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Unilateral Versus Bilateral Peripheral Access Using Ultrasound Machine Guidance in Patients Undergoing Red Blood Cell Exchange Transfusion: A Comparative Results

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INTRODUCTION

Apheresis machine operators frequently face a significant challenge when attempting venous access prior to automated red blood cell exchange transfusion. According to the National Institute for Health and Care Excellence (NICE) Guidelines, the committee was advised that venous access can be difficult for patients having exchange procedure particularly in very young children. Cannulation of deep peripheral veins or central veins in the neck region or groin may require ultrasound guidance. The American Society for Apheresis (ASFA) currently recommends using peripheral access, if there is a safe and effective option.

AIM

From July 2017, the apheresis unit at St Georges University Hospitals NHS Foundation Trust has undertaken red blood cell exchange transfusion using ultrasound guided peripheral one arm cannulation as an alternative to two arm cannulation. The risk of recirculation was the main concern in performing the red blood cell exchange using the unilateral peripheral access. The initiative was supported by patients' survey to explore patient tolerability to include comfort, rotation of site, choice of vein, preferred arm use, a free arm for technology, eating and drinking purposes, avoiding an arm with sickling crisis, some limiting factors (contractures, broken skin, fracture) including their previous experiences with centrally inserted lines.

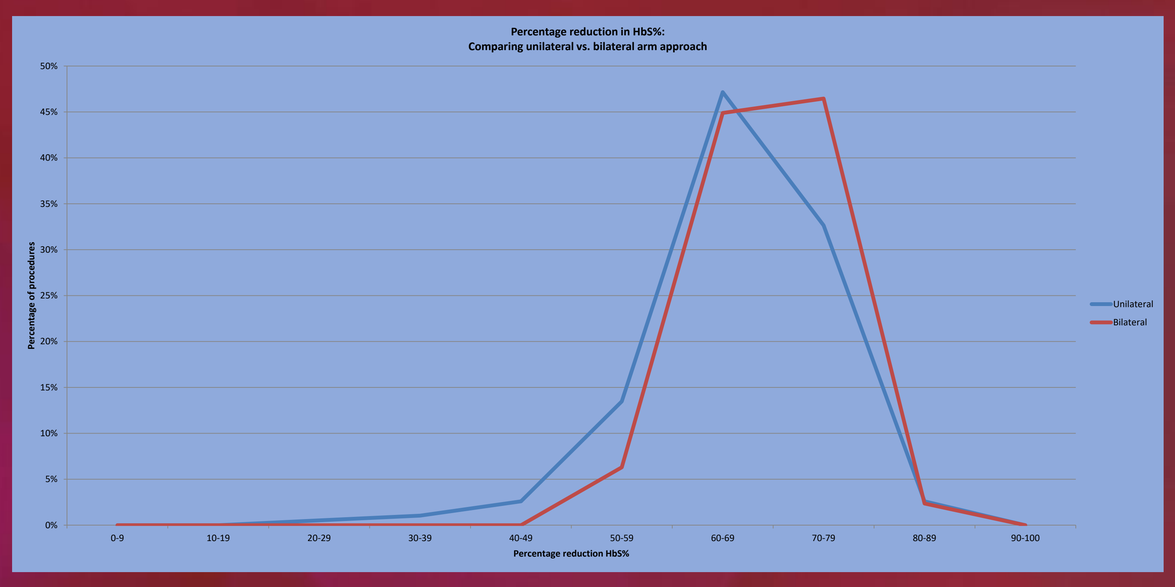
METHOD

A retrospective data analysis from July 2017 to February 2018 was performed identifying the patient's peripheral access either inserted unilaterally or bilaterally with the use of ultrasound machine. The data included the pre- and post- results of haematocrit, haemoglobin S percentage (HbS%), the percentage reduction of the HbS% and the site of inlet and return access used during the procedure.

A Chi-Squared test as recommended by Campbell (2007) and Richardson (2011) was used to compare the averages of percentage HbS% reduction.

RESULTS

During the seven month period, a total of 331 red blood cell exchange procedures were performed with 193 had unilateral access and 127 with bilateral access. Both unilateral and bilateral access were analysed with 11 procedures excluded as there was no post blood results or the sample has clotted. The average reduction of HbS% was 68.65% when bilateral access was utilised and 65.45% when procedures were undertaken with the unilateral approach (P=0.5529)



LIMITATIONS and RECOMMENDATIONS:
Proficiency in the use of ultrasound machine and the anatomical knowledge of vein sites are some of the keys to a successful peripheral insertion to undertake unilateral access in red blood cell exchange transfusion. However, patients with poor upper arm muscle tone, absence of large cephalic, brachial or basilica veins, vein structure and arm contractures are some of the reasons that may limit to attain unilateral cannulation access for the procedure. Staff training in the use of ultrasound is highly recommended.

CONCLUSIONS

No significant difference in HbS% reduction efficiency was identified when comparing the two different cannulation approaches. The findings indicate that a unilateral peripherally ultrasound guided inserted access provide a satisfactory results in reducing the HbS% after the red blood cell exchange procedure.

ACKNOWLEDGEMENT

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REFERENCES

[1] NICE Guidelines, "Spectra Optia for automated red blood cell exchange in patients with sickle cell disease", Medical Technologies guidance [MTG28], Published date: March 2016.
[1] ASFA, "Five things patients and providers should question", Choosing Wisely: An initiative of the ABIM Foundation, Released April 2018.

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