Assessment of changes in lactate measurement with intravascular microdialysis using the trend interchangeability method

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Results and Discussion: For the 22 analysed patients, the central venous catheter was used as usual care without complication. For absolute values (n=104), the correlation coefficient was 0.96 (P< 0.0001). The bias, precision and limits of agreement were -0.19, 0.51 and -1.20 to 0.82 mmol l-1, respectively. For changes in lactate measurement assessment (n=80), the concordance rate was 94% with the four-quadrant plot. In contrast, the trend interchangeability method showed that 23 (29) changes of lactate measurements were not interpretable; and among the remaining 57 (71) interpretable changes, 18 (32) were interchangeable, 8 (14) were in the gray zone, and 31 (54) were not interchangeable.

Background and Goal of Study: Blood lactate is a strong predictor of mortality, and it is recommended to monitor its clearance over time during surgery in high-risk patients. We studied the interchangeability of venous lactate measurement through intravenous microdialysis incorporated in a central venous catheter with the reference method on arterial blood sample.

Materials and Methods: Blood lactate measurements from microdialysis and central venous blood were simultaneously recorded in 23 high-risk cardiac surgical patients (Trial Registry Number: NCT02296593). For absolute values, correlation was determined by linear regression, and Bland-Altman for repeated measurements was used to compare bias, precision, and limits of agreement. Changes in lactate measurement were evaluated with four-quadrant plot and trend interchangeability methods.

Conclusions: The microdialysis using a central venous catheter is safe, and seems reliable to absolute values of blood lactate. However, only one third of changes in lactate measurements are interchangeable with reference method.

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