

Abstract:

Background: The lack of precise information on the epidemiology of peripheral intravascular catheter (PIVC)-related phlebitis and complications in critically ill patients results in the absence of appropriate preventive measures. Therefore, we aimed to describe the epidemiology of the use of PIVCs and the incidence/occurrence of phlebitis and complications in the intensive care unit (ICU).

Methods: This prospective multicenter cohort study was conducted in 23 ICUs in Japan. All consecutive patients aged ≥ 18 years admitted to the ICU were enrolled. PIVCs inserted prior to ICU admission and those newly inserted after ICU admission were included in the analysis. Characteristics of the ICU, patients, and PIVCs were recorded. The primary and secondary outcomes were the occurrence and incidence rate of PIVC-related phlebitis and complications (catheter-related blood stream infection and catheter failure) during the ICU stay.

Results: We included 2741 patients and 7118 PIVCs, of which 48.2% were inserted in the ICU. PIVC-related phlebitis occurred in 7.5% (95% confidence interval 6.9-8.2%) of catheters (3.3 cases / 100 catheter-days) and 12.9% (95% CI 11.7-14.2%) of patients (6.3 cases / 100 catheter-days). Most PIVCs were removed immediately after diagnosis of phlebitis (71.9%). Grade 1 was the most common phlebitis (72.6%), while grade 4 was the least common (1.5%). The incidence rate of CRBSI was 0.8% (95% CI 0.4-1.2%). In cases of catheter failure, the proportion and incidence rate per 100 intravenous catheter-days of catheter failure were 21% (95% CI 20.0-21.9%) and 9.1 (95% CI 8.7-10.0), respectively.

Conclusion: PIVC-related phlebitis and complications were common in critically ill patients. The results suggest the importance of preventing PIVC-related complications, even in critically ill patients.

Trial registration: UMIN-CTR, the Japanese clinical trial registry (registration number: UMIN000028019 , July 1, 2017).

Reference:

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