



Application of a thermal stimulus is a common procedure used to promote venodilation for peripheral intravenous cannulation (PIVC); however, the effects of thermal stimulation on the duration of venodilation and skin temperature of the forearm are unclear” Tokizawa et al (2016).

Abstract:

BACKGROUND: Application of a thermal stimulus is a common procedure used to promote venodilation for peripheral intravenous cannulation (PIVC); however, the effects of thermal stimulation on the duration of venodilation and skin temperature of the forearm are unclear.

AIM: To investigate the duration of venodilation induced by a thermal stimulus on the forearm.

METHOD: Healthy female adults (N = 40) from Japan participated in this study from November to December 2013. A heat pack was warmed to $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and placed over the forearm for 15 min. Vein diameter was measured via ultrasound and skin temperature via temperature sensor at six time points: before application of the thermal stimulus and at 1-min intervals for 5 min upon removal of the thermal stimulus. The main outcomes were vein diameter, proportional change in vein diameter, and skin temperature. We calculated proportional change in vein diameter after application of the thermal stimulus using vein

diameter before the thermal stimulus to represent 100%.

RESULTS: Compared with vein diameter before thermal stimulus, the diameter at each time point after thermal stimulus was significantly increased ($p < .05$) as were proportional change in vein diameter ($p < .05$) and skin temperature.

CONCLUSION: A thermal stimulus of $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ on the forearm dilated veins significantly for PIVC, and the effect persisted for at least 5 min.

Reference:

Tokizawa, Y., Tsujimoto, T. and Inoue, T. (2016) Duration of Venodilation for Peripheral Intravenous Cannulation, as Induced by a Thermal Stimulus on the Forearm. Biological Research for Nursing. May 27th. .

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