

迅速でより感度の高い検査は胸痛患者のトリアージを迅速にする (ESC2015 Presentation # 1161)

BACC:救急外来において高感度トロポニン検査はMIトリアージを加速化する

BACC: High-sensitivity troponin I test accelerates MI triage in the emergency department

急性心筋梗塞 (AMI) を示唆する胸痛で救急外来を受診した患者は、精密化されたカットオフ値を用いた新たな迅速アッセイを用いることで、より速やかに安全にトリアージできる。2015年 ESC Congress ホットラインセッションで発表されたBACC (Biomarkers in Acute Cardiovascular Care) スタディでは、AMIを示唆する急性の胸痛で受診した患者1,045人 (平均年齢65歳) を対象とし、標準的な3時間のアッセイおよび1時間のアッセイの両者を用いて評価した。標準的な方法に基づき、184人の患者はAMIと診断され入院した。その他は帰宅した。全ての患者が6か月間追跡された。研究者らが2つのアッセイの結果を比較し、AMIを除外する最良のトロポニンカットオフ値は、現在の推奨値である27ng/Lよりはるかに低い値である6ng/Lであると算出した。その後、心血管イベントを予測するこの新たなカットオフ値の臨床的妥当性をBiomarCaREスタディのデータを用いて確かめた。その結果、トロポニン値が6ng/Lより高いことは死亡または心血管疾患の高リスクを示唆することが確認された。研究者らは次にこの新たなカットオフ値をBAACコホートに適用したところ、この新たなアルゴリズムでトリアージした方がこれまでの3時間の方法で行うよりも死亡率が低くなるであろうことが明らかにされた。

Full Text

Patients arriving at the emergency department with chest pain suggestive of acute myocardial infarction (AMI) can be triaged more quickly and more safely using a new rapid assay with refined cut-offs. The Biomarkers in Acute Cardiovascular Care (BACC) study, presented as a Hot Line at ESC Congress 2015, suggests this new algorithm can reduce mortality and cut triage times to one hour, compared to the standard three-hour approach.

"There is an urgent need for fast decision-making for this growing patient population," said principal investigator of the study Dirk Westermann, M.D., Ph.D., from the University Heart Centre Hamburg, and the German Centre for Cardiovascular Research.

"Use of this algorithm in patients with suspected AMI allows for highly accurate and rapid rule-out as well as rule-in, enabling safe discharge or rapid treatment initiation. This rapid algorithm might be applicable to clinical practice without a loss of diagnostic safety."

For patients with suspected AMI, current guidelines recommend analyzing cardiac troponin I – a marker of myocyte necrosis – directly at admission and then 3 hours later, to determine if the level warrants admission or discharge.

This means patients must remain in the hospital for at least 3 hours before receiving a diagnosis, using resources that are increasingly scarce.

In addition, troponin I levels are currently considered abnormal if they are above the 99th percentile from a healthy reference population – in this case 27 ng/L, said Dr. Westermann.

But new, highly sensitive troponin I assays can give results more quickly and detect more subtle troponin I elevations that may be important for assessing cardiovascular risk, he explained.

The BACC (Biomarkers in Acute Cardiovascular Care) study included 1,045 patients (mean age 65 years) with acute chest pain suggestive of AMI presenting at the emergency room of the university hospital in Eppendorf, Hamburg, Germany. Patients were assessed using both the standard 3-hour assay as well as a highly-sensitive 1-hour one.

Based on the standard approach, 184 patients were diagnosed with AMI and kept in the hospital, while the rest were discharged home. All patients were then followed for 6 months.

Comparing the results of both assays in the cohort, the researchers calculated the best troponin I cut-off value to rule out AMI was 6 ng/L – "far lower than the currently recommended 27 ng/L," noted Dr. Westermann.

They then tested the clinical relevance of this new cut-off for predicting cardiovascular events using data from the BiomarCaRE study – one of the largest studies to include troponin I measurement in more than 75,000 individuals from the general population.

The BiomarCaRE data confirmed that when individuals from the general population had troponin I values higher than 6 ng/L, they were at increased risk of death or cardiovascular disease, whereas patients with levels below this cut-off could be safely discharged home.

"This documents that even slightly elevated troponin I values are important predictors of cardiovascular disease," said Professor Westermann. "At the same time, utilizing a very low cut-off for discharge of patients with suggestive AMI is safe, since these patients are at the lowest possible risk for future events."

The researchers then applied the new cut-offs to the BAAC cohort and found that mortality would have been lower if patients had been triaged with the new algorithm compared to the routine 3-hour approach.

"The standard approach underestimated risk for many patients and resulted in high mortality," said Dr. Westermann. "In addition, using the rapid, sensitive assay would have reduced usage of the emergency room and scarce medical resources, enabling a faster diagnosis and better treatment."

The algorithm had negative predictive values of 99.7% after 1 hour and 100% after 3 hours.

"Therefore, our algorithm identified all patients at risk, but was not un-necessarily unspecific," said Dr. Westermann.

"This suggests that using more sensitive cut-offs than suggested by the guidelines can improve the safety for patients discharged home."

The algorithm was then validated in two independent cohorts (ADAPT and APACE trials) that included 4,009 patients with acute chest pain suggestive of AMI.

The research was supported by the German Center of Cardiovascular Research (DZHK), the European Union Seventh Framework Programme, and an unrestricted grant by Abbott Diagnostics. Abbott Diagnostics provided test reagents for high-sensitive troponin I measurements. Dr. Westermann and his colleagues declared no conflicts of interest regarding this study.

Conference News

[News 01]

治療抵抗性高血圧にはスピロラクトンが最適である

[News 02]

持続性心房細動を止める

[News 03]

急性MIにおける早期アルドステロンブロック

[News 04]

迅速でより感度の高い検査は胸痛患者のトリアージを迅速にする

[News 05]

驚くべき心臓の所見が将来のリスクを予測する

[News 06]

抗血小板薬2剤併用療法治療継続期間に関する議論

[News 07]

中枢性睡眠時無呼吸症用デバイスは心不全の死亡率を上昇させる

[News 08]

実臨床においてリバーロキサバンは安全性および有効性試験をパスした

[News 09]

発作性心房細動におけるカテーテルアブレーションの優位性

[News 10]

ARBはCVDバイオマーカーにより影響を及ぼす可能性がある

[News 11]

生体吸収性ステントはメタルステントと同等に好ましい

[News 12]

胸痛とうつ病は共通の神経化学的経路を有する可能性がある

[News 13]

心疾患に対するうつ病と血圧の相乗効果