



The incidence of PCA device-related errors was $<0.2\%$ and significantly differed according to the infusion pump type” Son et al (2018).

Abstract:

BACKGROUND: Patient-controlled analgesia (PCA) is one of the most popular and effective methods for managing postoperative pain. Various types of continuous infusion pumps are available for the safe and accurate administration of analgesic drugs. Here we report the causes and clinical outcomes of device-related errors in PCA.

METHODS: Clinical records from January 1, 2011 to December 31, 2014 were collected by acute pain service team nurses in a 2715-bed tertiary hospital. Devices for all types of PCA, including intravenous PCA, epidural PCA, and nerve block PCA, were included for analysis. The following 4 types of infusion pumps were used during the study period: elastomeric balloon infusers, carbon dioxide-driven infusers, semielectronic disposable pumps, and electronic programmable pumps. We categorized PCA device-related errors based on the error mechanism and clinical features.

RESULTS: Among 82,698 surgical patients using PCA, 610 cases (0.74%) were reported as human error, and 155 cases (0.19%) of device-related errors were noted during the 4-year study period. The most common type of device-related error was underflow, which was observed in 47 cases (30.3%). The electronic programmable pump exhibited the high

incidence of errors in PCA (70 of 15,052 patients; 0.47%; 95% confidence interval, 0.36-0.59) among the 4 types of devices, and 96 of 152 (63%) patients experienced some type of adverse outcome, ranging from minor symptoms to respiratory arrest.

CONCLUSIONS: The incidence of PCA device-related errors was <0.2% and significantly differed according to the infusion pump type. A total of 63% of patients with PCA device-related errors suffered from adverse clinical outcomes, with no mortality. Recent technological advances may contribute to reducing the incidence and severity of PCA errors. Nonetheless, the results of this study can be used to improve patient safety and ensure quality care.

Reference:

Son, H.J., Kim, S.H., Ryu, J.O., Kang, M.R., Kim, M.H., Suh, J.H. and Hwang, J.H. (2018) Device-Related Error in Patient-Controlled Analgesia: Analysis of 82,698 Patients in a Tertiary Hospital. *Anesthesia and Analgesia*. April 23rd. .

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