

Wine-Colored Plasma and Urine from Hydroxocobalamin Treatment

Sophia L. Wong, MD, Morris Pudek, PhD, and Dailin Li, PhD

Department of Pathology and Laboratory Medicine, University of British Columbia, Vancouver, British Columbia, Canada.

KEY WORDS: cyanide poisoning; smoke inhalation; hydroxocobalamin; chromaturia; analytical interference.
J Gen Intern Med 32(2):225-6
DOI: 10.1007/s11606-016-3782-3
© Society of General Internal Medicine 2016

A 49-year-old male was admitted following a house fire that resulted in burns to 20 % of his total body surface area. Empiric hydroxocobalamin was given for presumed cyanide poisoning secondary to smoke inhalation. Plasma and urine from the patient were noted to have an intense dark red/purple hue (Fig. 1).

Approximately 35 % of fire victims experience toxicity from cyanide, generated during pyrolysis of such synthetic materials as plastics, rugs, silks, and furniture.¹ Cyanide inhibits cytochrome oxidase in the electron transport chain and blocks aerobic metabolism, causing a histotoxic hypoxia. Hydroxocobalamin chelates cyanide and forms the nontoxic, renally excreted cyanocobalamin. A common side effect of hydroxocobalamin is a stunning dark red/purple discoloration of the recipient's skin, mucosal membranes, and body fluids, including plasma and urine. Although the pigmentation is harmless and resolves spontaneously within days, it can cause analytical interference with a number of common chemistry, hematology, and coagulation tests.² The clinical significance of these transient alterations remains to be determined. More concerning is the increase in carboxyhemoglobin and methemoglobin and decrease in oxyhemoglobin from hydroxocobalamin interference observed with certain co-oximeters.³ As smoke inhalation victims often demonstrate concomitant carbon monoxide and cyanide toxicities, initial blood gas measurements should be obtained prior to hydroxocobalamin administration. Our patient had a carboxyhemoglobin level of 20.5 % (normal, < 2.5 %) before hydroxocobalamin treatment, thereby confirming concurrent carbon monoxide poisoning.

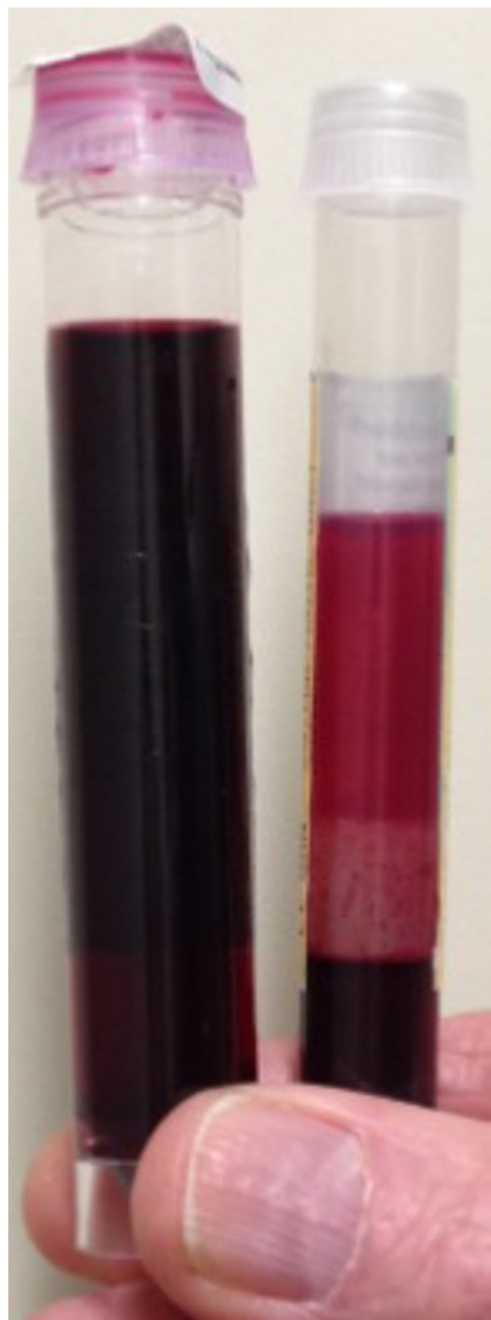


Figure 1. Wine-colored urine (*left*) and plasma (*right*) from hydroxocobalamin treatment for cyanide poisoning.

Received May 11, 2016

Accepted June 10, 2016

Published online June 23, 2016

Corresponding Author: *Sophia L. Wong, MD; Department of Pathology and Laboratory Medicine University of British Columbia, 855 West 12th Avenue, Vancouver, British Columbia V5Z 1M9, Canada (e-mail: Sophia.Wong@alumni.ubc.ca).*

Compliance with Ethical Standards:

Conflict of Interest: *The authors declare that they do not have a conflict of interest.*

REFERENCES

1. **Sauer SW, Keim ME.** Hydroxocobalamin: improved public health readiness for cyanide disasters. *Ann Emerg Med.* 2001;37:635-641.
2. **Beckerman N, Leikin SM, Aitchinson R, Yen M, Wills BK.** Laboratory interferences with the newer cyanide antidote: hydroxocobalamin. *Semin Diagn Pathol.* 2009;26:49-52.
3. **Pamidi PV, DeAbreu M, Kim D, Mansouri S.** Hydroxocobalamin and cyanocobalamin interference on co-oximetry based hemoglobin measurements. *Clin Chim Acta.* 2009;401:63-67.