Impact of strenuous exercise on the release of cardiac biomarkers?

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• Cardiovascular diseases (CVD) represent the leading cause of death in the United States, as well as in numerous developed countries, ahead of cancers and accidents
• The risk of cardiac events or sudden death after a vigorous physical effort has been described
• The death incidence linked to physical exercise is more important among elderly people than among younger ones and among persons who do not practise regular physical activity
• These undesirable events occur following a coronary
Background

• Cardiac troponins (T and I) (cTnT and cTnI) are considered as the best biomarkers for detection of myocardial cell injury and NT–proBNP as the best for the cardiac insufficiency.

• In this study, cTnT was measured by new commercially available high-sensitive methods in subjects undergoing the Maasmarathon.
Aim

• To compare cTnT and NT-proBNP levels before and after the stress test, in runners.
Materials and methods

• 28 subjects (26 ♂, 42.5±11yo) → race of 42.195 kilometers between Visé (Belgium) and Maastricht (The Netherlands).

• Performance = 4h06±35 min

• Blood samples
  – before = T0
  – just after = T1
  – 3 hours after = T3
Materials and methods

• cTnT concentrations were measured by high sensitive methods (hsTnT, Roche Diagnostics) on heparin plasma.

• NT–proBNP level was also determined with the kit from Roche Diagnostics on heparin plasma.

• The protocol was approved by the ethic committee of the University of Liège (Belgium). All subjects gave their informed consent.
Results
Results

TnThs marathoniens

Decision limit 0.014 µg/L
Results

NT-proBNP chez les marathoniens

- PBNP_T0
- PBNP_T1
- PBNP_T3

Decision limit: 103 pg/ml

p<0.0001
ns
Results

Comparison between different races for TnThs
Results

Comparison between different races for NT-proBNP
Conclusions

• Measurement of cardiac troponins by high sensitive methods enables the detection of a significant release of biomarkers from the heart during exercise.

• The value of NT–proBNP are also significant but less than TnThs.

• We think that the TnThs could be an interesting tool in the future to help sport medicine to detect risk of developing a
Conclusions

• Measurement of cardiac troponins by high sensitive methods enables the detection of a significant release of biomarkers from the heart during exercise.
• The value of NT–proBNP are also significant but less than TnThs.
• We think that the TnThs could be an interesting tool in the future to help sport medicine to detect risk of developing a
Thank you very much for your
Le sport est très bon pour la santé... sauf quand on en meurt!