·临床检验研究论著·

高敏肌钙蛋白 I 在不稳定型心绞痛严重程度及预后评估中的应用*

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摘　要：目的　探讨高敏肌钙蛋白 I(hs-cTnI)检测在不稳定型心绞痛(UAP)患者的诊断、冠状动脉病变严重程度及短期预后判断等方面中的应用。**方法**　102 例常规血清 cTnI 阴性的 UAP 患者，冠状动脉造影前测定血清 hs-cTnI 水平，随访 30 d，记录心血管不良事件。**结果**　hs-cTnI 水平随着冠脉病变的严重程度而升高，hs-cTnI 水平越高，冠脉狭窄程度及病变累及血管的程度越严重，差异有统计学意义($P<0.05$)。hs-cTnI 升高组主要心血管事件发生率明显高于 hs-cTnI 正常组，差异有统计学意义($P<0.01$)。**结论**　hs-cTnI 水平的高低可预测冠脉病变的狭窄严重程度与病变范围，其升高提示短期预后不佳、主要心血管事件发生率增加，可作为 UAP 早期危险分层的一个指标。

关键词：心绞痛，不稳定型；　肌钙蛋白 I；　心血管造影术；　预后
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Severity and prognosis evaluation of serum high sensitivity cardiac troponin I in unstable angina pectoris*

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Abstract: Objective　To explore the application of serum high sensitivity cardiac troponin I (hs-cTnI) detection in clinical diagnosis, coronary artery disease severity and short-term prognostic in unstable angina pectoris(UAP) patients. **Methods**　102 UAP patients with cTnI negative were selected. Serum hs-cTnI was measured before coronary angiography, and was followed-up to 30 days. The main cardiovascular events was recorded. **Results**　Serum hs-cTnI levels increased with the degree of coronary artery disease. The levels of serum hs-cTnI were higher, coronary stenosis and vascular lesions were more serious($P<0.05$). The incidence of short-term cardiovascular events in patients with elevated serum hs-cTnI was significantly higher than that of normal group($P<0.01$). **Conclusion**　Serum hs-cTnI levels may predict the severity of coronary and the major cardiovascular events. It may be used as an early risk stratification in UAP.

Key words: angina, unstable;　troponin I;　angiocardiographies;　prognosis

研究表明，急性冠脉综合征(ACS)是动脉粥样斑块不稳定甚至破裂以及炎症加速的过程。ACS 患者的预后一直是临床研究的重点和难点。心脏肌钙蛋白 I(cTnI)是心肌损伤最特异、最敏感的血清标志物之一，由德国西门子公司开发的新一代高敏 cTnI(hs-cTnI)测定试剂盒采用的是磁性微粒子化学发光双抗夹心免疫分析法，检测下限为 0.006 ng/mL，较传统的 cTnI 检测更为精确和灵敏，可使不稳定型心绞痛(UAP)的诊断率由 30%上升至 60%[1-2]。目前国内有关 hs-cTnI 与 UAP 的诊断及预后的相关报道较少。本研究旨在探讨 hs-cTnI 水平的变化在 UAP 的诊断、危险分层、短期预后判断等方面的应用情况。

1　资料与方法

1.1　一般资料　选择 2011 年 1 月 1 日至 2012 年 2 月 1 日在本院心内科住院，并诊断为 UAP 且接受冠状动脉造影的患者 102 例，血清 cTnI 阴性，其中男 64 例，女 38 例，平均年龄(66.41±30.15)岁。排除标准：所有病例均排除急性炎症和创伤，如急性支气管炎、泌尿系统感染等疾病及一些慢性疾病，如风湿病、结缔组织病及肿瘤等。

1.2　方法　患者于冠状动脉造影前抽取静脉血 2 mL，测定血清 hs-cTnI 水平。住院期间均行冠状动脉造影术，必要时行经皮冠状动脉介入术，对所有患者随访 30 d，记录有无主要心血管事件(心源性猝死、心源性休克、再次心肌梗死、再次心绞痛、急性左心功能衰竭和严重心律失常)发生。hs-cTnI 采用德国西门子公司开发的 ADVIA Centaur CP 化学发光仪进行检测，所用的 hs-cTnI 试剂盒和质控品均为原装配套，hs-cTnI 最低检测浓度为 0.006 ng/mL，第 99 百分位数为 0.04 ng/mL，10%CV 为 0.03 ng/mL。冠脉造影术应用德国西门子悬吊式通用数字化平板血管造影系统，采用 Judkins 法依次行左、右冠状动脉造影，选择至少 2 个相互垂直投照位置，造影结果由 2 名有经验的冠脉介入医师应用目测法测量病变程度。根据狭窄程度分组：未发现明显斑块狭窄者为正常组；狭窄程度小于 50%为轻度狭窄组；至少一支冠脉主要分支狭窄 50%～74%为中度狭窄组；至少一支冠脉主要分支狭窄 75%～99%为重度狭窄组；至少一支冠脉完全闭塞为完全闭塞组。根据狭窄病变累及血管范围分为单支病变组、双支病变组和三支病变组。

1.3　数据处理　运用 SPSS15.0 统计软件包进行分析。计量资料结果以 $\bar{x}\pm s$ 表示，组间比较用 t 检验，计数资料用 χ^2 检验，$P<0.05$ 为差异有统计学意义。

2　结　　果

2.1　102 例 UAP 患者血清 hs-cTnI 水平随冠状动脉狭窄的程度不同而升高，其中轻度狭窄组与正常组比较差异无统计学意义($P>0.05$)；中度狭窄组、重度狭窄组和完全闭塞组与正常

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组比较差异有统计学意义($P<0.05$);重度狭窄组与轻、中度狭窄组比较差异有统计学意义($P<0.01$),完全闭塞组 hs-cTnI水平亦高于轻、中度狭窄组($P<0.01$)。见表 1。

表 1　冠脉不同狭窄程度的 UAP 患者血清 hs-cTnI 水平比较

组别	n	hs-cTnI(ng/mL)
正常组	56	0.007 2±0.006 4
轻度狭窄组	23	0.007 7±0.006 8
中度狭窄组	11	0.009 2±0.007 6
重度狭窄组	8	0.038 2±0.021 5
完全闭塞组	4	0.079 8±0.056 1

2.2　102 例 UAP 患者中,单支病变组与正常组 hs-cTnI 水平之间差异无统计学意义($P>0.05$),双支病变组、三支病变组分别与单支病变组及正常组比较差异有统计学意义($P<0.01$),三支病变组 hs-cTnI 水平高于双支病变组($P<0.01$)。见表 2。

表 2　冠脉狭窄病变累及血管范围的 UAP 患者血清 hs-cTnI 水平比较

冠脉造影结果	n	hs-cTnI(ng/mL)
正常组	73	0.007 4±0.006 1
单支病变组	18	0.008 8±0.007 1
双支病变组	8	0.035 4±0.021 1
三支病变组	3	0.081 2±0.057 6

2.3　102 例 UAP 患者中有 85 例完成 30 d 随访,以目前采用的 hs-cTnI 正常参考值 0.03 ng/mL 为界限分为 2 组,发现 hs-cTnI 升高组主要心血管事件如心源性猝死、急性心肌梗死和心绞痛的发生率明显高于 hs-cTnI 正常组,差异有统计学意义($P<0.01$)。见表 3。

表 3　85 例 UAP 患者随访 30 d 心血管事件发生情况比较

组别	hs-cTnI(ng/mL)	n	心源性猝死[n(%)]	急性心肌梗死[n(%)]	心绞痛[n(%)]
hs-cTnI 正常组	0.017±0.011	66	0(0.00)	0(0.00)	1(1.52)
hs-cTnI 升高组	0.073±0.041	19	3(15.79)	2(10.53)	3(15.79)

3　讨　论

随着检测技术的发展及方法的更新,部分厂商相继推出各种敏感方法检测 cTnI,其检测灵敏度更高,检测限更低,在临床应用中凸显诸多优势,甚至带来革命性的变化。本文采用德国西门子公司的 ADVIA Centaur hs-cTnI 检测试剂系三抗体夹心法(2 种捕获抗体和 1 种检测抗体),采用了针对相似肽段的抗体,捕获抗体针对 41～49 和 87～91 肽段为单克隆抗体,而检测抗体是针对 27～40 肽段的多克隆抗体[3]。该方法减少了自身抗体的干扰,能检测到循环中发生降解的 cTnI 分子,从而实现检测的高敏感性[4]。

研究表明,hs-cTnI 检测不仅对急性心肌梗死的诊断更敏感,并且对 ACS 的早期危险分层、评估及预后也很有帮助[5-6]。Wilson 等[7]对 50 例诊断为 UAP 的患者进行动态随访,发现高达 82%的患者存在心肌梗死。Morrow 等[8]以 hs-cTnI 检测的第 99 百分位值为判断值,发现其比传统的 cTnI 多识别 12%将来可能发生心血管不良事件的高危患者。本研究显示,对貌似无心肌梗死的 102 例 UAP 患者检测血清 hs-cTnI,有 27 例 hs-cTnI>0.03 ng/mL,提示存在心肌梗死,可见 hs-cTnI 检测心肌梗死较常规 cTnI 检测更敏感,与上述报道一致。在研究的病例中尚发现中度狭窄组、重度狭窄组、完全闭塞组与正常组 hs-cTnI 水平比较差异有统计学意义($P<0.05$);三支病变组与正常组 hs-cTnI 水平比较差异亦有统计学意义($P<0.01$)。以上提示,可根据 hs-cTnI 水平的高低来预测冠状动脉病变的严重程度及其范围。

Apple 等[1]为评价 ADVIA Centaur hs-cTnI 检测试剂对心肌梗死诊断的准确度及其在有 ACS 的患者中预测心血管事件风险发生的作用,对 371 例急诊疑似 ACS 患者检测血浆 hs-cTnI,在住院 6～24 h 内重复测定,出院后随访 60 d,以观察心血管事件发生的情况,结果有 9 例(13%)发生心肌梗死。本研究在对 85 例 UAP 患者进行为期 30 d 的短期随访中发现,hs-cTnI 升高组的主要心血管事件发生率均高于 hs-cTnI 正常组。由此推论,hs-cTnI 升高者可预示短期预后不良,主要心血管事件发生率增加,此类患者应视为高危人群,重点加强监护。

综上所述,通过检测 hs-cTnI 来判断 UAP 或是微梗死优于目前采用的常规 cTnI 检测,hs-cTnI 水平变化对于 UAP 患者冠状动脉病变严重程度及其范围的识别、临床危险性评估、指导治疗均有重要价值。

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