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Coagulation Parameters for Ecarin Clotting Assay and Russell Viper Venom Assay on the ClotPro® (NMRR-19-820-47753)

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Introduction

Ecarin clotting assay (ECA) and Russell Viper Venom Assay (RVV) are established to assess coagulation effects of Factor II inhibitor i.e. Dabigatran and Factor Xa inhibitors i.e. Rivaroxaban and Apixaban; respectively. These assays can be conducted on the ClotPro®, which is a point of care (POC) instrument that uses viscoelastometry principles to measure coagulation effects.

Objective

To determine the coagulation parameter values for ECA and RVV in Malaysian population and compare to the established preliminary reference ranges of ClotPro®.

Methodology

We recruited healthy volunteers (HV) with ECA and RVV assessment done on the ClotPro® at the Sarawak Heart Center (SHC) between August 2019 to June 2020. The parameters assessed were clotting time (CT) in seconds, clot formation time (CFT) in seconds and maximum clot firmness (MCF) in mm. The parameter values were compared to the preliminary reference ranges (PRR) established on the ClotPro® from 30 blood donors.

Results

- ❖ A total of 63 HV were included in the study.
- ❖ Mean age was 25.37 ± 5.24 with a range of 20-46 years old.

Table 1: ECA coagulation parameters comparison between established preliminary reference ranges and the study population

ECA TEST	CT (sec)	CFT (sec)	MCF (mm)
ClotPro® PRR (n=30)	68-112	60-90	61-72
SHC HV (n=63)	73-158	75-190	49-73
SHC HV, Male (n=32)	73-158	75-132	50-70
SHC HV, Female (n=31)	73-149	75-190	49-73

Table 2: RVV coagulation parameters comparison between established preliminary reference ranges and the study population

RVV TEST	CT (sec)	CFT (sec)	MCF (mm)
ClotPro PRR (n=30)	49-79	35-85	53-69
SHC HV (n=63)	41-96	42-280	39-69
SHC HV, Male (n=32)	50-96	45-205	47-67
SHC HV, Female (n=31)	41-94	42-280	39-69

Discussion

The ranges for both ECA and RVV coagulation parameters in our population were wider as compared to the preliminary established reference ranges reported by the manufacturer. The established reference ranges were obtained from Caucasians, which have different physical size, dietary habit, cultural and geographical influences that might affect responses in the coagulation system as compared to Asians.

Conclusion

As the ECA and RVV coagulation parameter values for our population did not fall into the recommended reference ranges established for the ClotPro®, our study suggested to establish the reference ranges of these parameters specific for our population.