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血清降钙素原、乳酸清除率及危重疾病评分对脓毒症预后的评估价值

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摘要 目的:探讨血清降钙素原(procalcitonin, PCT)、乳酸清除率及危重疾病评分(Acute Physiology and Chronic Health Evaluation II, APACHE II)对脓毒症预后的评估价值。**方法:**选择 2011 年 2 月~2013 年 2 月期间我院收治的脓毒症休克及严重脓毒症患者 92 例,其中脓毒症休克 37 例,严重脓毒症者 55 例;存活 60 例,死亡 32 例。对本组患者血清 PCT、乳酸清除率及 APACHE II 进行分析,探讨以上指标对其预后的评定价值。**结果:**①死亡组血清 PCT、APACHE II、乳酸分值均大于存活组,左心射血分数(Left ventricular ejection fraction, LVEF)及早期乳酸清除率小于存活组,对比具有统计学意义($P<0.01$ 或 $P<0.05$);②脓毒性休克组血清 PCT、APACHE II、乳酸分值均大于严重脓毒症组, LVEF 及早期乳酸清除率小于严重脓毒症组,对比具有统计学意义($P<0.01$ 或 $P<0.05$);③本组乳酸与 APACHE II 呈正相关性($P<0.01$),早期乳酸清除率与 APACHE II 呈负相关性($P<0.01$)。**结论:**PCT、乳酸清除率及 APACHE II 评分可以作为脓毒症预后的有效评估指标,通过对 PCT、乳酸清除率及 APACHE II 评分监测以便尽早采取积极的治疗措施,改善预后情况。

关键词:血清降钙素原;乳酸清除率;危重疾病评分;脓毒症

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Evaluation Value of Serum Procalcitonin, Lactic Acid Clearance Rate and Acute Physiology and Chronic Health Evaluation II to Sepsis

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ABSTRACT Objective: To explore the significance of serum procalcitonin (PCT), lactate clearance rate and Acute Physiology and Chronic Health Evaluation II (APACHE II) in the evaluation of sepsis. **Methods:** 92 patients with septic shock and severe sepsis were selected in our hospital from February 2012 to February 2013, including 37 cases of septic shock and 55 cases of severe sepsis patients; 60 cases survived, 32 cases died. The serum levels of PCT, lactate clearance rate and APACHE II analysis, discussion of the assessment value of above indexes on the prognosis. **Results:** ① The serum levels of PCT, APACHE II, lactate values of death group were greater than the survival group, LVEF and the early lactate clearance rate is less than the survival group ($P<0.01$ or $P<0.05$); ② Septic shock group serum PCT, APACHE II scores, lactic acid more severe sepsis group, LVEF and early lactate clearance rate less than severe sepsis group ($P<0.01$ or $P<0.05$); ③ The lactic acid and APACHE II were positively correlated ($P<0.01$), the early lactate clearance rate was negatively correlated with APACHE II ($P<0.01$). **Conclusion:** PCT, lactate clearance rate and APACHE II can be used as an effective evaluation index of sepsis prognosis, through the PCT, lactic acid clearance rate and APACHE II monitoring so as to take active treatment, improve the prognosis of the patients.

Key words: Serum procalcitonin; Lactate clearance rate; Critical illness score; Sepsis

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前言

脓毒症是指因感染所致的全身性炎症反应综合征,并经临床证实存在可疑感染灶或细菌^[1]。脓毒性休克与严重脓毒症是常见的内科危重症,易出现脏器功能不全,无明显的抗生素反应等,使得患者感染控制效果差,增加了治疗的困难程度,提升了病死率。近年来,随着对该病研究的不断深入,血乳酸作为能够反映组织灌注不足及缺氧状态的有效指标已广泛应用于脓

毒症病情及预后的判断中^[2,3]。同时,有文献显示,血清降钙素原(procalcitonin, PCT)是鉴别细菌感染的一种高敏感性与特异性新指标,对脓毒症预后判断可能有重要价值^[4];而危重疾病评分(Acute Physiology and Chronic Health Evaluation II, APACHE II)也能够对危重疾病程度及预后进行有效评价^[5]。为此,本文对脓毒性休克与严重脓毒症患者血清 PCT、乳酸清除率及 APACHE II 进行分析,探讨以上指标对其预后的评定价值。

1 资料和方法

1.1 一般资料

选择 2011 年 2 月~2013 年 2 月期间我院收治的脓毒症休克及严重脓毒症患者 92 例,男 50 例,女 42 例;年龄 24~84 岁,

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平均年龄(52.3±3.7)岁。所有患者均符合国际脓毒症会议于2001年制定的相关定义标准^[6],包括慢性支气管炎20例,肺纤维化并感染9例,支气管哮喘并感染17例,获得性肺炎46例。92例患者中包括脓毒症休克37例,相关标准为低血压经扩容干预后无效者;严重脓毒症者55例,相关诊断标准为合并以下指标之一者^[7]:①急性少尿,即尿量至少2h低于0.5 ml/(kg·h);②低氧血症,即PaO₂/FiO₂低于300;③肌酐提升高于0.5 mg/dl;④凝血异常,即APTT高于60s或INR高于1.5;⑤血小板减少症,即血小板计数低于100×10⁹/L;⑥高胆红素血症,即总胆红素高于70 mmol/L或4 mg/L;⑦腹胀,且未见肠鸣音。⑧皮肤花斑或毛细血管延长了再充盈时间;⑨高乳酸血症,即高于3 mmol/L。排除冠脉急性综合征、慢性心力衰竭、晚期恶性肿瘤,以及严重的心肝肾疾病、糖尿病者。本组均按照脓毒症休克及严重脓毒症治疗国际指南中的相关方法进行治疗,存活60例,死亡32例。

1.2 方法

①患者到院时与到院6h时进行动脉血采集,通过血气生化分析仪对血乳酸水平进行检测。早期(6h)乳酸清除率=(到院时动脉血乳酸值-到院后6h动脉血乳酸值)/到院时动脉

血乳酸值×100%^[8]。②APACHE II评分^[9]:患者入院后给予APACHE II评分,内容包括:临床生理指标(心率、体温、呼吸、平均动脉压)血气、肌酐、钠、红细胞压、血浆钾、GCS昏迷评分等免疫低下或器官功能不全等健康评分及急性生理评分。③血清PCT测定:患者到院后取静脉血进行血清分离,并通过化学发光法对血清PCT进行测定。④通过超声心电图仪对患者进行心脏超声检查,选择心尖四腔切面,以Simpson改良单平面法进行LVEF计算。

1.3 统计学分析

通过SPSS15.0分析与统计,计量资料采用($\bar{x} \pm s$)来表示,组间比较采用独立样本的t检验,应用Spearman's相关性分析分析数据相关性,P<0.05为差异具有统计学意义。

2 结果

2.1 存活组与死亡组血清PCT、APACHE II、LVEF、乳酸、早期乳酸清除率对比

死亡组血清PCT、APACHE II、乳酸分值均大于存活组,LVEF及早期乳酸清除率小于存活组,对比具有统计学意义(P<0.01或P<0.05)。详见表1。

表1 两组血清PCT、APACHE II、LVEF、乳酸、早期乳酸清除率对比

Table 1 Comparison of serum PCT, APACHE II, LVEF, lactic acid, early lactate clearance rate between two groups($\bar{x} \pm s$)

组别 Groups	PCT (μg/L)	APACHE II	LVEF (%)	乳酸(mmol/L) Lactate(mmol/L)	早期乳酸清除率(%) Lactate clearance rate(%)
死亡组(n=32) Death group(n=32)	6.32±1.76	20.6±5.7	45.3±9.7	4.3±1.4	14.57±9.12
存活组(n=60) Survival group(n=60)	3.74±1.38	17.2±5.4	50.2±9.5	3.5±1.3	31.03±12.64
t	7.746	2.821	2.339	2.737	7.176
P	0.000	0.006	0.022	0.008	0.000

2.2 脓毒性休克与严重脓毒症患者血清PCT、APACHE II、LVEF、乳酸、早期乳酸清除率对比

脓毒性休克组血清PCT、APACHE II、乳酸分值均大于严

重脓毒症组,LVEF及早期乳酸清除率小于严重脓毒症组,对比具有统计学意义(P<0.01或P<0.05)。详见表2。

表2 两组患者血清PCT、APACHE II、LVEF、乳酸、早期乳酸清除率对比($\bar{x} \pm s$)

Table 2 Comparison of serum PCT, APACHE II, LVEF, lactic acid, early lactate clearance rate between two groups($\bar{x} \pm s$)

组别 Groups	PCT (μg/L)	APACHE II	LVEF (%)	乳酸(mmol/L) lactate(mmol/L)	早期乳酸清除率(%) lactate clearance rate(%)
脓毒性休克(n=37) Septic shock group(n=37)	6.33±1.75	20.2±5.2	44.8±9.9	4.2±1.7	14.60±9.15
严重脓毒症(n=55) Severe sepsis group(n=55)	3.75±1.28	16.8±5.7	51.2±10.8	3.5±1.4	31.22±12.5
t	7.690	2.905	2.881	2.156	7.357
P	0.000	0.005	0.005	0.034	0.000

2.3 乳酸、APACHE II及乳酸清除率的相关性

本组乳酸与APACHE II呈正相关性($r=0.382, P<0.01$);早期乳酸清除率与APACHE II呈负相关性($r=-0.423, P<0.01$)。

3 讨论

脓毒症属于常见的临床疾病,主要是指感染所造成的全身

炎症反应性综合征^[10-12]。该病易引发多器官功能不全,死亡率较高,且治疗费用贵,所以合理、有效的评估对患者病情进展及预后有着重要的意义。

血清 PCT 属于无激素活性降钙素的前肽物质,一般情况下极少量入血。血清 PCT 的指标在 0.1~0.5 $\mu\text{g/L}$ 以下为正常,在 0.5~2 $\mu\text{g/L}$ 之间为轻度增高,若超过 10 $\mu\text{g/L}$ 则为显著升高^[13]。有文献表明,全身细菌感染者或脓毒症者在感染初期或脓毒症早期血清 PCT 明显增高,之后水平均保持在较高的状态,经抗生素治疗后有明显的降低;感染的程度与血清 PCT 水平有一定关联^[14]。本文研究显示,生存组患者血清 PCT 可以随着病情的转复得到显著降低,而死亡组血清 PCT 水平明显高于存活组与正常指标。结果可以说明,对血清 PCT 进行动态观察能够有效评估脓血症的病情程度,对预测患者的预后情况有着重要的临床应用价值。

近年来,随着脓毒症研究的不断深入,乳酸动态连续监测已受到广泛的关注^[15]。有学者研究表明,乳酸动态检测对脓毒性休克与严重脓毒症患者病情程度及预后评估具有十分重要的意义,其中 6 h 早期乳酸清除率可以作为患者预后预测的独立性指标^[16,17]。早期乳酸清除率较高的存活组在应用血管活性药及 APACHE II 评分中均优于死亡组,可以说明早期乳酸清除率高的患者病死率较低。同时,严重脓毒症的早期乳酸清除率明显高于脓毒性休克组。上述结果说明,早期乳酸清除率与脓毒性休克及严重脓毒症患者的预后有着密切的关联,早期对脓毒症乳酸清除率进行干预能够有效加强患者的预后效果。

APACHE II 是对疾病严重程度进行评估的有效方法,一般用于对危重症者预后的评估^[18]。APACHE II 与持续性血乳酸升高有着密切的关联。有文献显示,脓毒症、SIRS、脓毒休克及严重脓毒症者的病死率为 16%、7%、46%、20%,因此评估脓毒症的严重程度,对降低病死率、加强预后具有十分重要的意义^[19]。APACHE II 属于目前最常见、最权威的临床危重疾病评分系统^[20]。本文研究表明,本组乳酸与 APACHE II 呈正相关性($P < 0.01$);早期乳酸清除率与 APACHE II 呈负相关性。结果说明,乳酸与 APACHE II 相关性较好,结合乳酸清除率、乳酸、APACHE II 检测有助于早期诊断脓毒症,并对其预后进行有效评价。

总之,血清 PCT、乳酸清除率及 APACHE II 评分可以作为脓毒症预后的有效评估指标。脓毒性休克及严重脓毒症患者应密切监测血乳酸、乳酸清除率及血清 PCT,并对 APACHE II 进行评估,以便尽早采取积极的治疗措施,改善预后情况,保障患者的就医质量。

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