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HIV 感染患者血清 IL-2、IL-16 水平和 CD4 细胞计数的相关性分析 *

陈寒冬^{1a} 吴立海^{1a} 苗亮^{1b} 闫晶² 张英³ 郎晓林^{1a} 郑岳^{1b} 董敬超^{1c}

(1 秦皇岛市第三医院 a.感染科;b.肝病科;c.检验科 河北 秦皇岛 066000;2 吉林市人民医院肿瘤科 吉林 吉林 132600;

3 长春市传染病医院感染科 吉林 长春 133011)

摘要 目的:探讨人类免疫缺陷病毒(HIV)感染患者血清白细胞介素-2(IL-2)、白细胞介素-16(IL-16)水平和 CD4 细胞计数的相关性。**方法:**选择 2017 年 3 月至 2018 年 3 月我院接诊的 50 例 HIV 感染患者作为观察组及同期于我院进行体检的健康人群 40 例作为对照组。检测和比较两组血清 IL-2、IL-16 与 CD4 细胞计数,并分析观察组血清 IL-2、IL-16 与 CD4 细胞计数的相关性。**结果:**观察组患者血清 IL-2、IL-16 水平及 CD4 细胞计数显著低于对照组,差异具有统计学意义($P<0.05$);Pearson 相关分析结果显示观察组患者血清 IL-2、IL-16 水平与 CD4 细胞计数呈显著正相关($r=0.514, r=0.499, P<0.05$)。**结论:**HIV 感染患者血清 IL-2、IL-16 水平显著下调,并与 CD4 细胞计数呈显著正相关,可在一定程度上反映 HIV 感染的严重程度。

关键词:人类免疫缺陷病毒;白细胞介素-2;白细胞介素-16;CD4 细胞计数;相关性

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Correlative Analysis of the Serum il-2, il-16 Levels with CD4 Cell Counts in the HIV-infected Patients*

CHEN Han-dong^{1a}, WU Li-hai^{1a}, MIAO Liang^{1b}, YAN Jing², ZHANG Ying³, LANG Xiao-lin^{1a}, ZHENG Yue^{1b}, DONG Jing-chao^{1c}

(1 a.Department of infectious diseases; b.Department of liver disease; c.Department of laboratory, the Third Hospital of Qinhuangdao, Qinhuangdao, Hebei, 066000, China;

2 Department of Oncology, people's Hospital of Jilin City, Jilin, Jilin, 132600, China;

3 Department of infectious diseases, Changchun infectious disease hospital, Changchun, Jilin, 133011, China)

ABSTRACT Objective: To study Analysis of the Correlation between serum il-2, il-16 levels and CD4 cell counts in hiv-infected patients. **Methods:** 50 patients with HIV infection admitted to our hospital from March 2017 to March 2018 were selected as the observation group and 40 healthy people who underwent physical examination in our hospital during the same period as the control group, the serum il-2, il-16 and CD4 cell counts in the two groups were detected and compared, and the correlation between serum il-2, il-16 and CD4 cell counts in the observation group was analyzed. **Results:** Serum il-2, il-16 levels and CD4 cell counts in the observation group were significantly lower than those in the control group, with statistically significant differences ($P<0.05$). Pearson correlation analysis showed that serum il-2 and il-16 levels in the observation group were significantly positively correlated with CD4 cell count ($r=0.514, r=0.499, P<0.05$). **Conclusion:** Serum il-2 and il-16 levels of hiv-infected patients were significantly down-regulated and positively correlated with CD4 cell count, which can reflect the severity of HIV infection to some extent.

Key words: Human immunodeficiency virus; Interleukin-2; Interleukin-16; CD4 cell count; The correlation

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前言

HIV 是一种危害性较大的传染病,患者出现 CD4 细胞下降,破坏患者的免疫系统,使人体丧失免疫功能,已成为危害人群健康的公共卫生问题^[1,2]。HIV 在人体内的潜伏期在 10 年左右,当 HIV 削弱体内的免疫系统时,人体就会发生感染^[3,4]。白细胞介素是由多种细胞产生并作用于多种细胞的一类细胞因子,IL-2 又称 T 细胞生长因子,对多种细胞类型产生作用,能够

活化 T 细胞,促进细胞因子的产生^[5,6]。IL-16 是由激活的细胞分泌的细胞因子,最初被称为淋巴细胞趋化因子,对 T 细胞、肥大细胞等的生长增殖分化、细胞间信息的传递有着重要的调节作用^[7,8]。有报道显示 IL-2、IL-16 水平与 T 淋巴细胞的存活、增殖、分化等起着重要的调节作用^[9,10],但其具体意义还需进一步探讨。本研究通过检测 HIV 感染患者血清 IL-2、IL-16 水平的变化,并分析其与 CD4 细胞计数的相关性,旨在为 HIV 感染临床诊断和治疗提供参考依据,现将结果报道如下。

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作者简介:陈寒冬(1980-),女,硕士研究生,主治医师,研究方向:感性疾病的临床研究,电话:18903355203,E-mail:sunlinggangzj@163.com

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1 资料与方法

1.1 一般资料

研究已获得我院伦理委员会批准实施。选择 2017 年 3 月至 2018 年 3 月我院接诊的 50 例 HIV 感染患者为观察组,包括男 38 例,女 12 例,年龄 19~75 岁,平均(46.95± 8.51)岁。并选择同期于我院进行体检的健康人群 40 例作为对照组,包括男 21 例,女 19 例,年龄 18~74 岁,平均(47.81± 8.62)岁。两组患者的性别($\chi^2=0.020$, $P=0.887$)、年龄($t=0.474$, $P=0.637$)等一般资料比较均无明显差异,具有可比性。

纳入标准:(1)近时无尿路感染;(2)无免疫系统疾病史;(3)未合并肾、肺、肝等脏器重大疾病者。排除标准:(1)妊娠期及哺乳期妇女;(2)存在精神疾病、沟通障碍者;(3)不配合本次研究,依从性差者。

1.2 方法

所有患者抽取空腹静脉血 5 mL,3000 r/min 离心 10 min,

提取上层血清后置入 EP 管,并置于冷冻箱内储存以备检测,血清 IL-2、IL-16 采用酶联免疫吸附法进行检测(试剂盒购于赫澎(上海)生物科技有限公司),仪器均使用 Formacs TOC/TN 分析仪。所有操作均严格按照试剂盒说明进行;CD4 细胞计数采用美国 BD 公司 BDFACSCalibur 全自动流式细胞仪进行测定。

1.3 统计学分析

本研究数据选择 SPSS22.0 进行统计,计量资料用均数±标准差($\bar{x} \pm s$)表示,组间两两比较使用独立样本 t 检验,使用 Pearson 相关性分析分析血清 IL-2、IL-16 水平和 CD4 细胞计数的相关性, $P<0.05$ 表示差异具有统计学意义。

2 结果

2.1 HIV 感染患者与对照组血清 IL-2、IL-16 水平的比较

观察组患者血清 IL-2、IL-16 水平显著低于对照组,差异具有统计学意义($P<0.05$),见表 1。

表 1 HIV 感染患者和正常对照组血清 IL-2、IL-16 水平的比较($\bar{x} \pm s$)

Table 1 Comparison of the serum IL-2 and IL-16 levels between patients with HIV infection and normal controls($\bar{x} \pm s$)

Groups	n	IL-2($\mu\text{g/L}$)	IL-16(ng/mL)
Observation group	50	2.37± 0.59	241.74± 74.95
Control group	40	3.64± 1.21	511.36± 38.52
t value		6.522	20.658
P value		0.000	0.000

2.2 HIV 感染患者与对照组 CD4 细胞计数的比较

计学意义($P<0.05$),见表 2。

观察组患者 CD4 细胞计数显著低于对照组,差异具有统

表 2 HIV 感染患者和正常对照组 CD4 细胞计数的比较($\bar{x} \pm s$)

Table 2 Comparison of the CD4 cell counts between patients with HIV infection and normal controls($\bar{x} \pm s$)

Groups	n	CD4 cell count(A/mL)
Observation group	50	371.52± 65.21
The control group	40	1035.23± 131.08
t value		31.315
P value		0.000

2.3 HIV 感染患者血清 IL-2、IL-16 水平和 CD4 细胞计数的相关性分析

水平与 CD4 细胞计数呈显著正相关($r=0.514$, $r=0.499$, $P<0.05$),见表 3。

Pearson 相关分析结果显示 HIV 感染患者血清 IL-2、IL-16

表 3 HIV 感染患者血清 IL-2、IL-16 水平和 CD4 细胞计数的相关性

Table 3 Correlation of the serum IL-2 and IL-16 levels with the CD4 cell count

Indicators	CD4 cell count	
	r	P
IL-2	0.514	0.000
IL-16	0.499	0.017

3 讨论

HIV 是人类免疫缺陷病毒感染引起的免疫缺陷性传染病,其发病机制是人体免疫系统的 CD4 遭受破坏,CD4 细胞减少,

免疫功能紊乱所致^[11,12]。患者由于免疫功能下降容易导致感染,感染则是 HIV 患者死亡的重要原因,且能够引起血液系统如红白细胞、血小板减少等,发生率为 63%~95%^[13,14]。HIV 感染者要经过数年才会发展成艾滋病病人,由于其机体抵抗力极度下降会出现多种感染,如发现不及时,后期还会发生恶性肿瘤,并长期消耗,以至全身衰竭而死亡。因此,早期诊断 HIV 感染具有十分重要的意义^[15,16]。

CD4 细胞是人体免疫系统中的重要指标,也是 HIV 的受体,CD4 细胞在 HIV 中起着“通风报信”的作用,当艾滋病毒进入人体后,CD4 细胞则会受到感染^[17,18]。有研究显示 CD4 淋巴细胞是 HIV 选择性攻击的靶细胞,已成为临床上评价机体免疫状态的重要指标^[19,20]。本研究结果显示 HIV 感染患者 CD4 细胞计数明显低于正常人群,提示 CD4 细胞检测对艾滋病治疗效果的判断和对患者免疫功能的判断有着重要参考意义。

IL-2 是由 T 细胞产生的含有 113 个氨基酸残基的糖蛋白,可诱导 B 细胞生长繁殖,促进抗体分泌,增强 NK 杀伤活性及产生细胞因子,诱导 LAK 细胞产生^[21,22]。有研究显示 HIV 感染患者血清 IL-2 水平明显降低^[23,24]。本研究结果显示 HIV 感染患者血清 IL-2 水平显著低于正常人群患者,且与 CD4 细胞计数呈正相关,与上述观点一致,提示当发生 HIV 感染后,患者血清 IL-2 变化较为明显,分析其原因是因为恶变的细胞密度较低,IL-2 的密度较高,可诱导 B 细胞生长繁殖,促进抗体分泌,同时能活化 T 细胞,促进细胞因子产生。IL-16 又称为淋巴细胞趋化因子,属于分泌型糖蛋白,是 CD4 淋巴细胞分泌的一种可溶性抗病毒淋巴因子,其与 CD4 相结合可引发一种负调节信号转导机制,从而抑制 HIV 增殖等生物学活性,对 HIV 患者具有免疫重建的作用^[25-27]。国外许多学者指出 IL-16 抑制 HIV 复制是阻止 HIV 病毒进入后的表达步骤^[28-30]。本研究结果显示 HIV 感染患者血清 IL-16 水平显著低于正常人群患者,且与 CD4 细胞计数呈正相关,提示当发生 HIV 感染后,血清 IL-16 水平随之降低,分析其原因是因为 IL-16 具有增强细胞抑制 HIV 病毒复制的能力,同时具有免疫重建的功能,可减弱 HIV 扩散和感染对免疫系统的影响。

综上所述,HIV 感染患者血清 IL-2、IL-16 水平显著下调,并与 CD4 细胞计数呈显著正相关,可在一定程度上反映 HIV 感染的严重程度。

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