TOWARD THE HARMONIZATION OF THE EPSTEIN-BARR VIRUS (EBV) REALTIME PCR QUANTIFICATION METHODS USED IN ARGENTINA

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INTRODUCTION: The Epstein-Barr virus is associated with the development of benign and malignant diseases, such as Post-Transplant Lymphoproliferative Disorders. Viral load is used as a biomarker of risk, diagnosis and evolution. Currently, various methodological strategies are applied in the clinical setting, which has prevented the identification of universal viral levels indicative of medical intervention. Within the framework of the National Network of EBV Laboratories (NLN-EBV), our objective was to encourage the calibration in IU of the EBV quantification methods by real-time PCR available in laboratories in Argentina and to describe their intra and inter-laboratory variability.

MATERIALS AND METHODS:

The EBV National Reference Laboratory submitted a calibration protocol and the WHO EBV International Standard (EBV-WHO) to the NLN-EBV.

In addition, panels of 6 plasma or whole blood samples containing between 2.7 and 5.0 log copies of EBV/mL ($panel_{plasma}$=17; $panel_{whole\ blood}$=8) were sent to 25 laboratories. They were asked to report EBV loads in log copies/mL and log IU/mL.

Conversion factors (copies to IU) were determined from the EBV-WHO dilutions by estimating the geometric mean. Mean viral load (MVL) and standard deviation (SD) were calculated for each sample. The Bland-Altman analysis was performed, considering a range of MVL±0.5 logarithmic units as acceptable intra- and inter-laboratory variability.

RESULTS: Twenty-five laboratories calibrated their assays in IU. The SD between EBV loads for each of the plasma samples ranged from 0.33 to 0.71 (log copies/mL) and 0.89 to 1.07 (log IU/mL); while for whole blood samples, between 0.49 and 0.67 (log copies/ml) and 0.12 and 0.43 (log IU/ml). Interlaboratory variability greater than MVL±0.5 logs was observed among participants. When analyzing intra-laboratory results, samples with identical EBV load varied within a range of ±0.5 logs.

CONCLUSIONS: Measurement of EBV load in IU constitutes an important step towards methodological harmonization, although it was not sufficient to achieve acceptable interlaboratory variability. The intra-laboratory variability was appropriate and fits the purposes of the clinical application.

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