



Libyan International Medical University
Faculty of Basic Medical Science

Nitrous oxide sedation in dentistry

Submitted by: Mabrouka farag ben ataiga, second year student, Faculty of Basic Medical Science, Libyan International Medical University

Supervisor: Dr. Fatima altarhoni

Date of submission: 19\4\2018

Abstract:

Nitrous oxide is a very quick acting inhaled sedation medicine that decreased discomfort and anxiety and it is also called " laughing gas ", nitrous oxide is a sweet – smelling , colorless , non-flammable gas , heavier than air or oxygen .

It has significant medical uses especially in surgery and dentistry .

Introduction:

Nitrous oxide sedation is the lightest form of dental sedation , but it can provide adequate level of anesthesia and relaxation for most people and for majority of dental procedures. It was discovered by Joseph Priestley . It involves breathing a mixture of 30% nitrous oxide gas in combination with 70% oxygen can help anxious patients to become more relaxed and co-operative during treatment without experiencing pain.

Inhalation analgesia , as it is also called , is a method of conscious sedation because the patient remains awake and conscious through at the procedure . It should not be confused with sleep dentistry which refers to unconscious sedation (general anesthesia) .

Nitrous oxide provides minimal sedation which is defined as a drug induced controlled external help , maintain their protective reflexes and the ability to respond normally to physical stimulation and to verbal commands .

Discussion :

It is important to know the mechanism of action of nitrous oxide , nitrous oxide induces opioid peptide release in the brain stem leading to the activation of descending noradrenergic neurones, which results in modulation of the nociceptive process in the spinal cord. Several receptor–effector mechanisms including dopamine receptors, α_2 adrenoceptors, benzodiazepine receptors and -methyl- -aspartate (NMDA) receptors have been implicated although the relationship of one with the other is not known.

Nitrous oxide has stages which are :-

1. Tingling sensation.
2. Followed by a warm feeling
3. Feeling of well-being hearing may dissolve into electronic throbbing
4. Sleepiness, Nausea sets in dream can occur.

Is Nitrous Oxide Safe for Children Nitrous oxide or laughing gas is safe for children. In fact, it is recommended as a sedative for children who are anxious or nervous about having a dental procedure. But some children suffer from nausea and have difficulty in wearing the mask required to inhale it. So parents can discuss with their child's dentist beforehand, and choose the most suitable sedation method.

Conditions Under Which Nitrous Oxide Should Not Be Used Nitrous oxide is an effective sedative and can be administered easily. But it may not be the right choice for everyone. It is not suitable for people who

- Have chronic obstructive pulmonary disease.
- Suffer from methylenetetrahydrofolate reductase deficiency.
- Have cobalamin deficiency.
- Possess a history of drug addiction or emotional issues.
- Are in the first trimester of pregnancy.
- Are receiving a treatment in which bleomycin sulfate is used.

After Using Nitrous Oxide – Post-Op

- When nitrous oxide is used for sedation the patient should eat light before the procedure. He should not consume a big meal for three hours after the treatment. Besides this, he should not drive after the procedure until his St. Louis sedation dentist permits him to do so.
- After nitrous oxide is turned off the patient has to receive oxygen for minimum five minutes to prevent a headache. The oxygen removes the remnant gas from the lungs and helps the patient to become alert once again.

Side Effects of Nitrous Oxide

- Generally, nitrous oxide does not have side effects. But a few patients may experience some negative effects if the nitrous level is very high or if it is inhaled too fast. In such cases, the patients may exhibit symptoms like shivering, nausea.

Advantages: Non-inflammable and nonirritant Rapid induction and recovery Very potent analgesic (low concentration) No nausea and vomiting Nontoxic to liver, kidney and brain.

Disadvantages: Not potent alone (supplementation) Hypoxia Inhibits methionine synthetase (precursor to DNA synthesis) inhibits vitamin B-12 sm. Dentists, OR personnel abusers at risk Gas filled spaces dangerous

Conclusions: Nitrous oxide and oxygen is a safe and effective technique to reduce anxiety, produce analgesia and enhance effective communication between Patient and operator. It increases patient's pain threshold. It must be used in pediatric patient and uncooperative patient.

References :

- 1.Davenport, Derek. Nitrous oxide: By NoMeans a Laughing Matter N.p.: nap.. ned Print
- 2.Dental Fear Central. Web. 11Apr. 2013. whip fearcentral.org/helpsedations.
- 3.General hemistry Online Nep., ned. Apr. 2013. llantoine.frostburg.edu/chem/senese 1011

