Effect of Isometric Hand Grip Exercises on Blood Flow and Placement of IV Catheters for Administration of Chemotherapy

Ayse Ozkaraman, PhD, and Öznur Usta Yesilbalkan, PhD

Background: Complications may occur in the subcutaneous or subdermal tissues during IV administration of chemotherapy related to blood flow and catheter placement.

Objectives: Daily isometric hand grip exercises were evaluated for their effect on blood flow in the vessels of the nondominant arm before placement of IV catheters and the success rate of IV catheter placement on the first attempt.

Methods: The study focused on patients with non-Hodgkin lymphoma receiving the first and second cycles of chemotherapy. The intervention group performed daily isometric hand grip exercises before chemotherapy with peripheral catheter insertion. The control group performed routine activities only. Blood flow was measured by ultrasound in the brachial artery (BA) and brachial vein (BV) of the nondominant arm before the first (T1) and second (T2) cycles of chemotherapy.

Findings: Blood flow slightly increased in the intervention group at T2 compared to T1. In the control group, blood flow decreased in the BA and did not change in the BV at T2 compared to T1. The success rate for first-attempt placement of a peripheral IV catheter was the same for the intervention and control groups.