

CASE REPORT

Hydroxocobalamin-related Purple Chromaturia: A Sequela of Treating Cyanide Poisoning

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ABSTRAK

Keracunan sianida adalah jarang berlaku dan ramai doktor muda tidak menyedari gejala serta rawatannya. Kami menunjukkan kes seorang lelaki berusia 37 tahun yang mengalami sakit kepala dan beberapa episod muntah selepas cubaan membunuh diri dengan menelan garam sianida. Pesakit menunjukkan tanda-tanda keracunan sianida akut seperti tekanan darah rendah, paras laktat yang tinggi dan kekeliruan. Memandangkan sejarah latar belakang yang diketahui, dia diberikan hydroxocobalamin sebagai rawatan/penawar secara serta merta di jabatan kecemasan. Dua jam selepas infusi, perubahan warna urin menjadi ungu diperhatikan. Ini adalah salah satu kesan sampingan hydroxocobalamin dan perubahan warna air kencing boleh berterusan selama beberapa minggu selepas rawatan awal. Pengiktirafan kesan sampingan ini adalah penting untuk memberi jaminan kepada pesakit dan mengelakkan penyiasatan yang tidak perlu.

Kata Kunci: Hydroxocobalamin; keracunan sianida; toksikologi

ABSTRACT

Cyanide poisoning is uncommon and many junior doctors are unaware of its presentation and treatment. We illustrated a case of a 37 years old gentleman presented with headache and multiple episodes of vomiting after a suicide attempt by ingesting cyanide salts. He manifested signs of acute cyanide poisoning such as hypotension, a raised lactate level and disorientation. In view of the strongly suggestive history, he was quickly given intravenous hydroxocobalamin as the antidote in the emergency department. Two hours after the infusion, purple chromaturia was noted. This is one of the adverse effects of hydroxocobalamin

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and the urine discoloration may last up to weeks after the initial treatment. Recognition of this adverse effect is essential to reassure patients and avoid unnecessary investigations.

Keyword: Cyanide poisoning; hydroxocobalamin; toxicology

CASE REPORT

A 37-year-old man presented with headache and episodes of vomiting after a witnessed ingestion of potassium cyanide at his work place. He worked as a goldsmith and had major depressive disorder, and was attempting suicide triggered by a recent family crisis. He was sent to the Emergency Department by his employer. He developed hypotension, hyperlactatemia, and was disorientated. Due to his occupational access to cyanide (Figure 1) and his presentation was strongly suggestive of acute cyanide poisoning, he was

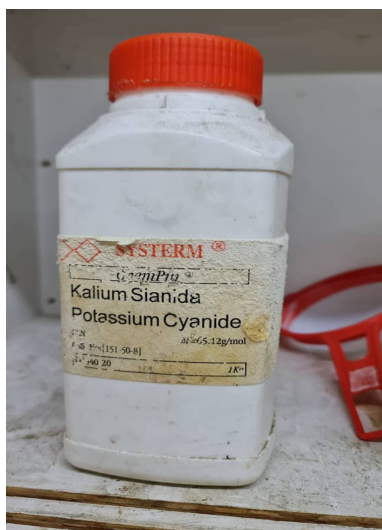


FIGURE 1: Cyanide salts used for extraction of gold and gold-plating

administered 5 gram of intravenous hydroxocobalamin (Cyanokit) immediately as the antidote. Two hours after the infusion, purplish-red urine was noted in the urinary catheter and bag (Figure 2). He was monitored closely with co-management from psychiatry team and was discharged well two days later after resolution of all symptoms. However, it took one week for the purple chromaturia to resolve.

DISCUSSION

Cyanide is traditionally known as a poison and has many environmental, household and industrial sources



FIGURE 2: Purplish-red urine was noted in the urinary catheter and bag after two hours of receiving intravenous hydroxocobalamin

(Hamel et al. 2011). Cyanide poisoning is not common (1252 cases over 12 years in the United Kingdom) but it remains an important condition to recognise and be aware of (Haden et al. 2022). Among the most common symptoms/signs are unresponsiveness (78%), hypotension (54%), arrhythmia (72%), seizure (20%) (Parker-Cote et.al 2018). Hypotension and lactic acidosis are associated with fatal outcomes (Haden et al. 2022). Treatment of cyanide poisoning includes supportive therapy and adjunctive antidotes. Hydroxocobalamin (Cyanokit), a precursor of vitamin B12, works via direct binding of cyanide, forming cyanocobalamin which is readily excreted in the urine. It is relatively safe compared to its counterpart dicobalt edetate and the now discontinued Cyanide Antidote Kit (amyl nitrite, sodium nitrite, sodium thiosulfate) (Shepherd & Velez 2008). When the red hydroxocobalamin was given at the recommended dose (intravenously 5 gram over 15 minutes), discolouration of the skin and urine (i.e. the most common drug-related side effect) can happen, together with allergic reactions

and transient hypertension (which may be favourable in hypotensive patients) (Hamel et al. 2011; Shepherd & Velez 2008). Although the chromaturia usually self-resolves in 2-3 days, some reported that the effect could last up to several weeks (Hamel et al. 2011; Warner et al. 2017). Causes of other mimicking chromaturia are included in Table 1.

CONCLUSION

It is crucial to recognise this 'benign', anticipated adverse effect as reassurance can be given to surprised patients and unnecessary work-up (due to a mistaken impression of haematuria) can be avoided.

AUTHOR DECLARATION

All authors certify that this paper or any of its content has not been published or submitted for publication elsewhere. Each author contributed to the work and have seen and agreed with the contents of the manuscript. Written consent was obtained for this image submission.

TABLE 1: Mimicking chromaturia and causes

Condition	Remark
Purple Urine Bag Syndrome	Urinary tract infections such as those by <i>Escherichia coli</i> , <i>Proteus mirabilis</i> , <i>Klebsiella pneumoniae</i>
Acute Intermittent Porphyrria	Formation of oxidised porphyrins on exposure to light giving an orange/red colour
Drummond's syndrome/Blue diaper syndrome	Rare autosomal X-linked disorder causing indicanuria due to deficiency of tryptophans transport
Beetroot/rhubarb ingestion	Usually harmless condition with red discolouration of urine
Medications (rifampin, phenazopyridine, chloroquine)	Self-limiting upon cessation of drugs
Haematuria/Rhabdomyolysis/Liver disorders/ Acute haemolysis	Urine colour from bright red to dark tea-coloured

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