

Methoxyflurane: Pharmacology And Clinical Applications Of An inhaled Analgesic

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Background: The aim of this review was to comprehensively assess the unique pharmacology of the inhaled analgesic Methoxyflurane and evaluate the evidence for its safety and efficacy in a variety of clinical settings. The history of Methoxyflurane is fascinating, being widely used as an anaesthetic long before it became clear that it caused dose dependent permanent renal impairment. Anaesthetic use ceased in the 1970s but analgesic use continued in Australian ambulances. In New Zealand, Methoxyflurane analgesia was withdrawn during the 1980s due to safety concerns. It is now supplied via the handheld Pentrox inhaler and has recently become available in nearly all Australasian ambulances, many hospital wards, medical centres, dental surgeries, ski fields and the military.

Methods: A literature search of electronic databases from 1960 till January 2010 was conducted. A hand search of these references and various publically available websites generated potential studies for inclusion. These were assessed for relevance to current doses and for level of evidence.

Results: There is a considerable volume of variable quality studies from the 1960s and 70s with a recent flurry of interest in prehospital and emergency use. Recent toxicology papers have helped explain the particular toxicity of Methoxyflurane in contrast to other fluorinated volatile agents. Currently there is minimal evidence for significant toxicity in single use. There is insufficient evidence to demonstrate that recurrent use is safe. Occupational exposure is of potential concern especially in settings of inadequate ventilation. Methoxyflurane has some efficacy in pre-hospital use and is well tolerated in adults. Young children, even when self administering, appear at increased risk of deep sedation. It is not clearly superior to existing methods for procedural analgesia. In dentistry, it is mainly efficacious as an anxiolytic when used to facilitate local anaesthetic administration. Interestingly, safety recommendations for dental use are quite different between Australia and New Zealand.

Conclusion: Methoxyflurane is efficacious in some circumstances but it is still a potentially toxic drug in excess dose. Even in recommended doses, there are outstanding concerns regarding safety in young children, those with subclinical renal impairment, exposed health workers and in recurrent use. Anaesthetists should be aware that this drug is becoming much more widespread in our hospitals and community and we need to be informed about its safe use.