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NLR、PLR 联合 CRP 检测对手足口病患儿的临床价值

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摘要:目的 探讨外周血中性粒细胞与淋巴细胞比值(NLR)、血小板与淋巴细胞比值(PLR)联合 C 反应蛋白(CRP)检测对手足口病(HFMD)患儿的临床诊断。**方法** 将 2016 年 5 月至 2017 年 9 月该院住院的 HFMD 患儿 112 例作为病例组,并按病情分为普通组、重症组、危重症组及病死组,另以该院健康体检儿童 42 例作为对照组。检测 2 组研究对象的血常规和生化结果,收集白细胞(WBC)、中性粒细胞(NEUT)、淋巴细胞(LYMPH)、血小板(PLT)、CRP 检查结果数据,并计算 NLR、PLR 值。**结果** 随疾病加重,WBC、NEUT、LYMPH、NLR、PLR、CRP 等免疫炎性指标水平呈升高趋势。2 组 WBC、CRP 水平比较,差异均有统计学意义($P<0.01$);NEUT、NLR 水平在危重组、重症组、普通组之间比较,差异有统计学意义($P<0.05$);重症组和普通组 LYMPH 高于对照组($P<0.05$);各组 PLT、PLR 水平均高于普通组和对照组($P<0.05$),其余各组间比较,差异无统计学意义($P>0.05$)。且 NLR 与 WBC($R^2=0.34$)、CRP($R^2=0.39$)及 PLR 与 WBC($R^2=0.21$)、CRP($R^2=0.41$)呈正相关($P<0.05$)。**结论** NLR、PLR 联合 CRP 检测与 HFMD 的发生、发展密切相关,可作为一种经济、简便的炎性指标,用于 HFMD 的诊疗及预后判断。

关键词:中性粒细胞与淋巴细胞比值; 血小板与淋巴细胞比值; 手足口病

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The diagnostic value and clinical significance of NLR, PLR and CRP for children with Hand Foot and Mouth Disease

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Abstract: Objective To explore the diagnostic value and clinical significance of NLR, PLR and CRP for Hand Foot and Mouth Disease, and providing laboratory new ideas for the diagnosis and treatment of HFMD. **Methods** A total of 112 patients (they were divided as general group, severity group, critical group and death group) and 42 healthy children were included as the research objects from May 2016 to September 2017 in our hospital. The index of blood routine and biochemistry were detected in the early admission, the data of the patients' WBC, NEUT, LYMPH, PLT and CRP were collected and the NLR and PLR were calculated. **Results** The level of immune inflammatory indicators such as WBC, NEUT, LYMPH, NLR, PLR and CRP were elevated with the aggravation of HFMD. The changes of WBC and CRP were statistically significant in comparison between groups ($P<0.01$). The levels of NEUT and NLR were significantly difference between the severity group, the severity group and the general group ($P<0.05$). The LYMPH of patients in the severity group and the normal group were higher than which in the control group ($P<0.05$). PLT and PLR levels were higher in each group than which in normal group and control group ($P<0.05$). There was no difference between the other groups. Furthermore, NLR with WBC ($R^2=0.34$), CRP ($R^2=0.39$) and PLR with WBC ($R^2=0.21$), CRP ($R^2=0.41$) were positive correlation. **Conclusion** NLR, PLR and CRP are closely related to the development of HFMD, which can be used as an economic and simple inflammatory index for the diagnosis and prognosis of HFMD.

Key words: neutrophil-to-lymphocyte ratio; platelet-to-lymphocyte ratio; hand hoot and mouth disease

手足口病(HFMD)是一种主要由肠道病毒 71 (EV71)和柯萨奇病毒 A16(CA16)感染引起的急性传染病,其主要临床特征表现为发热合并手、足、口、臀部皮疹,且多发生在 5 岁以下儿童^[1]。HFMD 患儿绝

大多数症状较轻,经过综合治疗基本在 1 周内痊愈。但少数重症或危重患儿病情进展迅速,可出现肺水肿、肺出血、无菌性脑膜炎、脑炎、急性弛缓性麻痹、心肌炎等多种严重并发症^[2-4]。外周血中性粒细胞与淋

巴细胞比值(NLR)、血小板与淋巴细胞比值(PLR)、C反应蛋白(CRP)均是反映机体炎性状态和免疫状态的综合性评价指标,以及感染性疾病及肿瘤的较多相关报道^[5-8]。现探讨 NLR、PLR 联合 CRP 检测对 HFMD 患儿的诊断价值及临床意义。

1 资料与方法

1.1 一般资料 本研究将 2016 年 5 月至 2017 年 9 月本院儿内三科住院的 HFMD 患儿 112 例作为病例组,根据《手足口病诊疗指南(2010 版)》为诊断与分组标准。由临床医师根据病情诊断,分为普通组 47 例,平均年龄(25.36±19.85)个月;重症组 34 例,平均年龄(24.21±17.58)个月;危重组 23 例,平均年龄(21.43±10.12)个月;病死组 8 例(28.50±10.41)个月;男、女性比例为 1.2:1.0。选取同期本院健康体检儿童 42 例作为对照组,平均年龄(22.95±10.72)个月,男、女性比例为 1:1。各组研究对象的年龄、性别等一般资料比较,差异无统计学意义($P>0.05$),具有可比性。

1.2 方法 所有研究对象于入院的当日或次日采集外周静脉血标本,置于 EDTA-K₂ 抗凝管,采用 Sysmex XN-9000 全自动血球仪及配套试剂进行血常规检测,记录各组白细胞(WBC)、中性粒细胞(NEUT)、淋巴细胞(LYMPH)、血小板(PLT)等计数,并计算

NLR、PLR 值。标本装于普通生化管,分离血清使用 Beckman 5800 全自动生化分析仪及配套试剂进行 CRP 检测。

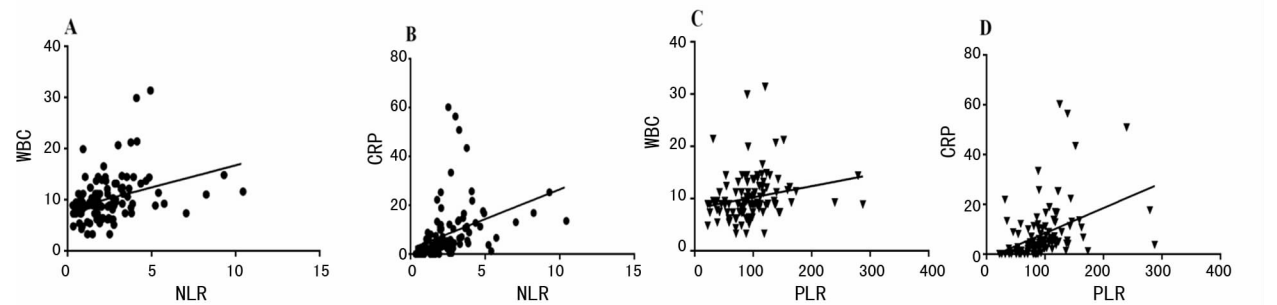
1.3 统计学处理 采用 SPSS19.0 统计软件进行数据分析,计量资料以 $\bar{x}\pm s$ 表示,两组间比较采用独立样本 t 检验。使用 GraphPad Prism 6.0 进行制图。 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 各组患儿 NLR、PLR、CRP 水平结果比较 各组 WBC 水平比较,差异均有统计学意义($P<0.01$);NEUT 水平在普通组与对照组、病死组与危重组之间差异无统计学意义($P>0.05$)外,其余各组间比较差异均有统计学意义($P<0.05$);LYMPH 水平除重症组和普通组高于对照组外($P<0.05$),其余各组比较差异无统计学意义($P>0.05$);重症组、危重组、病死组 PLT 水平均高于普通组和对照组($P<0.05$);NLR 除普通组与对照组、病死组与危重组差异无统计学意义($P>0.05$)外,其余各组比较均显著升高($P<0.01$);各组 PLR 水平均高于对照对和普通组,但重症组、危重组、病死组之间比较,差异无统计学意义($P>0.05$);CRP 水平随疾病加重而升高,各组间比较差异有统计学意义($P<0.01$)。见表 1。

表 1 各组患儿各项指标水平结果比较($\bar{x}\pm s$)

项目	对照组	普通组	重症组	危重组	病死组
WBC	5.42±1.54	7.74±1.91	10.37±2.80	11.44±3.65	19.82±8.22
NEUT	4.97±1.22	5.00±2.30	6.72±2.22	10.24±6.54	11.63±5.11
LYMPH	2.93±0.55	4.32±2.32	3.54±1.58	3.29±1.57	3.01±1.04
PLT	255.10±34.86	250.20±91.67	335.80±79.33	346.30±107.10	365.30±126.00
NLR	1.78±0.60	1.49±0.90	2.25±1.19	3.77±2.69	3.84±0.82
PLR	90.69±23.34	68.25±25.94	107.50±40.74	115.90±27.26	142.40±81.73
CRP	1.67±0.87	3.12±3.92	4.76±3.18	13.89±12.24	33.28±15.38



注:A 表示 NLR 与 WBC 的相关性;B 表示 NLR 与 CRP 的相关性;C 表示 PLR 与 WBC 的相关性;D 表示 PLR 与 CRP 的相关性

图 1 NLR、PLR 与 WBC、CRP 的相关性

2.2 NLR、PLR 与 WBC、CRP 的相关性 病例组 112 例 HFMD 患儿进行相关性分析显示,NLR 与 WBC($R^2=0.34$,95%CI:0.16±0.49, $P<0.01$)、NLR 与 CRP($R^2=0.39$,95%CI:0.22±0.54, $P<0.01$)、PLR 与 WBC($R^2=0.21$,95%CI:0.02±

0.38, $P<0.05$)、PLR 与 CRP($R^2=0.41$,95%CI:0.24±0.55, $P<0.01$)呈正相关关系。见图 1。

3 讨论

HFMD 是通过多种传播途径引起婴幼儿感染为主的儿科传染病,EV71 和 CA16 是导致 HFMD 最常

见的病原体。目前 HFMD 发病机制尚不明确,但很多研究发现肠道病毒感染后,可造成患儿多种免疫细胞、炎性细胞、细胞因子、炎性因子水平异常,致使患儿免疫炎性系统的功能异常,激发全身免疫炎性反应^[9-11]。外周血 NLR、PLR 是反映机体炎性状态和免疫状态的综合性评价指标,在肿瘤和感染性疾病中具有重要的临床意义^[5,12]。CRP 是一种常见急性时相反应蛋白,在感染性疾病的诊疗中有着广泛的应用,与 HFMD 的发生、发展密切相关^[13-14]。但目前鲜有 NLR、PLR 联合 CRP 在 HFMD 检测的相关报道,本研究探讨 HFMD 患儿 NLR、PLR、CRP 等炎性指标的变化,分析其与 HFMD 发生、发展的关联性。

NLR、PLR 是反映患儿机体免疫炎性状态的良好指标,NLR、PLR 升高表示 NEUT 相对增多,LYMPH 相对减少,炎性反应增强,而免疫状态不良,NLR、PLR 越高,发生危重症的风险越大,与本研究相符^[15-17]。本研究结果表明,NLR、PLR 随疾病的加重而升高,NLR 水平除普通组与对照组、病死组与危重组之间差异无统计学意义($P>0.05$)外,其余各组比较均显著升高($P<0.01$);各组 PLR 水平均高于对照组和普通组,但重症组、危重组、病死组之间比较,差异无统计学意义($P>0.05$),提示 NLR、PLR 与 HFMD 患儿疾病发生、发展密切相关。

本研究结果显示,WBC 水平升高在各组之间比较,差异有统计学意义($P<0.01$);NEUT 水平在普通组与对照组、病死组与危重组之间比较,差异无统计学意义($P>0.05$)外,其余各组之间比较,差异有统计学意义($P<0.05$);CRP 水平随疾病加重而升高,各组之间比较差异有统计学意义($P<0.01$)。WBC、NEUT、CRP 均是反映机体炎性反应的常用指标,WBC 明显增高是诊断重症 HFMD 指标,其升高可能是重症 HFMD 患儿自主神经系统功能异常的原因^[18]。且危重症患儿的机体处于免疫炎性应激状态,外周血 WBC、NEUT 升高程度与病情严重程度密切相关^[19]。CRP 是感染性疾病早期诊断和鉴别的良好指标,研究发现 HFMD 患儿的 CRP 均显著增高,本研究发现,CRP 水平随疾病的加重而升高,各组之间比较差异有统计学意义($P<0.01$),CRP >40 mg/L 是 HFMD 病毒感染引起心肺衰竭的危险因素;NLR 与 WBC($R^2=0.34$, $P<0.01$)、NLR 与 CRP($R^2=0.39$, $P<0.01$)、PLR 与 WBC($R^2=0.21$, $P<0.05$)、PLR 与 CRP($R^2=0.41$, $P<0.01$)呈正相关关系,说明 NLR、PLR 水平变化与 HFMD 患儿病情变化密切相关,对 HFMD 的诊断、治疗及预后判断具有重要的临床意义。

本研究结果表明,HFMD 病毒感染患儿炎性指标 NLR、PLR、WBC、NEUT、CRP 水平随疾病的加重而升高,且 NLR、PLR 与 WBC、CRP 呈正相关。NLR、

PLR 可作为一种经济、简便的炎性指标,用于 HFMD 的诊疗及预后判断。尤其是在条件有限的基层单位,NLR、PLR 对 HFMD 的病情判断具有重要的临床意义。

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选药物^[14]。

综上所述,泸州地区肺结核耐多药情况严重,以男性、中老年、农民、低收入、低文化水平、复治患者为主。MDR-TB 患者外出打工普遍;合并其他疾病的比例高,以慢性疾病为主。患者依从性普遍较差。

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