Journal Watch

Nitrous Oxide–Oxygen Mixture During Care of Bedsores and Painful Ulcers in the Elderly: A Randomized, Crossover, Open-Label Pilot Study. A, Horvath R, Basset P, Thiery S, Couturier P, Franco A, Bosson J. J Pain Symptom Manage 2008; 35: 171-176.

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Abstract: Bedsore and ulcer care can often be painful and no standardized analgesic method exists today for pain relief during treatment in adults and the elderly. To evaluate the analgesic efficacy of a nitrous oxide–oxygen mixture vs. morphine during painful bedsore and ulcer care in adult and elderly patients, we conducted a randomized, crossover, multicenter, prospective, open-label, pilot study. Thirty-four inpatients, aged 53–96 years (median 84 years), were recruited in Grenoble University Hospital, Annecy Hospital and Chambéry Hospital, France, from January to June 2001. Each of the 34 patients received morphine (M), nitrous oxide–oxygen mixture (E), or morphine+nitrous oxide–oxygen mixture (ME) during painful care in a crossover protocol. Treatments were changed every two days and the study duration was six days. Analgesia was evaluated before and after each care session using a behavioral scale to evaluate pain in noncommunicating adults (ECPA), a visual analog scale (VAS), a global hetero-evaluation scale (GHES), and the DOLOPLUS-2 scale. There was a significant overall difference (P<0.01) among the three treatments. On the ECPA, the average difference after and before care was +5.2±8.6 (M), −0.3±8 (E), and −0.6±7.4 (ME), respectively. There was a significant difference between M and E, and M and ME (each P<0.01). No difference was found between E and ME (P=0.97). There were similar significant differences in the GHES and DOLOPLUS-2 scales (all tests P<0.01). Post hoc comparisons showed a significant difference (P<0.01) between M and E, and between M and ME without any additional effect for M+E. No differences were found with regard to safety or tolerability. This pilot study demonstrates the superiority of nitrous oxide–oxygen mixture over morphine for analgesia. This experience suggests that this mixture has ease of use, rapid effect, and limited contraindications when used during painful bedsore and ulcer care in elderly patients. Furthermore, it is well accepted by these patients and by nursing staff.

Comments:

Strengths/uniqueness: Although nitrous oxide-oxygen mixture has long been used for procedure-related pain in other settings (e.g. dental, obstetric), this is the first randomized controlled trial examining its effects during the care of painful ulcers in the elderly.

Weaknesses: The unblinded nature of the trial introduced a potential source of bias into the outcome evaluations. The primary endpoint measure (EPCA) was not adequately described; although it was stated to have been validated, no reference was provided. Other measures were also not sufficiently described or referenced. The clinical

significance of the outcome differences between nitrous oxide-oxygen and morphine is unclear.

Relevance to Palliative Care: Procedure-related pain may be a significant source of distress for palliative care patients, and is often difficult to control due to its rapid onset and brief duration. The potential advantage of inhaled nitrous oxide-oxygen mixture lies in its relatively fast absorption and elimination. Limited experience with the use of nitrous oxide-oxygen mixture at our institution suggests that it may be of benefit in selected patients (e.g. when positioning for radiotherapy is painful). It is unclear if it exerts its effect through analgesic or anxiolytic mechanisms. Further research in the palliative care population would be helpful.