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A CASE REPORT OF PEDIATRIC CARBON MONOXIDE POISONING MANAGED WITH HYPERBARIC OXYGEN THERAPY

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Introduction

Carbon monoxide poisoning is a common and deadly form of poisoning that causes significant mortality and morbidity. However, very few studies were reported in the pediatric age group.

Case Report

A 5-year-old boy was brought to Emergency Department(ED) in an unconscious state by the Fire Brigade Emergency Medical Response Service(EMRS) following a house fire. The child was trapped in the house for 40 minutes prior to rescue. On arrival to ED, he had stridor with a Glasgow Coma Score of 10/15(E3, V2, M5). He was intubated for respiratory distress and airway protection. His initial arterial blood gas showed pH 7.04, pCO2 52.9, pO2 45.2, HCO3 19.7, lactate 13.4 and carboxyhemoglobin level of 19.1%. He remained hemodynamically stable and was subsequently referred for hyperbaric oxygen therapy(HBOT). The transfer for HBOT was outsourced and occurred after 4 hours of arrival. He received 2 cycles of HBOT at 2.8 atm, 8 hours apart with each cycle lasting about 1 hour and 45 minutes. Repeated arterial blood gas thereafter normalized with lactate of 2.4 and carboxyhemoglobin level reduced to 1.2%. Patient was then successfully extubated on day 4 of admission and discharged well at day 10. Patient remained well with no neurological sequelae during follow up at outpatient clinic till up to 6 months post event.

Discussion

Children are more susceptible to the effects of carbon monoxide poisoning because of their increased metabolic and respiratory rate. The use of HBOT for carbon monoxide poisoning in children to prevent neurology sequelae remains controversial due to its lack of randomized controlled trial. However, the available data suggests that it is probably safe and possibly efficacious in preventing delayed neurologic sequelae. In this case, we were fortunate that the nearest HBOT facility available is at Tengku Mizan Army Hospital, which is 45 minutes away. We were able to make the transfer timely and smoothly by our Critical Patient Escort and Retrieval Team (CPERT) in collaboration with our pediatric colleagues.

Conclusion

This is a case of successful treatment of carbon monoxide poisoning in children with HBOT. It is critical for the emergency physician to promptly recognize, manage and rapidly refer to the nearest center with HBOT.