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CRP、PCT、WBC 联合检测对中老年社区获得性肺炎的诊断效果 *

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摘要 目的：研究 C 反应蛋白（C-reactive protein，CRP）、降钙素原（Procalcitonin，PCT）以及白细胞（White blood cell，WBC）联合检测对中老年社区获得性肺炎患者的诊断效果。**方法：**选择 2018 年 1 月～2019 年 1 月我院收治的 76 例中老年社区获得性肺炎患者为观察组，同期在我院体检中心选取 30 例健康体检者为对照组。检测两组研究对象的 CRP、PCT 及 WBC 水平 。采取肺炎严重程度 CURB-65 评分将观察组的 76 例患者分为低危组（n=63 例），CURB-65 评分＜3 分，以及高危组（n=13 例），CURB-65 评分≥ 3 分；依照观察组的转归情况分为存活组（n=70 例）以及死亡组（n=6 例），比较观察组和对照组患者，低危组和高危组患者，存活组和死亡组患者的 CRP、PCT 及 WBC 水平的差异。**结果：**观察组患者的 CRP、PCT 及 WBC 水平明显高于对照组（*P*<0.05）；高危组患者的 CRP、PCT 水平明显高于低危组患者（*P*<0.05），而 WBC 水平两组无明显差异（*P*>0.05）；死亡组患者的 CRP、PCT 水平明显高于存活组患者（*P*<0.05），而 WBC 水平两组无明显差异（*P*>0.05）。经 Pearson 相关分析发现，CURB-65 评分与 PCT、CRP 均呈明显的正相关（t=0.532，0.497，*P* 均 <0.05）。**结论：**CRP、PCT 以及联合检测可以为中老年社区获得性肺炎的诊断提供有利的信息，且 CRP、PCT 与患者的病情严重程度有一定的相关性。

关键词：C 反应蛋白；降钙素原；白细胞；中老年社区获得性肺炎

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Diagnostic Efficacy of Combined Detection of CRP, PCT and WBC in Elderly Patients with Community Acquired Pneumonia*

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ABSTRACT Objective: To investigate the diagnostic efficacy of combined detection of C-reactive protein (CRP), procalcitonin (PCT) and white blood cell (WBC) in elderly patients with community acquired pneumonia. **Methods:** Selected 76 cases of elderly patients with community acquired pneumonia who were treated in our hospital from January 2018 to January 2019 as observation group. In the same period, 30 healthy people in our physical examination center were selected as the control group. The levels of CRP, PCT and WBC in the two groups were detected. The CURB-65 score of pneumonia was used to classify 76 patients in the observation group into low-risk group (n=63 cases), CURB-65 score <3 points, and high-risk group (n=13 cases), CURB-65 score ≥ 3 points; according to the outcome of the observation group, the survival group (n=70 cases) and the death group (n=6 cases), the comparison observation group and the control group, the low-risk group and the high-risk group, the survival group and the death group. Differences in CRP, PCT and WBC levels in the group. **Results:** The CRP, PCT and WBC levels in the observation group were significantly higher than control group (*P*<0.05). The levels of CRP and PCT in the high-risk group were significantly higher than those in the low-risk group (*P*<0.05), but there was no significant difference between the two groups (*P*>0.05). The CRP and PCT levels in the death group were significantly higher than those in the surviving group(*P*<0.05), but there was no significant difference between the two groups (*P*>0.05). Pearson correlation analysis showed that CURB-65 score was positively correlated with PCT and CRP (t=0.532, 0.497, *P*<0.05). **Conclusion:** The combined detection of CRP and PCT can provide useful information for the diagnosis of community-acquired pneumonia in the elderly, and has a certain correlation with the severity of the disease.

Key words: C-reactive protein; Procalcitonin; White blood cell; Elderly community-acquired pneumonia

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前言

社区获得性肺炎指的是在医院外患有的一种感染性肺部实质炎症疾病，并且包括入院之后在平均潜伏期间发病的情况，主要是由于非典型病原体、细菌或者病毒等感染而引发[1-3]。近年来，由于抗菌药物的滥用和病原体的不断变迁，我国社区获得性肺炎的发病率和病死率迅速升高[4,5]。研究发现中老年人是社区获得性肺炎发病和病死的高危人群[6-8]。早期发现、及时确诊、有效治疗和准确评估疾病严重程度，对于改善中老年社区获得性肺炎的预后极为关键。寻找快速、特效、敏感和简便的早期诊断和评估病情的生化检测指标，是目前诊疗中老年社区获得性肺炎亟待解决的重要问题[9,10]。中老年社区获得性肺炎患者出现咳痰、咳嗽以及发热等典型的肺炎症状通常不明显，而主要表现为乏力、纳差以及晕厥等情况，导致临床医师对病情的评估具有较大的局限性[11]。社区获得性肺炎患者的肺实质会发生炎症性病变，准确鉴别病因是开展有效治疗的关键，CRP、PCT 以及 WBC 均属于机体的炎性标志物。本研究采用 CRP、PCT 以及 WBC 联合检测，以分析其对中老年社区获得性肺炎的诊断效果。

1 资料与方法

1.1 一般资料

选择 2018 年 1 月～2019 年 1 月我院收治的 76 例中老年社区获得性肺炎患者为观察组，同期在我院体检中心选取 30 例健康体检者为对照组。纳入标准：(1)年龄大于 18 岁；(2)符合中华医学会呼吸病学分会 2016 年制定的《社区获得性肺炎诊断和治疗指南》的诊断标准。排除标准：(1)免疫缺陷疾病；(2)长期使用免疫抑制剂或激素治疗；(3)怀疑活动性肺结核、肺部肿瘤患者。观察组 76 例，男 41 例，女 35 例；年龄 45~73 岁，平均(63.38± 6.54)岁。对照组 30 例，男 16 例，女 14 例；年龄 45~72 岁，平均(61.26± 5.39)岁。

1.2 方法

所有患者均抽取 5 mL 空腹静脉血，采取乳胶免疫比浊法检测血清 CRP 水平，试剂盒购自深圳迈瑞生物医疗电子股份有限公司；采取酶联免疫荧光法检测血清 PCT 水平，试剂盒购自生物梅里埃法国股份有限公司；采取全自动血液细胞分析仪(深圳迈瑞生物医疗电子股份有限公司)检测 WBC 水平。

采取肺炎严重程度 CURB-65 评分将观察组的 76 例患者分为低危组（n=63 例），CURB-65 评分＜3 分，以及高危组(n=13 例)，CURB-65 评分≥ 3 分；依照观察组的转归情况分为存活组(n=70 例)以及死亡组(n=6 例)，比较观察组和对照组，低危组和高危组，存活组和死亡组 CRP、PCT 以及 WBC 水平的差异。并采取 Pearson 相关分析检测 CURB-65 评分与 CRP、PCT 以及 WBC 的相关性。

1.3 统计学分析

采用 SPSS 21.0，计量资料以 $\bar{x}\pm s$ 表示，组间和组内对比用方差分析和 t 检验，组间率的比较用 x^2 检验，P<0.05 为差异有统计学意义。

2 结果

2.1 两组患者的 CRP、PCT 以及 WBC 水平对比

观察组患者的 CRP、PCT 以及 WBC 水平明显高于对照组患者(P<0.05)，见表 1。

表 1 两组患者的 CRP、PCT 以及 WBC 水平对比($\bar{x}\pm s$)

Table 1 Comparison of CRP, PCT and WBC levels between the two groups($\bar{x}\pm s$)

Groups	n	CRP(mg/L)	PCT(ng/L)	WBC(× 10^9/L)
Control group	30	5.37± 1.26	0.13± 0.02	6.34± 1.57
Observation group	76	59.48± 11.39*	1.65± 0.44*	13.29± 2.78*

Note: Compared with the control group, *P<0.05.

2.2 高危组和低危组患者的 CRP、PCT 以及 WBC 水平对比

高危组患者的 CRP 和 PCT 水平明显高于低危组患者(P<0.05)，而 WBC 水平两组无明显差异(P>0.05)见表 2。

表 2 高危组和低危组患者的 CRP、PCT 以及 WBC 水平对比($\bar{x}\pm s$)

Table 2 Comparison of CRP, PCT and WBC levels in high-risk and low-risk groups($\bar{x}\pm s$)

Groups	n	CRP (mg/L)	PCT (ng/L)	WBC(× 10^9/L)
Low-risk group	63	30.42± 5.17	1.14± 0.25	13.63± 3.57
High-risk group	13	79.36± 12.49*	2.13± 0.59*	14.38± 3.49

Note: Compared with the control group, *P<0.05.

2.3 存活组和死亡组患者的 CRP、PCT 以及 WBC 水平对比

死亡组患者的 CRP 和 PCT 水平明显高于存活组患者(P<0.05)，而 WBC 水平两组无明显差异(P>0.05)，见表 3。

2.4 相关性分析

经 Pearson 相关分析发现，CURB-65 评分与 PCT、CRP 均呈明显的正相关(t=0.532，0.497，P 均 <0.05)。

3 讨论

目前，中老年社区获得性肺炎发病时的病情往往较为严重，病死率和并发症率比较高[12-14]。虽然抗生素在临床上得到了

日益广泛的应用，社区获得性肺炎依旧是威胁人类生命健康的一种重要感染性疾病[15]。在中老年人中具有极高的发病率，分析其原因，一方面，中老年人呼吸道的防御能力随着年龄的增长而明显下降，另一方面，中老年患者的呼吸道症状大多并不突出，加上患者大多合并有一种甚至多种的基础性疾病，胸片检查可能由于其他疾病而不显著，极易耽误病情，而且一旦中老年人发生肺部感染，更易迅速发展成重症肺炎[16-19]。以往临床诊断肺部感染主要参考患者的白细胞分类及计数、症状表现、痰细菌培养结果和胸部 X 线检查，但是上述指标的特异度及敏感度均较低[20]。

表 3 存活组和死亡组患者的 CRP、PCT 以及 WBC 水平对比（$\bar{x}\pm s$）

Table 3 Comparison of CRP, PCT and WBC levels in patients in the survival and death groups（$\bar{x}\pm s$）

Groups	n	CRP（mg/L）	PCT（ng/L）	WBC（× 10^9/L）
Survival group	70	34.92± 5.63	1.35± 0.37	14.64± 3.57
Dead group	6	85.42± 13.79*	2.97± 0.84*	15.29± 3.64

Note: Compared with the control group, *P<0.05.

CRP 作为一种典型的炎症标志物，其水平的升高表明机体出现了炎症反应。CRP 能对机体中的补体发挥激活功能，从而使吞噬细胞的作用增强，强化吞噬细胞在体内的清理作用，发挥清除病原微生物以及保护机体组织的目的[21-23]。PCT 作为感染性疾病的一种血清学标志物，具有高特异性以及高灵敏性的优点。当出现严重的寄生虫、细菌、真菌感染，脓毒症和多脏器功能衰竭时，机体的血清 PCT 水平会大幅度升高，而且其水平不会受到内部激素水平的影响[24]。有研究发现，PCT 在鉴别炎性反应和细菌感染方面较体温、WBC 和 CRP 具有更好的临床应用价值[25]。血清 PCT 水平不仅可以反映患者全身炎症反应的活跃程度，还可以反映被感染器官的类型、大小、患者炎症的严重程度、感染细菌的种类以及患者自身免疫反应情况等[26-30]。本研究结果发现，观察组患者的 CRP、PCT 以及 WBC 水平水平明显高于对照组；高危组患者的 CRP、PCT 水平明显高于低危组患者；死亡组患者的 CRP、PCT 水平明显高于存活组患者；表明 CRP、PCT 水平越高，中老年社区获得性肺炎患者的病情就越严重，预后就越不佳。本研究经 Pearson 相关分析发现，CURB-65 评分与 PCT、CRP 均呈明显的正相关。表明 CRP、PCT 水平越高，中老年社区获得性肺炎患者的 CURB-65 评分就越高。CRP、PCT 水平的高低对于评估中老年社区获得性肺炎病情严重程度和疾病转归具有重要的指导意义。

综上所述，CRP、PCT 联合检测可以为中老年社区获得性肺炎的诊断提供有利的信息，且与患者的病情严重程度有一定的相关性。

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