

VIDAS® EMERGENCY PANEL: DECREASE OF THE TURNAROUND TIME BY A FAST CENTRIFUGATION

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INTRODUCTION

Preanalytical steps and especially centrifugation, elongate the turnaround time (TAT). But in circumstances such as the diagnosis of acute myocardial infarction (AMI), or the exclusion of venous thromboembolism a short TAT is of major importance. In addition, according to recent recommendations (NACB) the laboratory should perform stat cardiac marker testing with a target TAT of 1h or less. Moreover especially when considering cTnI determination the centrifugation step is of major importance. Indeed, its level is undetectable in non-pathologic cases and bad preanalytical conditions can lead to false positive values.

MATERIAL AND METHODS

Material :

- blood samples

Samples were collected in lithium-heparin tubes (cardiac markers) and citrated tubes (D-Dimers)

- patients

Patients hospitalized in various departments : cardiology, cardiac surgery and cardiovascular surgery

- centrifugation

Two centrifugations are tested :

- routinely used centrifugation on an Heraeus Megafuge 2.0
- evaluated centrifugation on the Statspin Inc., Norwood, Ma

Methods :

- centrifugation

Samples obtained from routine subscription are divided after homogenisation into two parts and centrifuged :

- 15 – 20 minutes at 1500 g with Heraeus Megafuge
- 2 minutes at high speed (4500 g) with Statspin

- methods

immunoenzymofluorimetry on the VIDAS® bioMérieux analyser

parameters tested : Troponin Ic
Myoglobin
D-Dimers

The Vidas® assays are based on fluorimetric detection (enzyme-linked fluorescent assay, ELFA). The VIDAS® system measures the parameters with a one-step sandwich immuno-assay using mouse monoclonal antibody for capture purposes and an alkaline phosphatase labeled monoclonal antibody for detection.

- statistics

Passing and Bablock, J. Clin. Chem. Clin. Biochem. 1983, 21, 709-20

CONCLUSION

- No significant difference observed in values obtained with the two different methods of centrifugation
- No false negative values observed with D-dimers, the referenced ELISA test for the exclusion of venous thromboembolism.
- No false positive values observed with cTnI, the gold standard for acute coronary syndrome.
- > In conclusion, the Statspin method may be considered as an essential addition to any laboratory
⇒ global saving time of 20 min for diagnosis of myocardial damage

Aim of the study :

We compared a rapid centrifugation method to a conventional one on the emergency panel of the VIDAS® analyzer (cardiac markers and new D-dimers).

RESULTS

CARDIAC TROPONIN I

n = 25
Statspin = 1.017 x Heraeus – 0.042
95 % confidence interval :
slope 1.017 [0.974 – 1.036]
intercept – 0.042 [- 0.106 – 0.033]
coefficient of correlation : r=0.9997

Good correlations were obtained.
Moreover, for 31 extra-samples, cTnI levels remained below the detection limit (<0.1µg/L)

MYOGLOBIN

n = 51
Statspin = Heraeus
95 % confidence interval :
slope 1.00 [1.000 – 1.023]
intercept – 0.00 [-0.318 – 0.000]
coefficient of correlation : r=0.9985

Results obtained were identical.

D-DIMERS

n = 37
Statspin = 1.044 x Heraeus – 11.4
95 % confidence interval :
slope 1.044 [0.997 – 1.088]
intercept – 11.4 [- 32.444 – 10.816]
coefficient of correlation : r = 0.9960

Correlations obtained were good. Only one discordant value was observed. Nevertheless, there were no false negative values.