

ANALYSIS OF CURRENT PRACTICES OF PROPOFOL SEDATION ON PICU COMPARED WITH CURRENT EVIDENCE

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Introduction

Despite recommendations advising against the use of propofol for non-procedural sedation in paediatric intensive care, many clinicians view it as safe and accepted practice. The propofol related infusion syndrome (PRIS) is a rare condition characterized by lactic acidosis, rhabdomyolysis and cardiovascular collapse. We undertook a literature review to identify current guidelines regarding propofol sedation, identified 8 criteria relating to prescribing strategies, and the features of PRIS, and audited our practice against these criteria.

Methods

We performed a literature search for all evidence relating to established guidelines for use of propofol for sedation on PICU. We established 8 factors related to an increased likelihood of developing PRIS. These included: age of patient, admission diagnosis, prescribing strategies, such as duration of infusion, rate of infusion, total propofol dose, concentration of propofol used and coadministration of total parenteral nutrition (TPN). We identified the features of PRIS, including acidosis, lactataemia, and cardiovascular instability. We then searched our computer information system database, using the search criteria "propofol infusion 1%" and "2%", limiting the search to continuous (not bolus). We returned a result of 86 infusions.

Results

In our unit, propofol was used for sedation in all age groups, from age of five months to 17 years. The largest subgroup was patients admitted following cardiac surgery, though sepsis, respiratory infections, trauma and seizures were among the admission diagnoses. Eighteen patients had CH^+ over 45 or base excess above 3, and 10 had lactate over 2 mmol l⁻¹. Mean arterial pressure dropped by over 10% in 22 patients, and heart rate dropped by 10 - 40% in 14 patients. 14 patients received concomitant catecholamine infusions. The majority of all infusions (88%) lasted less than 24 hours, though 10 infusions lasted considerably more, up to 128 hours, and nine patients received more than one infusion. 75% had mean infusion rates, and 69% maximum infusion rates, less than 4mg/kg/hr. Few prescriptions described any strategy to guide initial rate or criteria for change in rate. Three patients received TPN concomitantly.

Discussion

Our study showed that patients of all ages had received propofol infusions. 'At risk' patients who were critically ill with sepsis, respiratory compromise, or post cardiac surgery were not excluded. Acidosis and lactataemia was found in a number of patients, who may have experienced a subclinical form of PRIS. There was lack of consistency in infusion rates, and often no apparent strategy to guide criteria for rate change according to cardiovascular parameters. Consideration should be made at 24 hours to an alternative sedative agent.

Conclusions

None of our patients suffered from PRIS or sudden death due to propofol sedation.

However, practices relating to its use could be improved to reduce the risk of its occurrence in the future. Areas for improvement should concentrate on: providing guidance regarding at-risk groups, in whom propofol should be avoided; establishing a strategy for infusion including rate, duration, and specification of clinical parameters to guide infusion rate; appropriate standards of monitoring, including acid-base and lactate measurements, combined with measurement of triglyceride levels.