of exposure, presence of clinical manifestations, and COHb level with the development of DNS. Only one reported death in this study.

Conclusion:
The findings of this study showed that few patients who were exposed to CO poisoning have developed DNS. BMI and age group were significantly associated with COHb level. Further larger-scale multicenter studies are needed to assess the factors associated with the development of DNS for patients with CO poisoning.