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Efficacy and safety of nitrous oxide in alleviating pain and anxiety during painful procedures.

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Source

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Abstract

AIMS:

To evaluate the efficacy and safety of nitrous oxide for children undergoing painful procedures.

METHODS:

Ninety children requiring repeated painful procedures (lumbar puncture, bone marrow aspirate, venous cannulation, or dressing changes) were given nitrous oxide at a variable concentration of 50-70%. Procedure related distress was evaluated using the Observational Scale of Behavioral Distress-Revised (OSBD-R). OSBD-R scores were obtained for each of the following phases of the procedure: phase 1a, waiting period; phase 1b, during induction with nitrous oxide; phase 2, during positioning and cleaning of the skin; phase 3, during the painful procedure; and phase 4, immediately following the procedure and withdrawal of nitrous oxide. Side effects were monitored and recorded by a second observer.

RESULTS:

OSBD scores reached a maximum during the induction phase with lower scores during subsequent phases. Children over the age of 6 showed a lower level of distress during nitrous oxide administration and the painful procedure. Eighty six per cent of patients had no side effects. The incidence of vomiting, excitement, and dysphoria was 7.8%, 4.4%, and 2% respectively. Eight patients developed oxygen desaturation ($\text{SaO}_2 < 95\%$), but none developed hypoxia, airway obstruction, or aspiration. Ninety three per cent of patients fulfilled the criteria for conscious sedation, and 65% had no recollection of the procedure. Mean recovery time was three minutes.

CONCLUSIONS:

Inhalation of nitrous oxide is effective in alleviating distress during painful procedures, with minimal side effects and short recovery time.