Massive Propofol Overdose with an MRI Infusion Pump

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INTRODUCTION

Drug administration error is one of the most critical issues in anesthetic care. We describe a case of a large bolus dose of propofol inadvertently administered via an infusion pump to a 6kg infant in the MRI suite. This case is noteworthy, not as much for the anesthetic management, but more for the systems processes that resulted from the drug administration error.

OUR CASE

A 7 month old patient with periventricular leukomalacia required a brain MRI under general anesthesia. After inhalational anesthetic induction and LMA placement, the MedRad MRI compatible infusion system was used to infuse propofol. The pump was programmed to deliver in mg/kg/hr instead of mcg/kg/min. This resulted in the infant receiving 150 mg/kg/hr of propofol, over 16 times the intended dose. The pump programming error was quickly recognized shortly after initiation of the scan as the patient became apneic and severely hypotensive, requiring epinephrine boluses. The scan was completed, Patient was transferred to PICU for observation.

DISCUSSION

This near-miss incident and unanticipated ICU admission was the result of multiple system failures. A multidisciplinary risk management investigation and analysis occurred. It was discovered that the MedRad pump did not have any drug library and, as a result, no dosing limits and warnings. Further, the pump was used by both the pediatric sedation department (which infuses propofol in mg/kg/hr) and the anesthesia department (which infuses propofol in mcg/kg/min). The MedRad pump defaults to previous infusion settings and does not force the user to select a dosing method with each use. The MRI was not urgent, however was scheduled for late in the day when limited staff familiar with providing anesthesia in the MRI environment were available. Lastly, no standardized orientation procedure existed to familiarize anesthesia providers with the unintuitive nature of programming the MedRad Pump.

This incident led to multiple corrections leading to a safer patient environment. The MedRad pumps were phased out, and IRadimed MRI compatible infusion pumps were ordered. The IRadimed pumps contain a drug library, thus allowing providers to specifically program the pump to infuse propofol. The pump also has clinically defined safeguard limits, which also decrease the risk of an inadvertent programming of an overdose. The pediatric anesthesia department at our institution has also defined guidelines and recommendations for off hour MRIs. Thus, encouraging the majority of MRIs to be done during the daytime, when multiple experienced personnel are always available. Finally, a standardized orientation to the MRI suite exists and instructional videos on the use of the IRadimed pump have been distributed. We believe that the excellent interdisciplinary investigation of this event and resulting action steps that were taken will prevent similar errors from happening in the MRI suite in the future.

References:
