REPORT FOR GCM – summary of final trial results GCU & participant satisfaction surveys

Introduction

Some patient cohorts, particularly patients undergoing chemotherapy (who have had repeated needle-punctures in their veins for previous IV access), patients with BMI > 25 and with significant levels of adipose tissue layers, trauma patients in hypovolumeic or cardiogenic shock, habitual intravenous drug users could present with difficult-to-cannulate-veins (DTCV). DTCV could escalate rapidly to a critical medical emergency if the process of giving life-saving drugs, fluids, blood transfusions, total-parenteral-nutrition and other medication via the intravenous-route becomes impossible.

Often, when IV access is complicated in a routine clinical situation, clinical staff usually resort to dilating veins in the forearm by immersion in warm-water or using warm-towels. This usually is not ideal since the practise uses methods which are not sterile, health-and-safety concerns when spillage occurs, the control of water temperature is difficult to regulate with added risk of scalding and the process is generally distressing for patients.

The AirGloveTM is a novel method used to veno-dilate the veins in the forearm, using dry-heat from a warm-air blower where the temperature can be regulated and warming time can be controlled. We carried out a number of patient-satisfaction surveys as well as comparing the use of the AirGloveTM vs the warm-water-immersion (WWI) method in a healthy volunteer cohort and measuring the degree of venodilation by ultrasound. A brief summary of the results are presented here in this report, while a more detailed account is being prepared in the form of a manuscript for publication in a peer-reviewed journal.

SUMMARY OF FINDINGS

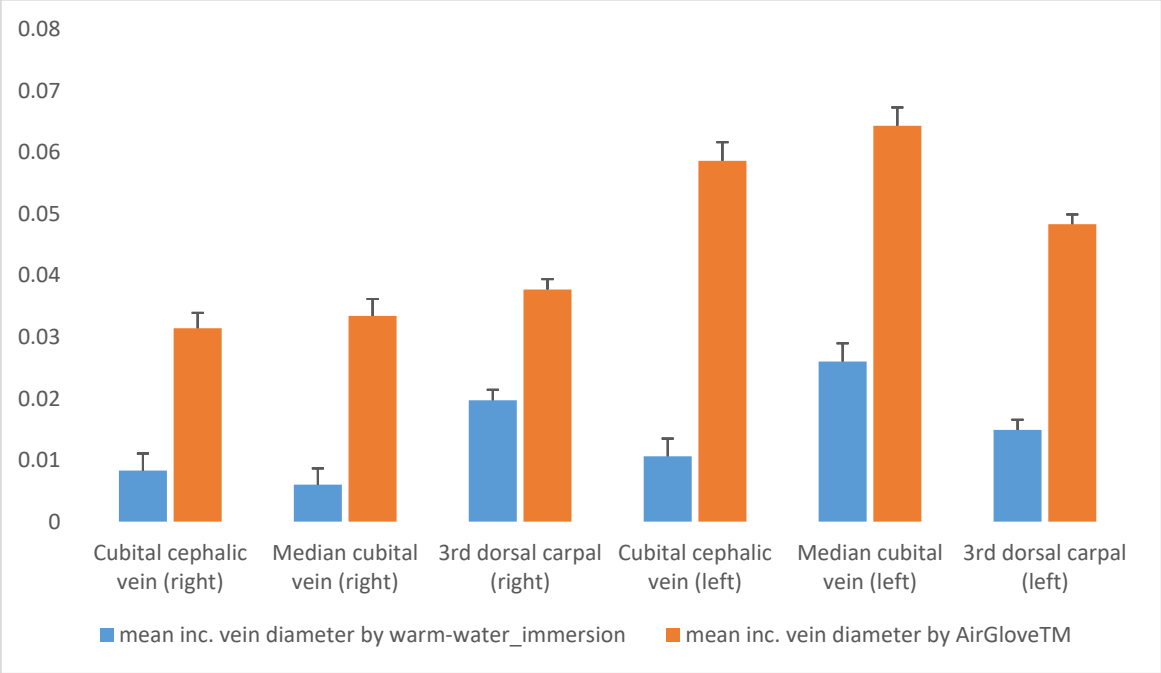

Figure 1. Comparison of the increase in average venous dilation by the warm-water immersion method vs the AirGlove^{TM} method (subtracted from baseline venous diameter in cm). Independent means T-tests show significant increase in venous diameter by AirGlove^{TM} when compared to the WWI method ($p < .05$, 95% confidence interval). The study was carried out in 34 healthy individuals.

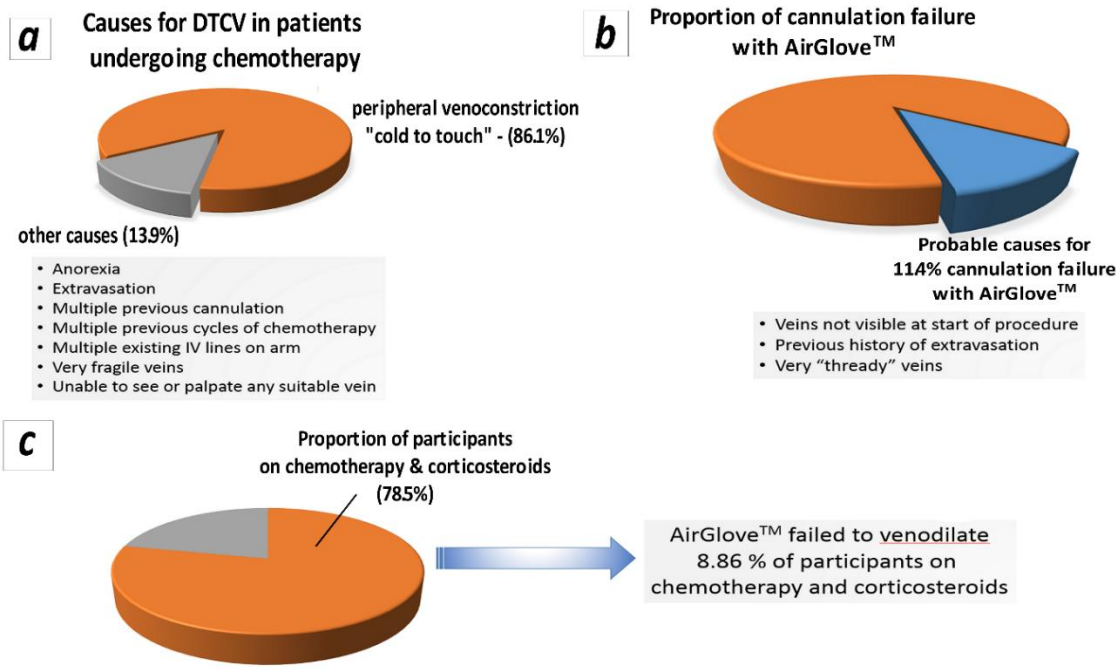

Figure 2. Evaluation of the AirGlove™ in the cancer-chemotherapy cohort (n=79). (a) majority (86.1%) of participants recruited had severe peripheral venoconstriction and their forearms were cold to touch. (b) The success rate of AirGlove™ in the cancer-chemotherapy cohort was 88.6% (c) The effect of steroids on vasoconstriction, the AirGlove™ was able to cause venodilation in > 90% of cancer-chemotherapy patients who were also taking corticosteroids which would have predisposed their veins to venoconstriction by the adrenergic pathway.

Brief summary and conclusions

The Air-Glove™ causes statistically significant vasodilatation ($p < .05$, CI: 95%) when compared to the WWI method (as shown in Figure 1). The WWI method does cause venodilation however we believe that the effect of convection cooling causes the veins to collapse in diameter. The proportion of cannulation failure in cohorts of patients using either the WWI method or the AirGlove ™ method was 11.4% attributed to the AirGlove™ while 88.6% of participants who showed cannulation failure in the trial were attributed to venodilation following the WWI method (Figure 2). Overall, the AirGlove™ method proved superior in its performance in causing significant venodilation, allowing the safe and efficient delivery of life-saving drugs and medication via the intravenous route.

Report prepared by Dr. Leon G. D'Cruz.
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