

# 损害控制外科在严重多发伤合并休克救治中的应用

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**[摘要]** 目的:分析损害控制外科(Damage control surgery, DCS)在严重多发伤合并休克救治中的应用价值。方法:按照入院时间,将2013年2月—2015年1月入院接受传统救治的94例患者纳入对照组,将2015年2月—2017年2月入院实施DCS救治的101例患者纳入DCS组,比较两组患者治疗情况、手术情况、生理指标恢复时间、并发症发生率、病死率。结果:DCS组24h输注晶体液量、胶体液量及浓缩红细胞量低于对照组,其输注血浆量高于对照组,住院时间低于对照组、手术时间长于对照组,差异有统计学意义( $P < 0.05$ )。两组术中平均体温比较,差异无统计学意义( $P > 0.05$ )。DCS组各项在生理指标恢复时间均短于对照组,差异有统计学意义( $P < 0.05$ )。DCS组患者并发症发生率及病死率均低于对照组,差异有统计学意义( $P < 0.05$ )。结论:在严重多发伤合并休克的救治中,遵循DCS理念能够有效纠正内环境紊乱、促进生理指标恢复,降低患者并发症发生率及病死率,达到良好的救治效果。

**[关键词]** 损害控制外科;严重多发伤;休克

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**The application of damage control surgery in the treatment of severe multiple injury with shock** MA Min, ZHAI Chunxia. (Department of Emergency, Laiwu City People's Hospital, Laiwu 271100, china)

**[Abstract]** **Objective:** The objective of this study was to investigate the therapeutic effect of damage control surgery in severe multiple injury with shock. **Methods:** A total of 94 cases of patients provided with traditional treatment between February 2013 and January 2015 were divided into observation group, while 101 patients treated with DCS between February 2015 and February 2017 were divided into DCS group. The treatment, operation situation, time taken to recover the physical signs, the occurrence rate of complication and the morbidity rate of two groups were compared. **Results:** The volume of crystalline solution injection, colloidal solution injection and concentrated red blood cells during 24 hours of DCS group were lower than that of observation group, while the volume of plasma injection was higher than that of observation group and the length of hospitalization was shorter than that of observation group and the length of operation was longer than that of observation group, and the differences were statistically significant ( $P < 0.05$ ). The difference of average body temperature during operation between two groups was not statistically significant ( $P > 0.05$ ). The time taken to recover the various physical signs of DCS group was shorter than that of observation group and the difference was statistically significant ( $P < 0.05$ ). **Conclusions:** Applying the concept of DCS in the treatment of severe multiple injury with shock can improve internal circulation and the recovery of physical signs, which reduces the rate of complications and morbidity.

**[Key words]** damage control surgery; severe multiple injury; shock

严重多发伤及其引发的休克是临床面对的难题,该类患者伤情重、极易继发生理功能紊乱并陷入低体温、代谢性酸中毒和凝血功能障碍的“致死性三联征”<sup>[1]</sup>。若早期处理不当可能导致患者死亡<sup>[2]</sup>。因此,越来越多的学者倾向于将损害控制外科(Damage control surgery, DCS)理念用于严重多发伤合并休克的救治,以期提高院前急救、院内急救、急诊手术与ICU监护等多个阶段的科学性、规范性<sup>[3]</sup>。我院于2015年2月开始落实DCS规范,此次研究比较DCS实施前后的救治效果,探讨改进策略。

## 1 资料与方法

### 1.1 一般资料

根据严重多发伤合并休克患者的时间序列,将2013年2月—2015年1月入院的94例患者为对照组,将2015年2月—2017年2月接受DCS救治的101例患者为DCS组。排除合并糖尿病、高血压、冠心病等可能影响生理指标检测结果者<sup>[4]</sup>。两组患者创伤严重程度评分为 $31.09 \pm 4.58$  vs  $30.95 \pm 4.46$ ,差异无统计学意义,年龄、性别、主要损伤部位等一般资料比较,差异无统计学意义,具有

可比性。

## 1.2 治疗方案

对照组患者接受传统救治,包括I期以解剖性修复为主的确定性手术,术后送至创伤重症监护病房(TICU),给予后续诊疗<sup>[5]</sup>。DCS组患者1)简化手术:实施以止血、控制污染为主的I期简化手术,手术时间控制在90 min以内,要求简单、有效、迅速;2)TICU复苏:简化手术结束后,将患者送至TICU病房,予血管内容量恢复、升血压等复苏治疗,复苏期间强调温度保持,以40℃空气对流毯覆盖全身,室温控制为30℃,输入液体温度保持在40℃,目标体温设定为37℃;3)再手术:待患者生理功能基本恢复、生理指标基本稳定后,行确定性手术,确定性手术以解剖修复为目的<sup>[6]</sup>。

## 1.3 观察指标分析

记录入院24 h内输注液体量(晶体液量、胶体液量)、浓缩红细胞量、血浆量;手术时间、术中平均体温及住院时间,其中,DCS组手术时间以简化手术时间+确定性手术时间计,对照组手术时间以确定性手术时间计,术中平均体温取两次手术平均值;比较生理指标恢复时间、并发症发生率、病死率,生理指标包括乳酸(BLA)、体温(T)、休克指数(SI)、碱剩余(BE)、凝血酶原时间(PT)、活化部分凝血活酶时间(APTT)<sup>[7]</sup>。以SPSS21.0软件分析数据, $\chi^2$ 检验、*t*检验,以 $P < 0.05$ 为差异有统计学意义。

## 2 结果

### 2.1 围术期指标

DCS组24 h输注晶体液量、胶体液量及浓缩红细胞量低于对照组,其输注血浆量高于对照组,差异有统计学意义( $P < 0.05$ )。DCS组手术时间、住院时间低于对照组,差异有统计学意义( $P < 0.05$ ),两组患者术中平均体温比较,差异无统计学意义( $P > 0.05$ )。见表1。

表1 两组患者治疗情况比较( $\bar{x} \pm s$ )

指标	DCS组(n=101)	对照组(n=94)
24 h输注晶体液量(mL)	1624.38 ± 252.49*	5229.40 ± 981.87
24 h输注胶体液量(mL)	0*	1862.34 ± 199.51
24 h输注浓缩红细胞量(mL)	2061.33 ± 291.48*	2629.50 ± 542.39
24 h输注血浆量(mL)	2339.58 ± 406.57*	661.48 ± 125.07
手术时间(min)	361.34 ± 15.26*	162.58 ± 50.52
术中平均体温(℃)	34.39 ± 0.52	34.67 ± 0.81
住院时间(d)	25.04 ± 2.97*	31.39 ± 4.88

注:与对照组比较 \* $P < 0.05$

### 2.2 生理指标恢复及预后

DCS组各项在生理指标恢复时间均短于对照组,差异有统计学意义( $P < 0.05$ )。见表2。

DCS组患者并发症发生率22.77%、病死率2.97%均低于对照组的53.19%及9.57%,差异有统计学意义( $P < 0.05$ )。

## 3 讨论

全球范围内,每年因创伤死亡的病例数超过500万,是18~40岁人群死亡的首位原因<sup>[8]</sup>。近年来我国交通事

表2 两组患者生理指标恢复时间比较(h,  $\bar{x} \pm s$ )

指标	DCS组(n=101)	对照组(n=94)	P值
BLA	12.25 ± 3.58	37.13 ± 5.26	< 0.05
T	4.16 ± 1.33	16.45 ± 3.05	< 0.05
SI	6.71 ± 0.85	22.39 ± 5.71	< 0.05
BE	9.57 ± 2.34	26.29 ± 6.38	< 0.05
PT	21.26 ± 5.39	63.79 ± 13.34	< 0.05
APTT	26.29 ± 5.81	72.68 ± 19.05	< 0.05

注:BLA:乳酸;T:体温;SI:休克指数;BE:碱剩余;PT:凝血酶原时间;APTT:活化部分凝血活酶时间

故等多种动能巨大的创伤屡见不鲜,严重多发伤发生率持续升高。以现有的骨和软组织技术处理不合并休克的严重多发伤,可挽救相当部分肢体,但对于合并休克的严重多发伤患者而言,如何评估治疗侧重点,取得生命救治和肢体保留的平衡,一直是临床探讨的重点所在<sup>[9-10]</sup>。

既往多发伤合并休克的救治中,多强调积极液体复苏、广谱抗生素使用以及早期确定性手术,但传统的处理办法往往对原本垂危的生命造成二次打击,导致病情恶化、病死率升高<sup>[11]</sup>。我院在DCS理念实施前,严重多发伤合并休克患者并发症发生率、病死率分别达53.19%、9.57%,提示早期确定性手术尽管消耗了大量医疗资源,患者救治效果仍不够理想,往往因弥漫性血管内凝血(DIC)、急性呼吸窘迫综合征(ARDS)、多器官功能障碍综合征(MODS)等并发症的发生导致死亡<sup>[12]</sup>。

鉴于传统救治方法的局限性,越来越多的临床医师开始关注DCS。DCS不仅强调损害控制性手术,还注重损害控制性液体复苏、急诊延迟复苏,适合生命体征不稳定患者救治<sup>[13]</sup>。在I期简化手术中,DCS以止血和污染控制为主,采取填塞、快速结扎等方式减少出血量,能够有效避免长时间复杂手术与外科麻醉所致血液、热量大量丢失,以及酸中毒和免疫系统损害,利于患者的尽快复苏<sup>[14]</sup>。得益于简化手术创造的条件,TICU的复苏可顺利完成,而在复苏过程中,DCS理念强调凝血机制异常的调节与凝血功能障碍的纠正,故对于早期改善组织低灌注和微循环障碍状态、减少乳酸生成具有积极意义<sup>[15]</sup>。因此,此次研究DCS组患者治疗生理指标恢复时间明显优于对照组。有学者发现,严重多发伤合并休克患者其BLA若能在24 h内恢复正常,患者存活率可接近100%,若其BLA超过48 h仍未恢复正常,则其病死率可高达86%<sup>[16]</sup>。

在多年DCS临床实践中,笔者将严重多发伤合并休克的救治原则总结为“先救命、后救伤”,即优先保存患者生命,而后强调脏器或肢体功能的保存,因此,救治过程中,首先应完善院前快速处理通道,在致死三联征出现前的黄金1小时内实施积极急救;简化手术强调出血和污染的快速控制,从而避免进一步损伤、延缓致死三联征进展<sup>[17]</sup>;复苏环节亦需注重复苏和复温的损害控制,重点关注凝血功能的改善,以血浆为主要复苏液体、尽量避免晶体液输入,从而减少DIC发生率、降低病死风险<sup>[18]</sup>;择期施行的确定性手术应待病情稳定后方可实施,在避免造成生理功能严

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重紊乱的加剧的同时, 确定性修复手术应兼顾脏器功能的修复与骨折部位的内固定, 以确保患者恢复质量。

总之, 在 DCS 理念指导下实施严重多发伤合并休克的救治, 能够改善救治效果、降低患者病死率, 是一种值得推广的严重多发伤合并休克的策略性治疗原则。

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