Abstract:

Objective: To evaluate the validity of laboratory tests for blood sampling from a peripherally inserted central catheter.

Methods: A total of 22 patients diagnosed with head and neck cancers were enrolled. In total, 101 paired blood samples were taken both via venipuncture and peripherally inserted central catheter for hematology and biochemistry testing. Paired t tests and linear correlation analysis were used to evaluate the results. Blood sampling-related pain was recorded by visual analogue scales and numerical rating scales. Infusion occlusion, hemolysis, and catheter-related blood stream infection were also recorded.

Results: The peripherally inserted central catheter-associated test results were slightly lower than those with venipuncture. Some parameters differed more than others. However, the degree of difference was less than 5% for every pair. There was a high correlation between the test results with two methods of blood sampling with the representative equation approximately being “y = x.” According to visual analogue scales and numerical rating scale analysis, the pain degree with peripherally inserted central catheter was significantly lower than that of the venipuncture (p < 0.001). No case of infusion occlusion, catheter-related blood stream infection was reported with both methods. Hemolysis rate in blood samples from peripherally inserted central catheter (1/101) was much lower than that seen with venipuncture (11/101) with significant difference (p = 0.0056).

Conclusion: Blood sampling via peripherally inserted central catheter and venipuncture showed equivalent reliability in laboratory testing. Compared with venipuncture, blood sampling via peripherally inserted central catheter causes less pain and is safer. Blood sampling via peripherally inserted central catheter is strongly recommended for clinical use.

Reference: