Japan Council for Quality Health Care

Project to Collect Medical Near-Miss/ Adverse Event Information

Medical Safety Information

No.98, January 2015

Wrong Method of Administering a Potassium Preparation

Five cases have been reported involving the administration via an intravenous line of an intravenous bolus of a potassium preparation, whose administration as an intravenous bolus is prohibited (information collection period: from January 1, 2011 to November 30, 2014). The information is compiled based on “Individual Theme Analysis” (p.71) in the 19th Quarterly Report.

The use of potassium preparations as an intravenous bolus is prohibited.

Potassium Preparation Administered	Quantity in 1 Ampoule	Quantity Prepared	Planned Administration Method	Erroneous Administration Method	Number of Cases
K.C.L. Drip Injection 15% (40mEq/20mL)	20mL	Diluted in normal saline (20mL) Total: 40mL	Continuous microinfusion using a syringe pump	Intravenous bolus	1
KCL Corrective Injection 1mEq/mL	20mL	5mL			1
KCL Injection 20mEq Kit*	1 kit contains 20mL	10mL	Coinfusion		1
Aspara Potassium Injection 10mEq	10mL	20mL			2

*In this case, the contents of a prefilled syringe of the preparation were drawn up into a syringe and administered as an intravenous bolus.

◆ The package inserts of potassium preparations state, “Potassium preparations can cause arrhythmia and, depending on the circumstances, cardiac arrest when administered as an intravenous bolus. As such, they should only be administered as an intravenous infusion.”

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Case 1

Intending that the patient should receive a continuous infusion of 5mL/h via a syringe pump, the physician ordered "Administer via the internal jugular CV side duct 1 K.C.L. Drip Injection 15% (40mEq/20mL) + normal saline (20mL) 3 times/day," but did not specify the rate or method of administration in the order. Looking at the instruction "Infusion only. Dilute before infusing." on the ampoule, the nurse telephoned the operating theater to confirm the details of the order. S/he had the operating theater nurse ask the physician, who was performing surgery, "Is it OK to administer it as per the order?" The physician replied, "It's fine," thinking that the nurse was going to use a syringe pump. The nurse prepared it in accordance with the order and then injected the potassium preparation solution into the side duct of the central venous line while keeping an eye on the monitor. When there was 6mL left, the low SpO_2 alarm sounded, so the nurse halted the injection.

Case 2

The senior physician gave a verbal order to "add KCL 10mL to the patient's infusion (Soldem 3A)." The nurse drew up 10mL to a syringe from the KCL Injection 20mEq Kit (prefilled syringe preparation) without attaching the special needle (into the prefilled syringe,) and then handed the syringe to the resident. The resident was anxious, because it was his/her first time administering a potassium preparation, so s/he asked the senior physician, "May I give the intravenous injection?" and the senior physician replied, "Do it." The resident connected the syringe to the side duct of the intravenous line and began to inject 10mL of KCL Injection.

Preventive measures taken at the medical institutions in which the events occurred.

- **Staff members will obey the rules about administration orders (specifying dosage, administration method, and rate of administration).**
- **The medical institution will place warnings (such as "Infusion only" and "Dilution needed") against the names of potassium preparations in the drug reference table, as well as including a warning notice stating "Administration as intravenous bolus prohibited" with any potassium preparations dispensed.**
- **Staff members will understand the purpose of using prefilled syringe preparations and will not transfer them to another syringe for use.**

* As part of the Project to Collect Medical Near-Miss/Adverse Event Information (a Ministry of Health, Labour and Welfare grant project), this medical safety information was prepared based on the cases collected in the Project as well as on opinions of the "Comprehensive Evaluation Panel" to prevent the occurrence and recurrence of medical adverse events. See quarterly reports and annual reports posted on the Japan Council for Quality Health Care website for details of the Project.
http://www.med-safe.jp/

* Accuracy of information was ensured at the time of preparation but cannot be guaranteed in the future.

* This information is intended neither to limit the discretion of healthcare providers nor to impose certain obligations or responsibilities on them.

Department of Adverse Event Prevention
Japan Council for Quality Health Care
1-4-17 Misakicho, Chiyoda-ku, Tokyo 101-0061 JAPAN
Direct Tel: +81-3-5217-0252 Direct Fax: +81-3-5217-0253
http://www.jcqhc.or.jp/