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脾功能亢进患者行脾切除术与部分脾动脉栓塞术前后免疫功能的对比研究*

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摘要 目的:研究脾切除术与部分脾动脉栓塞术对脾功能亢进患者的影响。**方法:**选取我院外科确诊为乙型病毒性肝炎后肝硬化伴脾功能亢进症患者 38 例,通过随机数表法将所有患者平分为观察组和对照组,观察组给予部分脾动脉栓塞术,对照组给予脾切除术。检测术前术后血细胞计数、细胞免疫指标和体液免疫指标。**结果:**术后 7 天,对照组的红细胞略低于实验组($\chi^2=0.118, P=0.906$);对照组的白细胞高于实验组($\chi^2=6.095, P<0.001$);对照组的血小板显著低于实验组($\chi^2=17.263, P<0.001$);术后 28 天,对照组的红细胞显著低于实验组($\chi^2=7.981, P<0.001$);对照组的白细胞明显高于实验组,差异有统计学意义($\chi^2=4.862, P<0.001$);对照组的血小板低于实验组($\chi^2=2.165, P=0.037$);术后 7 天,对照组的 CD3 略低于实验组($t=0.606, P=0.548$),对照组的 CD4 明显低于实验组,CD8 显著高于实验组,CD4/CD8 低于实验组,差异均有统计学意义($P<0.001$);术后 28 天,对照组的 CD3 略低于实验组($t=0.948, P=0.349$);对照组的 CD4 略低于实验组($t=2.742, P=0.009$);对照组的 CD8 显著高于实验组,CD4/CD8 低于实验组,差异均无统计学意义($P>0.05$);术后 7 天,对照组的 IgM 高于实验组,对照组的 IgG 略高于实验组,IgA 低于对照组,但差异无统计学意义($P>0.05$);术后 28 天,对照组的 IgM 高于实验组,对照组的 IgG 略高于实验组,但差异无统计学意义($P>0.05$);对照组的 IgA 为(2.76 ± 1.37)g/L,明显低于实验组的(3.79 ± 1.69)g/L($t=2.063, P=0.046$)。 **结论:**部分脾动脉栓塞术能有效改善脾亢症状,调节脾脏功能,提升全身性免疫功能,值得在临床中推广。

关键词:脾功能亢进;脾动脉栓塞术;免疫;血细胞

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The Contrastive Study on the Splenic Function of Hypersplenism Patients before and after Operation of Partial Splenic Embolization or Splenectomy*

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ABSTRACT Objective: To study the effects of splenectomy and partial splenic artery embolization on patients with hypersplenism.

Methods: In this study included were 38 cases of patients diagnosed with liver cirrhosis after viral hepatitis B and hypersplenism in our hospital. By the method of random number table, they were divided into the observation group and the control group. The observation group was given partial splenic artery embolization, and the control group was treated with splenectomy. Blood cell count, cellular immunity and humoral immunity were detected before and after operation. **Results:** On the 7th day after operation, the red blood cell level in the control group was slightly lower than in the experimental group ($\chi^2=0.118, P=0.906$); The white blood cell level in the control group were higher than in the experimental group ($\chi^2=6.095, P<0.001$); and the platelet in the control group was significantly lower than in the experimental group ($\chi^2=17.263, P<0.001$). After 28 days, the red blood cell level in control group was significantly lower than in the experimental group ($\chi^2=7.981, P<0.001$); while white blood cell levels in the control group was significantly higher than that in the experimental group, and difference had statistical significance ($\chi^2=4.862, P<0.001$). The platelet in control group remained lower than in the experimental group ($\chi^2=2.165, P=0.037$). At 7 days after surgery, the CD3 level in the control group was slightly lower than in the experimental group ($t=0.606, P=0.548$), and the CD4 level was significantly lower than in the experimental group, but CD8 level was significantly higher than in the experimental group. The CD4/CD8 was lower in the control group than in the experimental group. All the differences were statistically significant ($P<0.001$). The IgM was higher, and the IgG slightly higher, but IgA lower in control group than in the experimental group, but the differences were not statistically significant ($P>0.05$). After 28 days, the CD3 and CD4 were slightly lower in the control group than in the experimental group ($t=0.948, P=0.349$; $t=2.742, P=0.009$), while the CD8 was significantly higher in the control group than in the experimental group, and CD4/CD8 was lower than that of the experimental group. All the differences were not statistically significant ($P>0.05$). The IgM was higher and IgG was slightly higher in the control group than in the experimental

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group, but the differences were not statistically significant ($P>0.05$). The IgA was (2.76 ± 1.37) g/L in the control group, but (3.79 ± 1.69) g/L in the experimental group. The IgA was significantly lower in the control group than in the experimental group ($t=2.063$, $P=0.046$). **Conclusion:** Partial splenic embolization can effectively improve the symptoms of hypersplenism, regulate spleen function, and enhance the body immunity, so it is worthy of clinical promotion.

Key words: Hypersplenism; Splenic artery embolization; Immunity; Blood cell

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前言

脾功能亢进症(hypersplenism)是一种综合症,临床主要症状以脾脏肿大、血细胞减少为主^[1]。目前治疗方案主要为部分脾动脉栓塞术(Partial splenic embolization, PSE),通过切断或减少脾实质的供血实现脾实质机化及外周梗死,其实质是通过切除红细胞红髓聚集地而减弱脾脏巨噬细胞活性,从而改善脾功能亢进症的临床表现 IgM^[2]。PSE 的优点不仅保留了脾组织,还能平衡脾脏免疫机制^[3],本实验研究 PSE 对脾功能亢进的影响,为临床治疗提供一定参考,先报道如下。

1 资料与方法

1.1 一般资料

选取我院 2013 年 1 月至 2015 年 12 月外科确诊为乙型病毒性肝炎伴脾功能亢进症患者 38 例,其中男性 22 例,女性 16 例,年龄为 46-74 岁,平均年龄为 (60.21 ± 4.60) 岁,通过随机数表法将所有患者平分为观察组和对照组,观察组给予部分脾动脉栓塞术,对照组给予脾切除术,两组在性别比例及年龄分部等一般情况差异无统计学意义($P>0.05$)。本实验为回顾分析实验,均向所有患者告知实验相关事宜并获得患者签署知情同意书。

1.2 纳入及排除标准

纳入标准:1)诊断符合第八届中国抗癌协会确定的原发性乙型病毒性肝炎诊断标准^[4];2)三个月内无放疗、化疗史;3)半年内无免疫治疗。排除标准:1)伴随肾功能衰竭;2)伴随系统性免疫疾病;3)生存期低于 3 个月。

1.3 方法^[6]

1.3.1 脾切除术 对照组给予常规麻醉,分离脾脏周边组织的韧带,对脾动脉进行结扎后切除脾脏。部分脾动脉栓塞术:在数字减影 X 光机引导下,采用 Seldinger 穿刺术,将 5F 导管伸入至需要穿刺的右股动脉,经髂总动脉、腹主动脉、腹腔动脉干,至脾动脉,行造影检查^[7]。截取所需影像资料,确定脾动脉及其

分支走向后将导管置入脾下极动脉,从导管处注入明胶海绵颗粒混悬剂,实现脾下极动脉栓塞。由脾肿大情况及脾亢程度决定栓塞面积,一般控制在 60%以下,40%以上^[8]。造影结束后拔除导管,消毒创口并进行加压止血包扎。术后 3 日内给予常规抗生素服用,若出现发热、头晕呕吐、疼痛等栓塞病理性反应需对症治疗。

1.3.2 对所有患者进行血细胞计数 红细胞、白细胞、血小板,使用美国 FACSCalibur 流式细胞仪检测 CD3、CD4、CD8 所占细胞比例。使用全自动化学发光免疫分析仪检测血清中 IgA、IgM、IgG 含量。

1.4 监测指标

血细胞变化:监测术前、术后第 7 天、术后第 28 天红细胞、白细胞及血小板计数。细胞亚群:采集术前、术后第 7 天及术后第 28 天 CD3、CD4、CD8 所占细胞比例,并计算得出 CD4/CD8 比值。体液免疫指标:采集术前、术后第 7 天及术后第 28 天血清中 IgA、IgM、IgG 含量。

1.5 统计学方法

计数资料行 χ^2 检验或确切概率法,计量资料用 $(\bar{x} \pm s)$ 表示,组间比较采用两样本 t 检验,如结果提示 $P<0.05$,差异存在统计学意义。

2 结果

2.1 对比治疗前后外周血细胞计数

术后 7 天,对照组白细胞高于实验组,差异有统计学意义;对照组血小板显著低于实验组,差异有统计学意义;术后 28 天,对照组红细胞与血小板均低于实验组,差异有统计学意义;对照组白细胞明显高于实验组,差异有统计学意义(表 1)。

2.2 对比治疗前后 T 细胞亚群比例

术后 7 天:对照组 CD4 明显低于实验组,CD8 显著高于实验组,CD4/CD8 低于实验组,差异均有统计学意义($P<0.001$)。术后 28 天:对照组 CD4 低于实验组,差异有统计学意义($t=2.742$, $P=0.009$);对照组 CD8 显著高于实验组,CD4/CD8 低于实

表 1 治疗后两组外周血细胞计数比较

Table 1 Comparison of the peripheral blood cell counts between two groups after treatment

Groups	Postoperation 7d			Postoperation 28d		
	Erythrocyte($10^9/L$)	Leukocyte($10^9/L$)	Platelet($10^{12}/L$)	Erythrocyte($10^9/L$)	Leukocyte($10^9/L$)	Platelet($10^{12}/L$)
Control group	3.42 ± 0.68	8.47 ± 0.71	98.54 ± 8.23	3.45 ± 0.87	7.49 ± 0.89	165.22 ± 22.13
Experimental group	3.45 ± 0.87	6.25 ± 1.42	116.88 ± 10.72	6.25 ± 1.42	5.63 ± 1.41	181.18 ± 23.29
χ^2	0.118	6.095	17.263	7.981	4.862	2.165
P	0.906	<0.001	<0.001	<0.001	<0.001	0.037

Note: a compared with before treatment, $P<0.05$.

验组,差异均无统计学意义($P>0.05$)(表 2)。

术后 7 天,两组患者 IgM、IgG 与 IgA 指标变化不明显;术

后 28 天,对照组 IgA 为(2.76 ± 1.37)g/L,明显低于实验组的

(3.79 ± 1.69)g/L,差异有统计学意义($t=2.063$, $P=0.046$)(表 3)。

表 2 治疗前后 T 细胞亚群比例比较

Table 2 Comparison of the percentages of T cell subgroups before and after the treatment

Groups	Postoperation 7d			
	CD3(%)	CD4(%)	CD8(%)	CD4/CD8
Control group	67.03± 3.47	38.03± 3.84	26.18± 5.56	1.69± 0.24
Experimental group	67.61± 2.31	44.47± 2.54	21.38± 2.12	2.11± 0.32
t	0.606	6.097	4.181	4.576
P	0.548	<0.001	<0.001	<0.001

续表 2

Groups	Postoperation 28d			
	CD3(%)	CD4(%)	CD8(%)	CD4/CD8
Control group	68.01± 3.21	41.03± 3.84	25.18± 5.56	1.79± 0.24
Experimental group	68.89± 2.46	43.92± 2.52	23.38± 2.87	1.92± 0.30
t	0.948	2.742	1.254	1.474
P	0.349	0.009	0.217	0.149

Note: a compared with before treatment, $P<0.05$.

表 3 治疗前后体液免疫指标浓度比较

Table 3 Comparison of the concentration of humoral immune indexes before and after treatment

Groups	Postoperation 7d			Postoperation 28d		
	IgM(g/L)	IgG(g/L)	IgA(g/L)	IgM(g/L)	IgG(g/L)	IgA(g/L)
control group	2.22± 1.01L	17.24± 8.82	2.75± 1.37	2.35± 1.05	16.45± 8.82	2.76± 1.37
Experimental group	1.82± 0.38	16.74± 5.44	2.78± 1.50	2.15± 0.56	18.08± 3.66	3.79± 1.69
t	1.615	0.210	0.064	0.732	0.744	2.063
P	0.115	0.835	0.949	0.469	0.462	0.046

Note: a compared with before treatment, $P<0.05$.

3 讨论

作为人体重要的储血器官,脾脏具备破坏并吞噬破坏血细胞的功能。当肝脏发生器质性病变或脾感染时可引起脾功能亢进,尤其是肝硬化^[9]。脾亢可分为原发性脾亢和继发性脾亢,原发性脾亢主要以全血细胞减少、原发性脾粒细胞减少等为主要病理表现为特征,病因往往不明确。而继发性脾亢较为常见,病因较为明确。其临床表现主要为脾脏肿大、血细胞减少(红细胞、白细胞或血小板可以单独或同时减少)、骨髓呈造血细胞增生象^[10-13]。能减弱脾脏对血细胞的破坏能力和吞噬能力,部分乙型病毒性肝炎患者因血细胞数目下降而无法进行介入治疗。PSE 术可导致脾组织部分梗塞,从而引起广泛灶性梗死,达到减弱肝脏破坏血细胞功能的作用,从而使白细胞数量提升,从而治疗脾亢症状,为下一步乙型病毒性肝炎治疗奠定良好环境^[14,15]。

根据研究数据可得,术后 7 天,对照组红细胞略低于实验组($\chi^2=0.118$, $P=0.906$); 对照组白细胞高于实验组($\chi^2=6.095$,

$P<0.001$); 对照组血小板显著低于实验组($\chi^2=17.263$, $P<0.001$); 术后 28 天, 对照组红细胞显著低于实验组($\chi^2=7.981$, $P<0.001$);对照组白细胞明显高于实验组,差异有统计学意义; 对照组血小板低于实验组($\chi^2=2.165$, $P=0.037$)。表明性 PSE 术后有效提高外周血白细胞和血小板水平,但红细胞数量的变化不明显。术后 7 天, 对照组 CD3 略低于实验组($t=0.606$, $P=0.548$), 对照组 CD4 明显低于实验组,CD8 显著高于实验组,CD4/CD8 低于实验组,差异均有统计学意义($P<0.001$)。术后 28 天,对照组 CD3 略低于实验组($t=0.948$, $P=0.349$);对照组 CD4 略低于实验组($t=2.742$, $P=0.009$);对照组 CD8 显著高于实验组,CD4/CD8 低于实验组,差异均无统计学意义($P>0.05$)。表明乙型病毒性肝炎合并脾亢患者可导致 CD4 明显降低,CD8 为显著提升,从而导致 CD4/CD8 比值下降。造成机体免疫能力减弱,调节功能下降^[16,17]。当进行治疗后能逐渐恢复机体免疫能力,且并未破坏机体免疫机制,从而降低了脾脏的感染率。在体液免疫上,术后 28 天,对照组的 IgM 高于实验组,对照组

的 IgG 略高于实验组,但差异无统计学意义($P>0.05$);对照组 IgA 为 $(2.76\pm 1.37)\text{g/L}$, 明显低于实验组的 $(3.79\pm 1.69)\text{g/L}$ ($t=2.063, P=0.046$)。IgG 能激活补体,促进吞噬细胞的吞噬功能,而 IgM 有较强的杀菌及吞噬作用,同时还能中和毒性,两者在免疫机制中占关键作用,而 IgA 通过阻碍病菌对细胞壁的吸附和入侵从而达到抗感染作用。术后第 7 天三者均为有明显变化,表明患者的体液免疫恢复较慢,在第 28 天 IgA 得到明显提升,其余两项虽未明显提升,但可证实为提升了脾亢患者的免疫能力^[18]。

据国外相关研究报道^[19],36 例脾亢患者行 PSE 术,术后第 7 天外周血红细胞数、白细胞数、血小板数与术前差异有统计学意义,与本文研究有轻微出入,而脾亢患者自身可伴随一种或多种血细胞减弱,猜测与患者的病种及病程相关。同时国内相关学者也表示^[20]PSE 术能提高患者 CD4 的比例,降低 CD8 的比例,与本文研究一致。

综上所述,PSE 具备创伤小、痛苦微及术后恢复快得手术特点,同时其疗效为一致认可,能改善或调节脾脏功能,提升全身性免疫功能,在合理选择梗死面积下能减免更多梗死并发症,严格控制梗死面积可大大降低患者术后不适度,更利于患者术后恢复,值得在临床中推广。

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