

Nottingham University Hospitals Will



Nitrous oxide abuse and associated neurological symptoms

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CASE PRESENTATION:

21-year-old male presented with complaints of bilateral tingling and numbness in the lower legs for 1 week. He regularly recreationally uses nitrous oxide. He had progressively increased its use and could use a full canister in one sitting. He also used edible cannabis and smoked tobacco. He denied injecting drugs. There was no history of vomiting, seizures, or loss of power in limbs.

On examination there was normal power in all 4 limbs, sensation was bilaterally normal in lower limbs though he complained of tingling below the knees bilaterally. Proprioception, reflexes, and test for coordination were normal.

Toxbase was reviewed and FBC, U&Es, LFTs, B12, folate and blood gases were done.

MANAGEMENT AND OUTCOME:

Nitrous oxide is a relatively common drug of abuse in the UK. Chronic exposure causes neurotoxicity via inactivation of vitamin B12. This deficiency can lead to central nervous system demyelination, myelopathy and peripheral neuropathy. Acute exposure may occasionally cause neurotoxicity in susceptible patients who are Vitamin B12 deficient e.g. strict vegans and those with gastric or intestinal resections.

KEY LEARNING POINT:

Nitrous oxide is a relatively common drug of abuse in the UK. Chronic exposure causes neurotoxicity via inactivation of vitamin B12. This deficiency can lead to central nervous system demyelination, myelopathy and peripheral neuropathy. Acute exposure may occasionally cause neurotoxicity in susceptible patients who are Vitamin B12 deficient e.g., those on strict vegans or those with gastric or intestinal resections.

Image showing N₂O interference in Vit B12 metabolism. Ref. Massey et al. Nitrous oxide misuse and vit B12 deficiency. BMJ Case Reports. 2016;2016:bcr2016215728

