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OSETLJIVOST I SPECIFIČNOST TROPONINA T ZA DIJAGNOSTIKOVANJE AKUTNOG INFARKTA MIOKARDA

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Od nedavno se u dijagnostici kardiovaskularnih oboljenja, a naročito akutnog infarkta miokarda (AIM), posebna pažnja posvećuje proučavanju i primeni niza manjih proteina koji su komponente kontraktilnog aparata srčanog mišića, kao što je srčani troponin T (cTnT). Zato je cilj ovog istraživanja bio da se obradi i uporedi specifičnost i osetljivost cTnT mioglobina i određivanih enzima za rano dijagnostikovanje AIM, kao što su: kreatin kinaza (CK), izoenzim CK MB i laktat dehiorogeneza (LDH). Obrađene su četiri grupe ispitanika. Prvu grupu su činili dobrovoljni davaoci krvi (n = 105), drugu bolesnici s potvrđenim AIM (n = 30), treću bolesnici s politraumom (n = 30) i četvrtu bolesnici s kardiovaskularnim oboljenjima (KVO) u kojih nije potvrđen AIM (n = 30). Za određivanje cTnT korišćen je komercijalni test Eleccys Troponin T STAT (treće generacije), firme Boehringer Mannheim, koji se zasniva na tehnici elektrohemijskog luminiscentnog određivanja ECLIA, namenjenoj za rad na automatskom analizatoru Elecsys 2010. Koncentracija mioglobina (Mi) je određivana imunoturbidimetrijskom metodom, a enzimi standardizovanim IFCC metodama, na biohemijskom analizatoru HITACHI 911 firme Boehringer Mannheim primenom originalnih test reagensa. Referentne granice za cTnT su određene neparametarskom metodom na osnovu dobijenih vrednosti u uzorcima krvi 105 dobrovoljnih davalaca krvi i iznose od 0,010 do 0,028 ng/mL. U grupi bolesnika s potvrđenim AIM, biohemijski markeri (cTnT, CK, CK MB, Mi I LDH) su određivani odmah po prijemu bolesnika u hitnu službu, a zatim 4, 8, 16, 24, 48, 72, 96, 120, 144, 168, 192 i 216 sati nakon prijema, u bolesnika s politraumom 8 sati nakon završetka hirurške intervencije, a u bolesnika sa KVO u kojih nije potvrđen

SENSITIVITY AND SPECIFICITY OF TROPONIN T IN DIAGNOSIS OF ACUTE MYOCARDIAL INFARCTION

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Lately, in the diagnosis of acute myocardial infarction (MI), special attention is paid to the study of small molecular weight proteins, representing the strucrutal components of cardial muscle contractile proteins, such as cardial troponin T (cTnT). Therefore, the aim of this study was to determine and compare the specificity and sensitivity of cTnT myoglobine and the activity of standard tested enzymes such as: creatine kinase (CK), CK MB isoenzymes and lactic delytrogenase (LDH) in early diagnosis of acute MI. The study concerned the four groups of patients. The first group consisted of healty blood donors (n = 105), the second of patients with verified acute MI (n = 30), the third of a patients with polytrauma (n = 30), and the fourth of patients with cardiovascular diseases with no proved MI (n = 30). For the determination of cTnT level, the commercial Eleccys Troponin T STAT test was used (third generation), Boehringer Mannheim company, based on ECLIA (tehnique of electrochemical luminiscent analysis), designated for the work with automated analysis Elecsys 2010. The concentration of myoglobine (Mi) was determined by immunoturbiometric method, while the activity of other enzymes was determined by the standard IFCC methods with biochemical analyser HITACHI 911, Boehringer Manheim, and with original test reagents. The reference values of blood donor individuals found in the blood ranged from 0.01 to 0.028 ng/mL. In the group of patients with acute MI, biochemical markers (cTnT, CK, CK MB, Mi and LDH) were determined as soon as the material was received by the 24 h service and 4, 8, 16, 24, 48, 72, 96, 120, 144, 168, 192 and 216 hours later. In patients with polytrauma the markers

AIM odmah po prijemu i 4, 8, 16 i 24 sata nakon prijema. Koncentracija cTnT u bolesnika s potvrđenim AIM bila je povišena već odmah po prijemu bolesnika, dostižući maksimum 16-og sata od prijema, od kada postepeno opada, ali zadržava se iznad gornje granice referentnog intervala i nakon 216-og sata od momenta prijema. U bolesnika sa KVO u kojih nije potvrđen AIM nisu nađene povišene koncentracije cTnT. Poređenjem dobijenih vrednosti za cTnT u ove dve grupe bolesnika utvrđena je statistički značajna razlika za sve vremenske intervale. U grupi bolesnika sa politraumom jedino je koncentracija cTnT ostala u okviru referentnog intervala. Dijagnostička tačnost određivanih srčanih markera ispitana je i ROC analizom. Prema dobijenim podacima jedino cTnT ima značajnu dijagnostičku tačnost odmah po prijemu bolesnika, a izračunate ROC AUC iznose: za cTnT = 0,855, za CK = 0,716, za CK MB = 0,503 i za LDH = 0,552. Na osnovu iznetih podataka može se zaključiti da je cTnT najspecifičniji i najosetljiviji rani marker za dijagnostikovanje AIM.

Ključne reči: kardijalni markeri, srčani troponin T, kardiovaskularna oboljenja, AIM.

were tested 8 hours after surgery and in patients with other cardiovascular deseases with non documented acute MI immediattely after admission, and 4, 8, 16 and 24 hours later. The level of cTnT in patients with proved acute MI was increased at the first testing after admission. The highest values were found at hour 16, gradually declining thereafter, but maintaining above the higher control level in the next 216 hours after admission. In patients with cardiovascular diseases and non documented acute MI the level of cTnT was unchanged. Comparison of results of these two groups of patients showed statistically significant differences in cTnT levels in patients with acute MI during all tested time intervals. In the group of patients with polytrauma only the value of cTnT was within the normal level. Diagnostic precision of tested cardiac markers was also tested by ROC analysis. According to the data obtained, only cTnT exhibited statistically significiant diagnostic precision immediately after the admission of patients with the following calculated ROC AUC: 0.855 for cTnT, 0.716 for CK, 0.503 for CK MB and 0.552 for LDH, respectively. According to the presented data, it can be concluded that cTnT was the most specific and the most sensitive marker in the diagnosis of acute MI.

Key words: cardiac markers, cardiac troponin T, cardiovascular diseases, acute MI.