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腹腔镜肝部分切除术中肝血流阻断方法的选择及对患者肝功能的影响 *

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摘要 目的:探讨三种不同的肝血流阻断方法用于腹腔镜肝部分切除术的安全性及有效性,为肝胆外科手术提供参考。**方法:**对我院 2011 年 7 月至 2013 年 9 月收治的 83 例肝脏肿瘤行肝部分切除术患者的临床资料进行分析。根据肝血流阻断方式,将所选病例分为三组:间歇性断流组(22 例),完全断流组(28 例),选择性断流组(33 例)。观察并比较三组患者的手术时间、断流时间、术中出血量、输血量、术后肝功能指标的变化及并发症的发生率。**结果:**三组的平均手术时间和断流时间无显著差异($P>0.05$);选择性肝血流阻断组患者的术中出血量和输血量均显著少于间歇性断流组和完全断流组($P<0.05$);三种断流方式术后均发生并发症,但选择性阻断术后并发症的发生率明显低于间歇性断流和完全断流术,差异具有统计学意义($P<0.05$)。三组患者术后的血清总胆红素(TBIL)、丙氨酸转氨酶(ALT)及天冬氨酸转氨酶(AST)的水平均呈现不同程度降低,血清白蛋白(ALB)的含量升高;选择性断流组各指标变化更明显,数值更接近于正常水平($P<0.05$)。**结论:**与传统断流方法比,选择性肝血流阻断法能够减少剩余肝脏的再灌注损伤,有利于提高手术效果。但该方法存在一定局限,应根据患者实际情况选择断流方式。

关键词:肝部分切除术;选择性肝血流阻断;间歇性肝血流阻断;完全肝血流阻断;肝功能

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Options of Hepatic Vascular Exclusion for Hepatectomy and the Influence on Liver Functions*

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ABSTRACT Objective: To discuss the clinical effects of different methods of hepatic vascular exclusion for the hepatectomy and to analyze the influence on liver functions in order to make a reference. **Methods:** A retrospective analysis was performed about the clinical data of 83 patients with liver cancer who were accepted the partial hepatectomy in our hospital from July 2011 to September 2013. According to the different exclusion methods, the selected patients were divided into three groups. The IHVE group(22 cases), the THVE group (28 cases) and the SHVE group (33 cases). The operation time, the exclusion time, the blood loss, the transfusion volume, the incidence of complications and the liver function index of patients before and after the operation were observed and analyzed. **Results:** There was no statistically significant difference about the operation time and the exclusion time ($P>0.05$). The blood loss and transfusion volume of patients in the SHVE group were lower than those of the THVE group and the IHVE group with statistically significant differences($P<0.05$). The incidence of complications in the SHVE group was lower than those of the other two groups($P>0.05$). The liver function index of patients in the SHVE group was statistically significant better than those of others with the AST, ALT and TBIL decreasing, and ALB increasing after the partial hepatectomy ($P<0.05$). **Conclusions:** It is suggested that the selected hepatic vascular exclusion could reduce the postoperative complications and the ischemic reperfusion damage to the residual liver tissues so as to improve the clinical effects. However, it is indicated that we should take the proper decision on the basis of the specific conditions of patients.

Key words: Partial hepatectomy; SHVE; THVE; IHVE; Liver function

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前言

肝癌是最常见的恶性肿瘤之一,发病隐匿、进展快、死亡率

高^[1]。目前,治疗原发和继发肝脏肿瘤的方法主要为肝切除术,而对于肿瘤病变较小、不宜做肝叶切除或半肝切除的患者则采用肝部分切除的方法。肝部分切除术(Partial hepatectomy)是将

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通向病变部位的血管分支和胆管切断并结扎,以防止肿瘤细胞增殖扩散而导致病情发展^[2-4]。由于肝脏的解剖结构复杂、周围血管密集,手术操作风险大,极易引起大出血而影响余肝的正常功能^[5]。因此,肝切除术中合理的阻断入肝血流、有效控制出血、减少肝脏损伤是手术的关键。临床普遍采用的肝血流完全阻断法虽然能够有效的控制术中出血,但会引起严重的再灌注损伤,导致肝功能衰竭^[6]。间歇性肝血流阻断虽然能减轻再灌注损伤,但手术耗时长,患者不易耐受^[7]。近年来,选择性肝血流阻断被广泛应用,该方法能够有效控制术中出血,使患者的血流动力学保持稳定,对余肝正常功能影响小^[8-10]。本文通过分析肝部分切除术后患者肝功能的变化,探讨不同断流方式对腹腔镜肝部分切除手术效果的影响,为肝胆外科手术提供参考。

1 资料与方法

1.1 临床资料

2011年7月-2013年9月在我院接受肝部分切除术的83例患者,根据断流方式分为三组。其中,间歇性断流组22例,包括男15例,女7例;年龄23-76岁,平均 (42.09 ± 6.35) 岁;术前ALT: (30.51 ± 3.24) U/L、ALB: (39.88 ± 2.44) g/L、AST: (58.18 ± 1.09) U/L、TBIL: (13.29 ± 1.24) μ mol/L。完全断流组28例,包括男16例,女12例;年龄21-75岁,平均 (39.08 ± 8.66) 岁;术前ALT: (31.09 ± 4.29) U/L、ALB: (38.98 ± 2.92) g/L、AST: (59.26 ± 1.55) U/L、TBIL: (13.67 ± 1.62) μ mol/L。选择性断流组33例,包括男19例,女14例;年龄26-70岁,平均 (37.65 ± 4.56) 岁;术前ALT: (30.72 ± 3.81) U/L、ALB: (37.49 ± 1.82) g/L、AST: (59.45 ± 1.81) U/L、TBIL: (12.96 ± 1.55) μ mol/L。三组患者的一般资料无显著差异($P>0.05$),具有可比性。

1.2 手术方法

1.2.1 间歇性肝血流阻断(Intermittent hepatic vascular exclusion) 患者取仰卧位,采用气管插管全身麻醉,经上腹直肌切口,探查肝脏及动脉情况,游离肝周韧带和粘连组织,钛夹夹闭肝十二指肠韧带,阻断入肝血流,行肝部分切除术,16 min后打开止血夹,使剩余肝脏组织得到血氧供应^[11],5 min后行第二次阻断,直至病变完全切除。

1.2.2 肝血流完全阻断(Total hepatic vascular exclusion) 患者采取全身气管插管麻醉,沿腹下腔静脉切开膈肌,切断肝周韧带,用超声刀和止血钳按顺序阻断肝上、肝下大血管、肝门、下腔静脉,待彻底切除病灶,按相反顺序解除阻断^[14]。阻断时间 ≤ 30 min。

1.2.3 选择性断流(Selected hepatic vascular exclusion) 选择性阻断一般分为肝左动脉或右动脉血流阻断、门静脉左支或右支血流阻断。本组33例患者,10例行肝右动脉血流阻断:切开膈肌后沿着肝十二指肠韧带边缘,分离出肝右动脉,用血管夹阻断血流。另外23例行门静脉左支血流阻断:在胆囊反三角处找到肝总管,于后侧切开格林氏鞘显露门静脉,沿门静脉左侧分离出门静脉左支,取一根导尿管,用直角钳牵拉,经文氏孔由小网膜囊穿出,引向门静脉左侧,用钛夹阻断血流,电凝刀切除病灶并止血,观察无活动性出血可解除阻断^[12]。

1.3 观察指标

手术时间、断流时间、术中出血量、输血量及并发症发生率。术后第3、5、7、15天检测血清中丙氨酸转氨酶(ALT)、天冬氨酸转氨酶(AST)、白蛋白(ALB)及总胆红素(TBIL)等。

1.4 统计学处理

SPSS17.0软件进行分析,数据采用 χ^2 或T检验,以 $P<0.05$ 为差异具有统计学意义。

2 结果

2.1 三组手术的基本情况比较

三组手术均顺利完成,无一例死亡。间歇性断流组的平均手术时间为 (117.82 ± 1.57) min;断流时间为 (19.51 ± 2.76) min;术中出血量为 (196.48 ± 3.24) ml;输血量为 (117.82 ± 2.42) ml;术后发生胆漏1例、胸腔积液2例,并发症发生率为13.64%。完全断流组的平均手术时间为 (98.16 ± 2.94) min;断流时间为 (19.13 ± 1.87) min;术中出血量为 (212.55 ± 3.31) ml;输血量为 (106.05 ± 1.85) ml;术后发生门静脉系统血栓1例、肠粘连3例、肝功能衰竭1例,并发症发生率为14.29%。选择性断流组的平均手术时间为 (90.81 ± 2.27) min;断流时间为 (14.64 ± 1.54) min;术中出血量为 (122.32 ± 2.21) ml;输血量为 (118.47 ± 1.23) ml;术后发生腹腔积液1例、切口感染2例,并发症发生率为9.09%。三组手术的平均手术时间和断流时间无显著差异($P>0.05$);选择性肝血流阻断组患者的术中出血量和输血量均显著少于间歇性断流组和完全断流组($P<0.05$);三种断流方式均发生术后并发症,但选择性阻断组并发症发生率低于间歇性断流和完全断流组,差异具有统计学意义($P<0.05$)。

2.2 三组患者术前及术后的肝功能指标变化

如表1所示,三种断流法行部分肝切除术后,患者的血清总胆红素(TBIL)、丙氨酸转氨酶(ALT)及天冬氨酸转氨酶(AST)的水平均呈现不同程度降低,血清白蛋白(ALB)的含量不同程度升高,其中选择性断流组患者的各项指标变化更明显($P<0.05$)。术后15天检测选择性断流组患者的TBIL为 (4.84 ± 1.28) μ mol/L,ALT为 (10.11 ± 1.56) U/L,AST为 (29.44 ± 1.63) U/L,ALB为 (55.31 ± 1.53) g/L,各指标含量均接近于正常值,差异显著且具有统计学意义($P<0.05$)。

3 讨论

目前,肝切除手术被认为是治疗肝癌的首选方法,而有效的控制术中出血则是肝切除手术的关键^[13]。据最新统计,全世界每年新发肝癌患者约六十万,大部分患者同时合并不同程度的肝硬化,手术风险较大^[15]。传统的肝血流阻断方式虽然能够控制术中出血,但会激发癌变组织内的生长转化因子和肿瘤坏死因子大量释放,引起更为严重的缺血再灌注损伤,特别是对肝癌合并肝硬化的患者来说,其肝脏功能处于失代偿期,对于耗时长且风险大的手术不易耐受,术中易发生大出血,甚至导致肝功能衰竭^[16,17]。近年来相关文献报道,选择性肝血流阻断能够保证余肝血流通畅、减少再灌注对肝功能造成的损伤、降低术后肝功能衰竭的发生率,是一种有效的肝血流阻断方法。选

表 1 三组患者手术前后的肝功能指标变化情况

Table 1 Changes of liver function index of patients in the three groups before and after the operation

Indicators	Groups	Before surgery	After surgery			
			3 days	5 days	7 days	15 days
TBIL($\mu\text{mol/L}$)	IHVE	13.29 $\pm$ 1.24	10.13 $\pm$ 1.11	9.82 $\pm$ 1.57	7.82 $\pm$ 1.57	5.03 $\pm$ 1.18
	THVE	13.67 $\pm$ 1.62	19.13 $\pm$ 2.01	12.13 $\pm$ 2.52	9.74 $\pm$ 1.79	6.13 $\pm$ 2.11
	SHVE	12.96 $\pm$ 1.55	12.44 $\pm$ 1.63	8.28 $\pm$ 1.91	6.05 $\pm$ 2.85	4.84 $\pm$ 1.28
AST(U/L)	IHVE	58.18 $\pm$ 1.09	51.28 $\pm$ 1.91	49.20 $\pm$ 1.30	46.16 $\pm$ 2.94	42.82 $\pm$ 1.57
	THVE	59.26 $\pm$ 1.55	47.34 $\pm$ 1.05	41.12 $\pm$ 1.33	44.18 $\pm$ 1.09	45.84 $\pm$ 2.92
	SHVE	57.49 $\pm$ 1.82	42.45 $\pm$ 1.00	35.05 $\pm$ 1.85	31.47 $\pm$ 1.23	29.44 $\pm$ 1.63
ALB(g/L)	IHVE	39.88 $\pm$ 2.44	40.45 $\pm$ 2.67	42.45 $\pm$ 1.81	41.66 $\pm$ 1.58	45.33 $\pm$ 1.36
	THVE	38.98 $\pm$ 2.92	38.00 $\pm$ 1.33	40.18 $\pm$ 1.09	42.17 $\pm$ 1.56	45.79 $\pm$ 2.52
	SHVE	37.49 $\pm$ 1.82	39.45 $\pm$ 1.00	49.45 $\pm$ 1.81	48.72 $\pm$ 2.81	55.31 $\pm$ 1.53
ALT(U/L)	IHVE	30.51 $\pm$ 3.24	24.23 $\pm$ 1.25	20.82 $\pm$ 1.57	15.82 $\pm$ 1.07	12.13 $\pm$ 2.50
	THVE	31.09 $\pm$ 4.29	28.24 $\pm$ 2.01	25.92 $\pm$ 1.05	19.33 $\pm$ 1.66	15.13 $\pm$ 3.13
	SHVE	30.72 $\pm$ 3.81	22.51 $\pm$ 2.41	17.94 $\pm$ 2.02	11.35 $\pm$ 1.33	10.11 $\pm$ 1.56

择性肝血流阻断术最大程度的减少手术对患者造成的损伤,且术后并发症发生率相对较低、恢复快,能够改善术后的生存质量^[18,19]。

结合本研究,我们发现选择性肝血流阻断组患者的术中出血量和输血量均显著少于间歇性断流组和完全断流组($P<0.05$)。分析原因为:选择性肝血流阻断方法主要由一侧入路游离肝动脉行肝静脉断流,避免损伤余肝及肝周组织,从而减少术中出血及输血量、降低患者大出血的危险。此外,三种断流方式术后均发生并发症,但选择性阻断术后并发症的发生率明显低于间歇性断流和完全断流术,差异具有统计学意义($P<0.05$)。结果说明,选择性肝血流阻断能够减少术后并发症的发生几率,而且手术切口小,有利于患者术后恢复。分析可知,选择性肝血流阻断的方法仅对病变一侧的肝血流进行阻断,能够最大程度的保证剩余肝脏的供血充足,静脉回流通畅,避免缺血再灌注损伤和肠道淤血,从而降低患者出现肝功能衰竭等并发症的机率。本研究还发现,三种断流法行部分肝切除术后患者血清中 TBIL、ALT 及 AST 水平均不同程度的降低,而 ALB 含量则不同程度的升高。其中,选择性断流组患者的各项指标的变化情况更明显,且术后 15 天测得的肝功能指标更接近于正常值,差异显著($P<0.05$)。结果说明,选择性肝血流阻断对肝部分切除术患者的剩余肝脏影响小,能够保证余肝得到充足的血流供应,维持正常的代谢功能,避免再灌注损伤,从而降低术后肝功能衰竭等并发症的发生率,进而提高手术效果、改善患者预后。

综上所述,与传统断流方法比较,选择性肝血流阻断法能够减少余肝的缺血再灌注损伤,有利于提高手术效果。但是,该方法也存在一定的局限性,我们在临床实践中应根据患者的实际情况来权衡断流方式的选择。

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(上接第 3108 页)

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