Multifactor Analysis of Malposition of Peripherally Inserted Central Catheters in Patients With Cancer

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Background: Peripherally inserted central catheters (PICCs) are used widely in patients with cancer, but catheter malposition often occurs.

Objectives: This study aimed to provide a reference for clinically safe catheterization through multifactor analysis of malposition of PICCs in patients with cancer.

Methods: The occurrence of PICC malposition in patients with cancer was retrospectively reviewed, and a multivariate logistic regression analysis was performed.

Findings: Of 2,084 patients with PICCs, 170 cases (8%) of malposition occurred. The multivariate logistic regression analysis revealed that the risk of adverse events from malposition was higher in the right upper limb than in the left upper limb. The highest risk from malposition was cephalic vein puncture, followed by brachial vein puncture. The risk in the lower part of the elbow joint was higher than that in the upper part of the elbow joint. During PICC insertion, the left upper limb and upper part of the elbow joint should be selected for the puncture, and the basilic vein should be selected as the first-choice vein to reduce the incidence of malposition and adverse events.

Data from 2,084 patients with cancer with PICCs inserted at vascular access centers and hospital wards were retrospectively analyzed from December 2012 to November 2013. None of the patients had a history of radiation treatment, superior vena cava (SVC) syndrome, or vascular surgery. The tumors were confirmed by pathologic diagnosis.

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