

# 腹水超滤浓缩再利用治疗乙型肝炎后肝硬化 顽固性腹水的临床价值

王东旭 刘国旺 朱宏斌 李佳 张素娟

300014 天津, 解放军第二五四医院消化科(王东旭、朱宏斌、李佳、张素娟); 300192 天津, 天津市第二人民医院(刘国旺)

通讯作者: 王东旭, Email: dongxuwang36@yahoo.com

DOI: 10.3969/j.issn.1008-9691.2017.05.016

**【摘要】目的** 探讨对乙型肝炎(乙肝)后肝硬化顽固性腹水超滤浓缩再利用的临床价值。**方法** 采用回顾性研究方法,选择2013年12月至2016年11月在解放军第二五四医院住院接受腹水滤过浓缩腹腔回输治疗的难治性腹水患者113例作为研究组,以同期住院的仅接受常规治疗的难治性腹水患者52例作为对照组。两组均给予保肝、提高血浆渗透压、纠正低蛋白血症(静脉注射白蛋白,每次10g,每周3次)、降低门脉压(给予奥曲肽0.2mg、q8h)、改善微循环、纠正水和电解质平衡紊乱、利尿[给予呋塞米(速尿)100mg/d]等常规治疗;研究组在上述治疗基础上进行腹水浓缩回输。观察研究组患者治疗前后腹胀缓解、意识改变、血压、24h尿量、内生肌酐清除率(CCr)、血钾离子( $K^+$ )、血钠离子( $Na^+$ )、腹水白蛋白定量和治疗前后1周血白蛋白水平、治疗后1周内腹腔感染情况的变化;比较研究组与对照组治疗12周后腹腔感染发生率的差异。**结果** 研究组患者治疗后腹胀有不同程度的缓解,24h尿量较治疗前有所增加( $mL: 1291.3 \pm 123.4$ 比 $1265.0 \pm 61.5$ ,  $P=0.051$ ),无病例出现意识改变、血压不稳定;血 $K^+$ 、 $Na^+$ 比较差异无统计学意义(均 $P>0.05$ ),腹水白蛋白水平较治疗前明显增加( $g/L: 19.1 \pm 2.9$ 比 $17.2 \pm 4.1$ ,  $P=0.000$ );治疗后1周,CCr较治疗前明显升高( $\mu mol/L: 71.2 \pm 8.7$ 比 $56.1 \pm 5.4$ ,  $P=0.000$ );3次治疗后1周血白蛋白较治疗前升高( $g/L: 25.7 \pm 4.4$ 比 $24.6 \pm 3.0$ ),但差异无统计学意义( $P=0.054$ )。研究组治疗后1周内未出现腹腔感染,治疗12周腹腔感染发生率低于对照组[9.7%(11/113)比13.5%(7/52)],但差异亦无统计学意义( $P=0.476$ )。**结论** 腹水超滤浓缩再利用能有效缓解腹胀症状,提高CCr,有利于腹水白蛋白再利用,未增加12周内腹腔感染的发生,对肝硬化顽固性腹水的治疗有较高价值。

**【关键词】** 腹水滤过; 腹腔回输; 乙型肝炎后肝硬化

**基金项目:** 国家科技重大专项课题(2012ZX10005005)

**The clinical value of re-using ultrafiltrated and concentrated ascites fluid** Wang Dongxu, Liu Guowang, Zhu Hongbin, Li Jia, Zhang Sujuan

Department of Gastroenterology, No.254 Hospital of the Chinese People's Liberation Army, Tianjin 300014, China (Wang DX, Zhu HB, Li J, Zhang SJ); The Second People's Hospital of Tianjin, Tianjin 300192, China (Liu GW)

Corresponding author: Wang Dongxu, Email: dongxuwang36@yahoo.com

**【Abstract】Objective** To investigate the clinical value of re-using ultrafiltrated and concentrated ascites fluid for refractory ascites in patients with hepatitis B cirrhosis. **Methods** A retrospective study was conducted, one hundred and thirteen patients with intractable ascites (all patients received intraperitoneal reinfusion of ultrafiltrated and concentrated ascites fluid therapy) admitted to the Department of Gastroenterology of No.254 Hospital of the Chinese People's Liberation Army from December 2013 to November 2016 were enrolled and assigned as the study group, fifty-two patients with intractable ascites admitted in the same period as above group in this hospital without undergoing above ascites fluid reinfusion were served as the control group. Both groups were given conventional therapies, including measures for hepatoprotection, increase of plasma osmotic pressure, correction of hypoproteinemia (intravenous injection albumin 10 g, 3 times a week), reduction of portal venous pressure (octreotide 0.2 mg, q8 h), improvement of microcirculation, correction of water and electrolyte balance disorders, diuresis (furosemide 100 mg/d), etc. On the basis of the above conventional treatment, the system with ascites ultrafiltration, concentration and reinfusion into abdominal cavity was applied to carry out the concentrated ascites fluid reinfusion therapy in the study group. The relieve of abdominal bloating, conscious, blood pressure, 24-hour urine output, endogenous creatinine clearance rate (CCr), serum potassium ion ( $K^+$ ), serum sodium ion ( $Na^+$ ), ascites albumin quantity, serum albumin levels before treatment and after treatment for 1 week, abdominal infection situation after treatment for 1 week were observed in the study group. The difference in incidence of abdominal infection between the study group and control group (at the end of 12 weeks after treatment) was compared. **Results** In the study group, after treatment, the patients with abdominal bloating had different degrees of relief, 24-hour urine output was increased compared with that before treatment ( $mL: 1291.3 \pm 123.4$  vs.  $1265.0 \pm 61.5$ ,  $P = 0.051$ ), no cases with conscious changes, blood pressure instable. There were no statistical significant difference in blood  $K^+$  and  $Na^+$  ( $P > 0.05$ ). And ascites albumin concentration was increased compared with before treatment ( $g/L: 19.1 \pm 2.9$  vs.  $17.2 \pm 4.1$ ,  $P = 0.000$ ); 1 week after treatment, CCr was significantly higher than that before treatment ( $\mu mol/L: 71.2 \pm 8.7$  vs.  $56.1 \pm 5.4$ ,  $P = 0.000$ ); serum albumin was increased after

3 times of treatment in 1 week (g/L:  $25.7 \pm 4.4$  vs.  $24.6 \pm 3.0$ ), but the difference was not statistically significant ( $P = 0.054$ ). No abdominal infection occurred within 1 week after treatment were observed in patients of study group. There was no statistical significant difference in the incidence of abdominal infection between the study group and control group in 12 weeks after treatment [9.7% (11/113) vs. 13.6% (7/52),  $P = 0.476$ ]. **Conclusions** The re-using of ultrafiltrated and concentrated ascites fluid can effectively relieve the abdominal bloating symptom, improve CCr, be beneficial to the re-use of ascites albumin, and does not increase the incidence of abdominal infection within 12 weeks after the therapy, therefore the treatment has relatively high therapeutic value for intractable ascites in patients with hepatitis B cirrhosis.

**【Key words】** Ascites filtration; Reinfusion; Post-hepatitis B cirrhosis

**Fund program:** National Science and Technology Major Project (2012ZX10005005)

顽固性腹水又称难治性腹水,一般指患者在限钠、大剂量利尿剂治疗后腹水减少仍 $<200$  mL/d;或腹水持续存在 3 个月以上;或经严格内科治疗后腹水仍无明显消退且持续 1.5 个月以上,并出现少尿和(或)氮质血症,血钠浓度 $<130$  mmol/L,尿钠浓度 $<10$  mmol/L,尿钠/尿钾 $<1$ ,肾小球滤过率和肾血浆流量均低于正常。顽固性腹水约占肝硬化腹水的 10%,预后较差<sup>[1]</sup>。腹水是良好的培养基,患者容易出现腹腔感染,甚至脓毒症,在脓毒症发生发展过程中,炎症和凝血系统相互促进、相互影响,凝血系统损伤从早期到后期都与感染导致的炎症共同存在<sup>[2]</sup>。随着病情的加重可出现感染性休克,进而出现促炎/抗炎反应失衡<sup>[3]</sup>。严重感染亦可导致肝功能损害<sup>[4]</sup>,进而发展为肝衰竭,药物治疗比较局限,疗效也不理想<sup>[5]</sup>,肝移植是治疗肝衰竭的唯一有效手段<sup>[6]</sup>,但临床实施受很多因素影响,难以实现。腹水滤过回输是腹水再利用的一种治疗方法,治疗过程中静脉回输患者总不良反应发生率高于腹腔回输患者,但对继续治疗和临床效果并无影响<sup>[7]</sup>,通过腹腔回输大部分患者病情显著改善<sup>[8]</sup>。本研究观察腹水超滤浓缩腹腔回输对乙型肝炎(乙肝)后肝硬化顽固性腹水患者疗效的影响,现报告如下。

## 1 资料与方法

**1.1 研究对象的选择及分组:**采用回顾性研究方法,选择 2013 年 12 月至 2016 年 11 月在本院住院接受腹水滤过浓缩腹腔回输治疗的难治性腹水患者 113 例作为研究组,其中男性 62 例,女性 51 例。以同期住院接受基础治疗的难治性腹水患者 52 例作为对照组,其中男性 28 例,女性 24 例。

**1.1.1 纳入标准:**所有患者均为乙肝后肝硬化失代偿期;肝硬化诊断符合“慢性乙型肝炎防治指南(2015 更新版)”<sup>[9]</sup>。

**1.1.2 排除标准:**恶性肿瘤、胰源性腹水、心源性腹水、肾源性腹水者。

**1.1.3 剔除标准:**治疗过程中全身或部分器官出现感染、研究所需资料不完整者。

**1.1.4 伦理学:**本研究符合医学伦理学标准,并经

本院医学伦理委员会批准,取得患者或家属的知情同意。

## 1.2 治疗方法

**1.2.1 基础治疗:**均采用保肝、增加血浆渗透压、纠正低蛋白血症(静脉注射白蛋白,每次 10 g、每周 3 次)、降低门脉压(给予奥曲肽 0.2 mg、q8 h)、改善微循环、纠正水和电解质平衡紊乱、利尿〔给予呋塞米(速尿)100 mg/d〕等治疗。

**1.2.2 腹水回输治疗:**采用珠海健帆生物科技股份有限公司生产的 JF-800A 血液灌流机。北京伟力新世纪科技发展有限公司生产的聚丙烯腈中空纤维过滤器(YT-100 型)、聚乙烯透析管路及穿刺鞘管针(一次性耗材)。观察组在基础治疗前提下行腹水滤过腹腔回输〔治疗前实验室检查示腹水白细胞计数(WBC) $<100 \times 10^9/L$ 〕。方法:患者排尿后取平卧位,选左、右侧髂前上棘与脐连线中外 1/3 处为穿刺点,常规消毒、铺巾,用一次性穿刺针刺入上述穿刺点,连接腹水超滤浓缩机,通过仿生物膜的滤过作用将腹水中水分滤出,而将浓缩后的腹水直接回输于患者腹腔,全过程为密闭无菌操作,每次滤出腹水量一般为 2~3 L;腹水流量 50 mL/min<sup>[10]</sup>,每周 3 次。术后腹带加压处理。

**1.3 资料收集:**收集治疗后患者腹胀缓解情况、意识情况及不良反应等资料,比较研究组治疗前后血压、治疗 1 周内腹腔感染情况、24 h 尿量、内生肌酐清除率(CCr)、血钾离子( $K^+$ )、血钠离子( $Na^+$ )、腹水白蛋白定量和治疗前以及治疗 3 次后 1 周血白蛋白水平的差异,比较研究组与对照组治疗 12 周腹腔感染发生率的差异。

**1.4 统计学分析:**使用 SPSS 20.0 统计软件分析数据,符合正态分布的计量资料以均数 $\pm$ 标准差( $\bar{x} \pm s$ )表示,采用配对  $t$  检验;计数资料以例表示,采用  $\chi^2$  检验。 $P < 0.05$  为差异有统计学意义。

## 2 结果

**2.1 腹水滤过腹腔回输的不良反应和临床疗效:**研究组治疗后无患者出现意识改变,且均未出现血压不稳定的临床表现,治疗后 1 周内未出现腹腔感

染,治疗 1 次后所有患者腹胀均有不同程度缓解,治疗 3 次后所有患者腹胀均明显缓解。

**2.2 腹水滤过腹腔回输治疗对患者 CCr、24 h 尿量和血白蛋白的影响(表 1):** 研究组患者治疗后 CCr 较治疗前明显增加( $P < 0.05$ ), 24 h 尿量、血白蛋白较治疗前有所增加,但差异均无统计学意义(均  $P > 0.05$ )。

**表 1 研究组治疗前后 CCr、24 h 尿量、血白蛋白的变化比较( $\bar{x} \pm s$ )**

时间	例数(例)	CCr( $\mu\text{mol/L}$ )	24 h 尿量(mL)	血白蛋白(g/L)
治疗前	113	56.1 $\pm$ 5.4	1 265.0 $\pm$ 61.5	24.6 $\pm$ 3.0
治疗后	113	71.2 $\pm$ 8.7	1 291.3 $\pm$ 123.4	25.7 $\pm$ 4.4

注:与治疗前比较

**2.3 腹水滤过腹腔回输治疗对患者血  $K^+$ 、 $Na^+$ 、腹水蛋白定量的影响(表 2):** 研究组治疗前后血  $K^+$ 、 $Na^+$  水平比较差异均无统计学意义(均  $P > 0.05$ ),治疗后腹水白蛋白较治疗前明显增加( $P < 0.05$ )。

**表 2 研究组治疗前后血  $K^+$ 、 $Na^+$ 、腹水白蛋白的变化比较( $\bar{x} \pm s$ )**

时间	例数(例)	$K^+$ (mol/L)	$Na^+$ (mol/L)	腹水白蛋白(g/L)
治疗前	113	3.9 $\pm$ 0.7	124.8 $\pm$ 6.2	17.2 $\pm$ 4.1
治疗后	113	3.7 $\pm$ 0.9	126.2 $\pm$ 5.2	19.1 $\pm$ 2.9
$t$ 值		1.456	1.793	3.993
$P$ 值		0.148	0.076	0.000

**2.4 研究组与对照组治疗 12 周腹腔感染发生情况比较(表 3):** 两组治疗 12 周腹腔感染发生率比较差异无统计学意义( $P > 0.05$ )。

**表 3 研究组与对照组治疗 12 周腹腔感染发生率比较**

组别	例数(例)	腹腔感染[%(例)]
对照组	52	13.5( 7)
研究组	113	9.7(11)
$\chi^2$ 值		0.509
$P$ 值		0.476

### 3 讨论

肝硬化患者由于发生了肝实质性损害,可影响多种酶类及蛋白质的合成<sup>[11]</sup>,严重者可导致自发性细菌性腹膜炎、上消化道出血及肝昏迷等一系列并发症的发生<sup>[12]</sup>。难治性腹水是肝硬化的临床终末期表现之一,其发生为肝硬化严重肝功能损害的标志,治疗比较困难<sup>[13]</sup>。现代医学认为,肝硬化腹水是多种因素综合作用的结果,其中血浆白蛋白减少是引起水钠潴留的重要因素。因而补充白蛋白以提高胶体渗透压,增加有效血容量并加以利尿是治疗

肝硬化的主要措施。有研究显示,采用利尿、放水、补充白蛋白等常规措施治疗肝硬化腹水往往疗效不佳,且患者合并症多,病死率高<sup>[14]</sup>。腹水超滤浓缩回输治疗能迅速解除其对器官的压迫,尤其是对肾血管的压迫,提高血浆白蛋白水平,抑制肾素-血管紧张素-醛固酮系统(RAAS)激活,提高腹水蛋白质、细胞补体  $C_3$  浓度,防止腹水感染,减少腹水渗出<sup>[15]</sup>。

本研究显示,113 例患者均未出现治疗相关腹腔感染、意识改变、血压不稳定的临床表现,临床应用未出现不良事件,较安全。其原因一方面与严格控制治疗适应证、术中无菌操作有关,另一方面与单次治疗限制滤出量、滤出速度有关。研究表明,每次排出腹水 5 L 以上可能导致急性循环系统障碍,穿刺放液后必须输注血浆代用品如白蛋白等以防止循环衰竭,而通过腹水浓缩滤去炎性物质和水分而保留腹水中的蛋白质后再自体回输到体内,从而大幅降低了血制品的应用和相应费用<sup>[16-18]</sup>。有研究表明,基于患者生命安全考虑每次腹水浓缩回输术中应尽量多地透析腹水量以减少操作次数,提高患者依从性,但具体临床参考标准还有待进一步研究<sup>[19]</sup>。本研究表明,治疗 1 次后患者腹胀均有不同程度缓解,治疗 3 次后腹胀均明显缓解,疗效明显。

本研究显示,研究组治疗后 CCr 较治疗前明显升高,表明治疗前腹水过多会对肾功能有影响。有研究表明,肝硬化患者发生肾功能不全时预后极差<sup>[20]</sup>。由于腹水大量累积会导致患者出现多种不适症状,尤其是腹胀、腹痛、厌食甚至呼吸困难,而这些症状又加重恶液质的出现,体内腹水更难排出体外,从而形成恶性循环<sup>[21]</sup>,可发展为肝肾综合征,预后较差<sup>[22]</sup>。随着腹水量的减少,腹内压的下降,肾脏血流增加,CCr 升高,肾功能得以改善。本研究显示,研究组治疗后 24 h 尿量较治疗前增加,但差异无统计学意义,临床考虑肾小球滤过率的增加可增加尿量,但腹腔内水分的减少、腹内压下降、腹腔白蛋白的增加均可不同程度导致血循环中水分向腹腔内转移,从而表现为尿量变化不明显,也表明在超滤量合理的前提下,腹腔内水分的减少对有效循环血容量影响不大。1 周内腹水滤过浓缩腹腔回输治疗 3 次后,血白蛋白水平较治疗前升高,临床推测可能存在腹水白蛋白重吸收入血情况,但差异无统计学意义,一方面不排除血白蛋白与腹水白蛋白出现再平衡,导致白蛋白重吸收受限;另一方面,治疗后腹水白蛋白浓度升高,可能需要观察更长时间,以利

于腹水白蛋白向血液中转移。

肝硬化患者感染发生率高,感染可能涉及多种危险因素,感染发生后病死率高、预后差<sup>[23]</sup>。有研究表明,危重病患者的腹腔感染主要为继发性感染,以院内获得性感染为主<sup>[24]</sup>。目前临床检测腹水仍然以是否有致病菌生长或细菌定量定性检测为目的,但常规的细菌培养方法很难从腹水中找到细菌<sup>[25]</sup>。因此我们在临床上治疗后观察这类患者腹腔感染的时间较长(达 12 周),但仍然显示研究组腹腔感染率与对照组比较差异无统计学意义,说明该治疗未增加潜在的后续腹腔感染。

综上所述,在进行限水、限钠、利尿等处理前提下,腹水超滤浓缩再利用能有效缓解腹胀症状,提高 CCr,有利于腹水白蛋白再利用,但不增加 12 周内腹腔感染的发生率,对肝硬化顽固性腹水有较高的治疗价值。

参考文献

[1] 孙玉凤,姚洪森,姚希贤.肝硬化并发腹水的治疗[J].中国全科医学,2003,6(6):456-458. DOI: 10.3969/j.issn.1007-9572.2003.06.008.  
Sun YF, Yao HS, Yao XX. Treatment of ascites due to cirrhosis [J]. Chin Gen Pract, 2003, 6 (6): 456-458. DOI: 10.3969/j.issn.1007-9572.2003.06.008.

[2] 许燕京,朱然,孙旖旎,等.抗凝血酶Ⅲ对脓毒症 DIC 的早期诊断价值:附 445 例患者的回顾性分析[J].中华危重病急救医学,2017,29(2):127-132. DOI: 10.3760/cma.j.issn.2095-4352.2017.02.007.  
Xu YJ, Zhu R, Sun YN, et al. Antithrombin Ⅲ for early diagnosis of DIC in sepsis patients: a retrospective analysis with 445 patients [J]. Chin Crit Care Med, 2017, 29 (2): 127-132. DOI: 10.3760/cma.j.issn.2095-4352.2017.02.007.

[3] 李敏,郝东,王涛,等.多糖包被在感染性休克中的变化及临床意义[J].中华危重病急救医学,2016,28(8):699-703. DOI: 10.3760/cma.j.issn.2095-4352.2016.08.006.  
Li M, Hao D, Wang T, et al. Variation and clinical value of endothelial glycocalyx in the patients with septic shock [J]. Chin Crit Care Med, 2016, 28 (8): 699-703. DOI: 10.3760/cma.j.issn.2095-4352.2016.08.006.

[4] 徐文达,万维维,赵琳,等.血浆吸附治疗急性肝衰竭的临床观察[J].中国中西医结合急救杂志,2014,21(5):391-392. DOI: 10.3969/j.issn.1008-9691.2014.05.019.  
Xu WD, Wan WW, Zhao L, et al. Clinical observation of plasma adsorption in the treatment of acute liver failure [J]. Chin J TCM WM Crit Care, 2014, 21 (5): 391-392. DOI: 10.3969/j.issn.1008-9691.2014.05.019.

[5] 段志文,武杨屏,范晶华,等.不同血液净化方式治疗各型肝衰竭的临床疗效比较[J].中国中西医结合急救杂志,2016,23(4):390-392. DOI: 10.3969/j.issn.1008-9691.2016.04.013.  
Duan ZW, Wu YP, Fan JH, et al. Comparisons of therapeutic effects of different blood purification means in treatment of various hepatic failures [J]. Chin J TCM WM Crit Care, 2016, 23 (4): 390-392. DOI: 10.3969/j.issn.1008-9691.2016.04.013.

[6] 王兴强,刘懿禾.肝衰竭患者肝功能评估与支持治疗[J/CD].实用器官移植电子杂志,2016,4(3):147-150. DOI: 10.3969/j.issn.2095-5332.2016.03.006.  
Wang XQ, Liu YH. Evaluation of liver function and supportive therapy in patients with liver failure [J/CD]. Pract J Organ Transplant (Electron Version), 2016, 4 (3): 147-150. DOI: 10.3969/j.issn.2095-5332.2016.03.006.

[7] 李军,朱铁兵,王军升,等.腹水浓缩经静脉与腹腔回输治疗顽固性腹水临床研究[J].肝脏,2005,10(2):141-142. DOI: 10.3969/j.issn.1008-1704.2005.02.035.  
Li J, Zhu TB, Wang JS, et al. Clinical study on treatment of refractory ascites by intravenous and intraperitoneal reflux [J].

Chin Hepatol, 2005, 10 (2): 141-142. DOI: 10.3969/j.issn.1008-1704.2005.02.035.

[8] 卫秀芳.密闭式腹水直接回输法治疗肝硬化腹水的近期疗效观察[J].中国综合临床,2000,16(10):676. DOI: 10.3760/cma.j.issn.1008-6315.2000.10.035.  
Wei XF. Observation on short-term curative effect of closed ascites direct return method on cirrhosis of ascites [J]. Clin Med China, 2000, 16 (10): 676. DOI: 10.3760/cma.j.issn.1008-6315.2000.10.035.

[9] 中华医学会肝病学分会,中华医学会感染病学分会.慢性乙型肝炎防治指南(2015 更新版)[J].中华肝脏病杂志,2015,23(12):888-905. DOI: 10.3760/cma.j.issn.1007-3418.2015.12.002.  
Chinese Society of Hepatology of Chinese Medical Association, Chinese Society of Infectious Diseases of Chinese Medical Association. The guideline of prevention and treatment for chronic hepatitis B: a 2015 update [J]. Chin J Hepatol, 2015, 23 (12): 888-905. DOI: 10.3760/cma.j.issn.1007-3418.2015.12.002.

[10] Orimi S, Mizuno K, Narahara M, et al. A study of appropriate flow rate settings for cell-free and concentrated ascites reinfusion therapy and change of cytokine concentrations in ascites [J]. Ther Apher Dial, 2011, 15 (4): 411-414. DOI: 10.1111/j.1744-9987.2011.00973.x.

[11] 齐发梅,袁秀梅,贾彦娟,等.血清单胺氧化酶与肝纤维化四项在肝硬化早期诊断中的临床价值[J].实用检验医师杂志,2013,5(1):26-28. DOI: 10.3969/j.issn.1674-7151.2013.01.007.  
Qi FM, Yuan XM, Jia YJ, et al. The clinical significance of serum monoamine oxidase combined with liver fibrosis four markers detection in the early diagnosis of liver cirrhosis [J]. Chin J Clin Pathol, 2013, 5 (1): 26-28. DOI: 10.3969/j.issn.1674-7151.2013.01.007.

[12] 冷明芳,崔楠,周国华.肝硬化合并肠功能紊乱的临床治疗观察[J].临床军医杂志,2007,35(3):376-377. DOI: 10.3969/j.issn.1671-3826.2007.03.019.  
Leng MF, Cui N, Zhou GH. Clinical research on hepatic cirrhosis with functional bowel disorder [J]. Clin J Med Off, 2007, 35 (3): 376-377. DOI: 10.3969/j.issn.1671-3826.2007.03.019.

[13] 宋毓飞.中西医结合治疗肝硬化顽固性腹水临床分析[J].中国中西医结合急救杂志,2009,16(3):155. DOI: 10.3969/j.issn.1008-9691.2009.03.009.  
Song YF. Clinical analysis of intractable ascites due to cirrhosis treated by combination of traditional Chinese and western medicine [J]. Chin J TCM WM Crit Care, 2009, 16 (3): 155. DOI: 10.3969/j.issn.1008-9691.2009.03.009.

[14] 江登丰,毛华.肝硬化心肌病[J].肝脏,2011,16(4):345-347. DOI: 10.3969/j.issn.1008-1704.2011.04.026.  
Jiang DF, Mao H. Cardiomyopathies in liver cirrhosis [J]. Chin Hepatol, 2011, 16 (4): 345-347. DOI: 10.3969/j.issn.1008-1704.2011.04.026.

[15] 张金龙,黄志刚,莫国生,等.腹水浓缩超滤回输治疗肝硬化顽固性腹水 42 例[J].中华传染病杂志,2003,21(4):294-295. DOI: 10.3760/j.issn.1000-6680.2003.04.024.  
Zhang JL, Huang ZG, Mo GS, et al. Treatment of 42 cases of refractory ascites due to cirrhosis with ascites [J]. Chin J Infect Dis, 2003, 21 (4): 294-295. DOI: 10.3760/j.issn.1000-6680.2003.04.024.

[16] Wang L, Okubo T, Shinsaka M, et al. Efficacy and safety of cell-free and concentrated ascites reinfusion therapy (CART) in gynecologic cancer patients with a large volume of ascites [J]. J Obstet Gynaecol Res, 2015, 41 (10): 1614-1620. DOI: 10.1111/jog.12763.

[17] Maeda O, Ando T, Ishiguro K, et al. Safety of repeated cell-free and concentrated ascites reinfusion therapy for malignant ascites from gastrointestinal cancer [J]. Mol Clin Oncol, 2014, 2 (6): 1103-1106. DOI: 10.3892/mco.2014.335.

[18] Ito T, Hanafusa N, Fukui M, et al. Single center experience of cell-free and concentrated ascites reinfusion therapy in malignancy related ascites [J]. Ther Apher Dial, 2014, 18 (1): 87-92. DOI: 10.1111/1744-9987.12049.

[19] 刘岩红,史慧晶,沈思兰,等.腹水透析量对腹水浓缩回输治疗顽固性腹水的疗效影响[J].肝脏,2016,21(5):363-365. DOI: 10.3969/j.issn.1008-1704.2016.05.010.  
Liu YH, Shi HJ, Shen SL, et al. Effect of ascites dialysis on the treatment of refractory ascites with ascites [J]. Chin Hepatol, 2016, 21 (5): 363-365. DOI: 10.3969/j.issn.1008-1704.2016.05.010.

[20] 涂昆桦,郑昌铸,陈永昌.重症肝硬化患者合并肾功能不全[J].中国血液净化,2015,14(9):558-561. DOI: 10.3969/j.issn.1671-4091.2015.09.012.

(下转第 544 页)

例患者在充分输注血液制品及常规止血等疗效较差的情况下,使用 rFVIIa 迅速有效使腹腔出血减少,从而达到有效止血的目的。

目前对于创伤、产后等合并大出血患者,多数人建议在经过充分综合治疗后仍无法控制出血情况下才考虑使用 rFVIIa 作为最后一道防线,由于 rFVIIa 必须通过患者自身的凝血系统而发挥作用,因此在使用 rFVIIa 前必须满足以下条件:PLT>50×10<sup>9</sup>/L,血细胞比容(HCT)>0.24, Fib 1.5~2 g/L,且纠正酸中毒、低体温和低钙血症等<sup>[9, 12]</sup>。本例患者使用 rFVIIa 前已完全符合上述要求。关于 rFVIIa 的用量目前仍未完全统一,一般建议初始计量为 90~120 μg/kg,必要时间隔 15~30 min 可追加 1~2 次<sup>[9, 12]</sup>。rFVIIa 使用过量可引起血栓,应注意监测。

参考文献

[1] Bonnet MP, Benhamou D. Management of postpartum haemorrhage [J]. F1000Res, 2016, 5: 1514. DOI: 10.12688/f1000research.7836.1.

[2] Khan KS, Wojdyla D, Say L, et al. WHO analysis of causes of maternal death: a systematic review [J]. Lancet, 2006, 367 (9516): 1066-1074. DOI: 10.1016/S0140-6736(06)68397-9.

[3] Chattopadhyay SK, Kharif H, Sherbeeni MM. Placenta praevia and accreta after previous caesarean section [J]. Eur J Obstet Gynecol Reprod Biol, 1993, 52 (3): 151-156.

[4] 王振辉, 李晨辉. 凶险型前置胎盘 27 例临床分析 [J]. 实用妇产科杂志, 2013, 29 (1): 77-79. DOI: 10.3969/j.issn.1003-6946.2013.01.030.

Wang ZH, Li CH. Clinical analysis for 27 patients with pernicious placenta previa [J]. J Pract Obstet Gynecol, 2013, 29 (1): 77-79. DOI: 10.3969/j.issn.1003-6946.2013.01.030.

[5] 陈静, 那全, 庄艳艳, 等. 凶险型前置胎盘 128 例临床分析 [J]. 中国实用妇科与产科杂志, 2015, 31 (6): 539-542.

Chen J, Na Q, Zhuang YY, et al. Clinical analysis of 128 cases of pernicious placenta previa. [J]. Chin J Pract Gynecol Obstet, 2015, 31 (6): 539-542. DOI:

[6] Tsai TC, Rosing JH, Norton JA. Role of factor VII in correcting dilutional coagulopathy and reducing re-operations for bleeding following non-traumatic major gastrointestinal and abdominal surgery [J]. J Gastrointest Surg, 2010, 14 (8): 1311-1318. DOI: 10.1007/s11605-010-1227-6.

[7] American College of Obstetricians and Gynecologists. ACOG practice bulletin: clinical management guidelines for obstetrician-gynecologists number 76, October 2006: postpartum hemorrhage [J]. Obstet Gynecol, 2006, 108 (4): 1039-1047.

[8] Guasch E, Gilsanz F. Treatment of postpartum hemorrhage with blood products in a tertiary hospital: outcomes and predictive factors associated with severe hemorrhage [J]. Clin Appl Thromb Hemost, 2016, 22 (7): 685-692. DOI: 10.1177/1076029615573303.

[9] Rossaint R, Bouillon B, Cerny V, et al. The European guideline on management of major bleeding and coagulopathy following trauma: fourth edition [J]. Crit Care, 2016, 20: 100. DOI: 10.1186/s13054-016-1265-x.

[10] 陈宁, 沈锋. 急性呼吸窘迫综合征家兔输注不同类型液体对凝血/纤溶功能的影响 [J]. 中国中西医结合急救杂志, 2015, 22 (5): 486-491. DOI: 10.3969/j.issn.1008-9691.2015.05.009.

Chen N, Shen F. Effects of infusion with different kinds of liquid on blood coagulation and fibrinolysis in rabbits with acute respiratory distress syndrome [J]. Chin J TCM WM Crit Care, 2015, 22 (5): 486-491. DOI: 10.3969/j.issn.1008-9691.2015.05.009.

[11] 姚玲, 刘博, 沈锋. 20% 人血白蛋白对 ARDS 家兔凝血及肺纤维化的影响 [J]. 中华危重病急救医学, 2017, 29 (5): 407-412. DOI: 10.3969/j.issn.1008-9691.2017.02.005.

Yao L, Liu B, Shen F. Efficacy of 20% albumin infusion on coagulation and pulmonary fibrosis in rabbits with ARDS [J]. Chin Crit Care Med, 2017, 29 (5): 407-412. DOI: 10.3969/j.issn.1008-9691.2017.02.005.

[12] Carvalho M, Rodrigues A, Gomes M, et al. Interventional algorithms for the control of coagulopathic bleeding in surgical, trauma, and postpartum settings: recommendations from the share network group [J]. Clin Appl Thromb Hemost, 2016, 22 (2): 121-137. DOI: 10.1177/1076029614559773.

[13] Butwick AJ, Goodnough LT. Transfusion and coagulation management in major obstetric hemorrhage [J]. Curr Opin Anaesthesiol, 2015, 28 (3): 275-284. DOI: 10.1097/ACO.000000000000180.

[14] 傅云峰, 赵国胜, 高萌, 等. 血栓弹力图在住院重症患者临床合理用血中的应用 [J]. 中华危重病急救医学, 2016, 28 (5): 396-400. DOI: 10.3760/cma.j.issn.2095-4352.2016.05.004.

Fu YF, Zhao GS, Gao M, et al. Application of thromboelastogram in reasonable transfusion for hospitalized patients with critically illness [J]. Chin Crit Care Med, 2016, 28 (5): 396-400. DOI: 10.3760/cma.j.issn.2095-4352.2016.05.004.

[15] Stanworth SJ, Birchall J, Doree CJ, et al. Recombinant factor VIIa for the prevention and treatment of bleeding in patients without haemophilia [J]. Cochrane Database Syst Rev, 2007, 2007 (2): CD005011. DOI: 10.1002/14651858.CD005011.pub2.

[16] Levi M, Peters M, Büller HR. Efficacy and safety of recombinant factor VIIa for treatment of severe bleeding: a systematic review [J]. Crit Care Med, 2005, 33 (4): 883-890.

[17] Boffard KD, Riou B, Warren B, et al. Recombinant factor VIIa as adjunctive therapy for bleeding control in severely injured trauma patients: two parallel randomized, placebo-controlled, double-blind clinical trials [J]. J Trauma, 2005, 59 (1): 8-18.

(收稿日期: 2016-06-15)

(上接第 518 页)

Tu KH, Zheng CY, Chen YC. Critically ill cirrhotic patients with renal insufficiency [J]. Chin J Blood Purif, 2015, 14 (9): 558-561. DOI: 10.3969/j.issn.1671-4091.2015.09.012.

[21] 李小鹏, 余珊珊, 李路, 等. 肝硬化患者左心功能变化与终末期肝病模型评分的相关性研究 [J]. 南方医科大学学报, 2015, 35 (4): 557-561. DOI: 10.3969/j.issn.1673-4254.2015.04.019.

Li XP, Yu SS, Li L, et al. Changes of left ventricular function in cirrhotic patients and their correlation with the model for end-stage liver disease score [J]. J South Med Univ, 2015, 35 (4): 557-561. DOI: 10.3969/j.issn.1673-4254.2015.04.019.

[22] 胡爱荣, 蒋素文, 胡耀仁. 肝硬化急性肾损伤及肝肾综合征的诊治路径 [J]. 中华危重病急救医学, 2016, 28 (3): 193-199. DOI: 10.3760/cma.j.issn.2095-4352.2016.03.001.

Hu AR, Jiang SW, Hu YR. Diagnosis and treatment of acute kidney injury and hepatorenal syndrome in patients with liver cirrhosis [J]. Chin Crit Care Med, 2016, 28 (3): 193-199. DOI: 10.3760/cma.j.issn.2095-4352.2016.03.001.

[23] 卢向东, 宋诗铎, 张志广. 肝硬化合并感染的临床研究 [J]. 中国医师进修杂志, 2010, 33 (31): 14-16. DOI: 10.3760/cma.

j.issn.1673-4904.2010.31.005.

Lu XD, Song SD, Zhang ZG. Clinical study of bacterial infection in patients with liver cirrhosis [J]. Chin J Postgrad Med, 2010, 33 (31): 14-16. DOI: 10.3760/cma.j.issn.1673-4904.2010.31.005.

[24] 孔钦翔, 胡立芬, 周仲松, 等. 重症加强治疗病房 12 年间腹水培养阳性患者病原菌分布及其耐药性分析 [J]. 中华危重病急救医学, 2016, 28 (3): 211-216. DOI: 10.3760/cma.j.issn.2095-4352.2016.03.004.

Kong QX, Hu LF, Zhou ZS, et al. The profile of antibiotic resistant pathogens isolated from ascites fluid patients in intensive care unit during past 12 years [J]. Chin Crit Care Med, 2016, 28 (3): 211-216. DOI: 10.3760/cma.j.issn.2095-4352.2016.03.004.

[25] 梁后杰, 王瑞玲, 徐启旺, 等. 自发性腹膜炎腹水细菌菌落形成及其生物学特性研究 [J]. 中华危重病急救医学, 2001, 13 (9): 527-529. DOI: 10.3760/j.issn:1003-0603.2001.09.005.

Liang HJ, Wang RL, Xu QW, et al. Study on the biological characteristics of cryptic growth cells of ascites in patients with spontaneous bacterial peritonitis [J]. Chin Crit Care Med, 2001, 13 (9): 527-529. DOI: 10.3760/j.issn:1003-0603.2001.09.005.

(收稿日期: 2017-08-24)