

doi: 10.13241/j.cnki.pmb.2015.07.030

常规开颅手术和脑室镜治疗硬膜下血肿的对比研究

曲志峰 鲍艳春 陈文理 温志强 马陈建 关聪聪 康平平

(武警北京总队第三医院神经外科 北京 100041)

摘要 目的:对比分析常规开颅手术和脑室镜治疗硬膜下血肿的临床疗效。**方法:**自2012年1月到2013年10月,我科急诊收治的硬膜下血肿病例共63例。其中脑室镜组28例,男16例,女12例,年龄(33.2 ± 9.4)岁;常规开颅组35例,男23例,女12例,年龄 30.2 ± 9.4 岁。常规开颅组采用传统的大骨瓣开颅术清除颅内血肿,另一组采用脑室镜微创技术清除颅内血肿。**结果:**脑室镜组和常规开颅组的术前GCS评分分别为 4.2 ± 0.7 、 4.6 ± 0.8 ,差异无统计学意义($P > 0.05$)。术后第3、7天脑室镜GCS评分明显升高,和常规开颅组相比,差异有统计学意义($P < 0.05$);术后第1、3、7天,脑室镜组的血糖水平明显比常规开颅组下降的速度快,差异具有统计学意义($P < 0.05$);脑室镜组头皮切口长度、骨窗大小明显比常规开颅组要小,血肿清除率大,二者差异有统计学意义;两组预后差异有统计学意义($P < 0.05$)。**结论:**脑室镜治疗硬膜下血肿,具有手术时间短,创伤小,术后患者恢复速度快等优点,值得推广。

关键词:蛛网膜下腔;出血;脑室镜

中图分类号:R651 文献标识码:A 文章编号:1673-6273(2015)07-1313-04

A Clinical Comparative Study between Conventional Craniotomy Operation and Ventriculoscope Treatment for Epidural Hematoma

QU Zhi-feng, BAO Yan-chun, CHEN Wen-li, WEN Zhi-qiang, MA Chen-jian, GUAN Cong-cong, KANG Ping-ping

(Department of Neurosurgery, the Third Hospital of Beijing Armed Police Corps, Beijing, 100041, China)

ABSTRACT Objective: To analyze clinical effect of operation between the routine craniotomy surgery and ventriculoscope for treatment of subdural hematoma. **Methods:** From January 2012 to October 2013, a total of 63 cases with epidural hematoma were admitted in our department. 28 cases in the ventriculoscope group, including 16 males and 12 females, at age of 33.2 ± 9.4 years old, got ventriculoscope minimally invasive technology to clear intracranial hematoma. The other 35 cases in conventional craniotomy group, including 23 males and 12 females, at age of 30.2 ± 9.4 years old, received the traditional large bone flap craniotomy. **Results:** The preoperative GCS scores were 4.2 ± 0.7 in the conventional craniotomy group, and 4.6 ± 0.8 in the ventriculoscope comparatively, having no significant difference ($P > 0.05$). At the 3rd and 7th day after surgery, ventriculoscope GCS score was significantly increased; and compared with conventional craniotomy group, the difference was statistically significant ($P < 0.05$). At the 1st, 3rd, and 7th day after surgery, the blood sugar level of ventriculoscope group decreased significantly faster than that of conventional craniotomy group, and the difference was statistically significant ($P < 0.05$). The incision was longer and bone window size was larger in ventriculoscope group than in the conventional craniotomy group, and there was significant difference between the two groups. The clearance rate of hematoma was also higher in ventriculoscope group. The prognosis showed statistical difference between the two groups ($P < 0.05$). **Conclusion:** Compared to the traditional craniotomy operation, ventriculoscope for subdural hematoma can shorten operation time, lessen trauma after the surgery, and improve the GCS score and prognosis of patients.

Key words: Subarachnoid; Hemorrhage; Ventricle mirror

Chinese Library Classification(CLC): R651 **Document code:** A

Article ID:1673-6273(2015)07-1313-04

前言

急性硬脑膜下血肿在急诊手术中占到很多的比例,是神经外科临床常见疾病。出血的来源多为脑实质表面的血管,多与脑实质挫裂伤、脑内血肿并存,血肿多进展迅速。其治疗棘手,死亡率高^[1]。标准大骨瓣开颅术清除血清肿,去骨瓣减压是硬膜

下血肿是临床常用的手术方法,手术创伤大,特别是急重症,大骨瓣开颅对患者造成手术打击可能。脑室镜是微创神经外科的一个趋势^[2]。我科应用脑室镜处理硬膜下血肿的病例和开颅手术进行对比研究,现就整个研究报告如下。

1 资料与方法

1.1 临床资料

本研究是前瞻性非随机对照实验,自2012年1月到2013年10月,我科急诊收治的硬膜下血肿病例共63例,车祸外伤

作者简介:曲志峰(1981-),硕士,主治医师,主要从事神经外科疾病的治疗研究,E-mail:ldoctor98224@aliyun.com,电话:13810446861
(收稿日期:2014-07-06 接受日期:2014-07-30)

34例, 跌伤10例, 高处坠落伤12例, 钝器击伤9例。其中脑室镜组28例, 男16例, 女12例, 年龄 33.2 ± 9.4 岁, 格拉斯哥昏迷评分(Glasgow coma scale GCS)评分轻度12例, 中度7例, 重度9例; 常规开颅组35例, 男23例, 女12例, 年龄 30.2 ± 9.4 岁, GCS评分轻度13例, 中度12例, 重度10例。

1.2 手术方法

术前检查: 每个病例术前进行GCS评分, 常规术前处理包括脱水、利尿、保持呼吸道通畅, 脑保护治疗、止血药物等。同时行急诊CT检查, 确定硬膜下血肿位置。血肿部位: 额部23例, 额颞部19例, 颞顶部9例, 额顶部7例, 颞后顶下5例, 伴硬膜外血肿12例, 合并颅骨折23例。

手术方法: 所有病例均采用气管内插管全麻。常规开颅组: 根据术前CT影像学确定的血肿位置, 常规做皮骨瓣成形开颅, 根据血肿大小, 确定合适的骨窗大小, 剪开硬脑膜, 在血肿距离皮层最近的位置处切开脑皮质层, 清除血肿后, 打通侧脑室并清除部分血肿, 冲洗术野, 明显出血的电凝止血, 在血肿腔内、硬膜外置引流管。脑室镜组: 根据CT影像学表现, 选择出血量最大的CT层面, 且距离头皮最近的位置做为手术切口, 做4-5 cm切口, 全层切开直到颅骨外膜, 4号丝线缝合牵引头皮暴露颅骨, 颅骨钻孔扩大骨孔, 形成一直径约2 cm的小骨窗, 切开硬脑膜, 导入脑室镜头, 缓慢调整脑室镜角度, 吸附血凝块。操作过程中动作轻柔, 边吸引液化血液边冲洗, 保持术野清晰^[3,4]。反复冲洗, 直至血清肿清洗完毕, 看到明显出血点的, 电凝止血, 留置引流管^[5]。

1.3 观察指标

(1) GCS评分 对比常规开颅组和脑室镜组术前和术后第1、3、7天的GCS评分; (2) 血糖 对比常规开颅组和脑室镜组术前和术后第1、3、7天的血糖水平; (3) 手术情况对比 皮肤切口长度、骨窗大小、血肿清除率(术前CT血肿范围大小 - 术后第一天复查CT血肿量)/术前血肿范围; (4) 随访6个月 Glasgow预后评分(Glasgow Outcome Scale, GOS): 分为预后良好(良好 + 中残)、差(重残 + 植物生存)和死亡组。根据此标准, 对比分析常规开颅组和脑室镜组预后^[6,7]。

1.4 统计学方法

所有数据采用SPSS 15.0统计软件进行分析, 计量资料采用均值 $\pm$ 标准差($\bar{x} \pm s$), 应用t检验; 计数资料采用检验。P值均小于0.05, 认为有统计学意义。计量数据正态性采用Shapiro-Wilk检验法; 方差齐性采用Levene's检验, 若方差不齐, 采用t'检验, 否则采用t检验。预后属有序多分类资料, 采用有序多分类Kruskal-Wallis H检验。

2 结果

2.1 GCS评分结果

由表-1可以看出, 术前脑室镜组和常规开颅组的GCS评分分别为 4.2 ± 0.7 、 4.6 ± 0.8 , 差异无统计学意义($P > 0.05$)。术后第一天, 两组的GCS评分均无明显升高。术后第3、7天脑室镜GCS评分明显升高, 和常规开颅组相比, 差异有统计学意义($P < 0.05$)。

表1 脑室镜组和常规开颅组 GCS 评分对比

Table 1 Comparison of GCS between the ventriculoscope group and conventional craniotomy group

	Ventriculoscope group	Conventional craniotomy group	T	P
Before operation	4.2 ± 0.7	4.6 ± 0.8	0.94	0.21
At the 1st day after operation	7.7 ± 1.1	7.2 ± 1.3	1.24	0.12
At the 3rd day after operation	8.1 ± 1.6	7.5 ± 1.7	1.95	0.01
At the 7th day after operation	10.8 ± 2.0	8.1 ± 1.9	4.32	0.00

2.2 血糖检测结果

由表-2可以看出, 术前脑室镜组和常规开颅组的血糖水平分别为 16.22 ± 3.75 mmol/L、 14.93 ± 2.85 mmol/L, 二者的差

异无统计学意义($P > 0.05$)。术后第1、3、7天, 脑室镜组的血糖水平明显比常规开颅组下降的速度快, 差异具有统计学意义($P < 0.05$)。

表2 脑室镜组和常规开颅组血糖水平变化对比

Table 2 Comparison of blood glucose change between the ventriculoscope group and conventional craniotomy group

	Ventriculoscope group	Conventional craniotomy group	T	P
Before operation	16.22 ± 3.75	14.93 ± 2.85	1.04	0.11
At the 1st day after operation	12.38 ± 2.76	13.21 ± 2.39	1.34	0.01
At the 3rd day after operation	7.12 ± 1.78	9.86 ± 2.33	2.45	0.00
At the 7th day after operation	5.88 ± 1.14	6.92 ± 1.82	3.56	0.00

2.3 手术情况

由表-3可以看出脑室镜组皮肤切口长度、骨窗大小明显比常规开颅组要小, 差异有统计学意义。脑室镜组的血肿清除率 $82.1 \pm 23.4\%$ 、常规开颅组的血肿清除率为 $69.2 \pm 18.3\%$, 二者差异有统计学意义 ($P < 0.05$)。脑室镜组的手术时间评价为 3.5 ± 0.3 h, 对照组为 4.5 ± 0.4 h, 二者的差异有明显统计学意义

($P < 0.05$)。

2.4 预后

由表-4可以看出, 脑室镜组和常规开颅组死亡例数分别为5例(17.8%)、6例(17.1%), 差别不明显, 但是达到预后良好的例数分别为16例(57.1%)、17例(48.5%), 总体差异有统计学意义($P < 0.05$)。由表-5可以看出, GCS轻度和中度的硬膜下血肿

患者,采用脑室镜手术,预后较常规开颅组要好,差异有统计学意义($P<0.05$),但是 GCS 分级重度的患者预后无明显差异($P>0$).

表 3 脑室镜组和常规开颅组手术情况对比

Table 3 Comparison of details of operation between the ventriculoscope group and conventional craniotomy group

	Ventriculoscope group	Conventional craniotomy group	T	P
Length of incision (cm)	5.2± 1.6	15.6± 4.8	7.80	0.00
Size of bone flap (cm ²)	4.7± 0.9	7.2± 1.3	11.49	0.00
Clearance rate of hematoma (%)	82.1± 23.4	69.2± 18.3	22.52	0.00
Operation time(h)	3.5± 0.3	4.4± 0.4	13.68	0.00

表 4 脑室镜组和常规开颅组预后比较

Table 4 Comparison of prognosis between the ventriculoscope group and conventional craniotomy group

	Good	Poor	Died	H	P
Ventriculoscope group	16	7	5	11.23	0.00
Conventional craniotomy group	17	11	7		

表 5 不同 GCS 分级和手术方法与预后的关系

Table 5 The correlation of GCS classification, operation methods and prognosis

		Good	Poor	Died	H	P
GCS mild	Ventriculoscope group	10	2	0	5.23	0.00
	Conventional craniotomy group	9	3	1		
GCS moderate	Ventriculoscope group	4	2	1	3.17	0.03
	Conventional craniotomy group	7	3	2		
GCS severe	Ventriculoscope group	4	2	3	1.33	0.21
	Conventional craniotomy group	5	3	2		

3 讨论

外伤性硬膜下血肿多伴有脑挫裂伤、脑实质出血、颅骨骨折等,病情危重,其死亡率及致残率较高,如诊断治疗不及时,颅内血肿持续增大,病情加重,导致颅内高压,严重影响患者的预后。脑实质损伤打破脑组织供氧与氧耗之间的平衡关系,受伤早期引起脑组织缺血(不通)、缺氧等导致脑细胞氧供不足,机体自身的应激反应引起"糖代谢"被动员,肾上腺素、去甲肾上腺素、皮质醇等激素分泌增多。刺激肝、肌糖原迅速分解,血糖迅速升高^[8-10]。血糖水平的升高,使血浆渗透压升高,危害细胞膜功能,从而进一步引起神经细胞代谢紊乱。若血糖持续高水平,细胞上皮和毛细血管损伤,通透性增加,血液渗出,导致出血,表示脑细胞持续受高血糖水平的损伤,往往提示脑损伤预后差^[11]。本组研究发现,术后第一天,脑室镜组的血糖为(12.38± 2.76)mmol/L,开颅组的血糖为(13.21± 2.39)mmol/L,清除血肿后,脑组织血管得到正常供血,脑代谢恢复正常,血糖水平降低,可以看出脑室镜组的血糖较开颅组下降速度快,术后第7天恢复正常水平。

硬膜外血肿主要还是采取外科手术治疗,文献报道的多数硬膜下血肿都是采用传统的去骨瓣开颅清除血肿减压手术,死亡率高达45%左右。迅速清除颅内血肿,是减小并发症及改善预后最有效的办法^[12,13]。传统的标准大骨瓣开颅术清除血肿减压,手术时间长,创伤大,失血多,特别是对 GCS 评分较低的颅

内出血患者。去除大骨窗减压手术比小骨窗手术预后差,并发症多^[14]。自从1980年我国傅国枢教授介绍神经外科中使用脑室纤维内窥镜以来,显示了脑室镜在神经外科临床中的明显优势^[15]。在显示屏放大直视下的术野解剖清晰,损伤小,大大提高了颅内手术治疗的成功率和治愈率^[16-18]。特别是在高血压脑出血疾病的应用中取得了很好的临床经验。潘仁龙等回顾性分析了134例高血压脑出血应用脑室镜手术的临床资料发现,脑室镜辅助手术的死亡率17%,常规开颅手术的死亡率23为22.7%,且脑室镜能改善预后,提高生存率^[19]。

GCS 评分较低重度的蛛网膜下腔出血脑外伤患者,多数伴有脑实质挫裂伤,硬膜外血肿、颅骨骨折等,甚至还伴有胸腹联合伤,此类的患者预后有多重因素。我们的研究结果显示,GCS 重度患者两组的预后无明显差异。GCS 轻中度患者,多数患者属于单纯的颅内出血,不伴有其他复合伤,采用脑室镜清除颅内血肿的预后比对照组好,脑室镜辅助下能明显减小手术时间,减小创伤,术后恢复快,能明显改善预后,提高生存率^[20,21]。

总的来说,脑室镜应用于硬膜下血肿,较传统的开颅手术相比,手术时间短,术后患者恢复速度快,能改善呢 GCS 评分轻中度患者的预后,但是不能改善 GCS 评分重度患者的预后。

参考文献(References)

- [1] 赖润龙, 郑丰任, 许锦成, 等. 标准大骨瓣开颅术治疗急性外伤性硬膜下血肿 42 例[J]. 中华创伤杂志, 2000, 16(4): 253-254
Lai Run-long, Zheng Feng-ren, Xu Jin-cheng, et al. The standard large

- trauma craniotomy in the treatment of acute traumatic subdural hematoma in 42 cases [J]. Chinese Journal of Traumatology, 2000, 16 (4): 253-254
- [2] 杨开勇, 毛伯镛. 305 例急性硬脑膜下血肿的治疗[J]. 中华创伤杂志, 2000, 16 (5): 300-301
- Yang Kai-yong, Mao Bo-yong. 305 cases of acute subdural hematoma treatment[J]. Chinese Journal of Traumatology, 2000, 16 (5): 300-301
- [3] 史晓蓓, 王成伟, 张林, 等. 64 层螺旋 CT 脑血管造影在颅内动脉瘤诊断中的应用[J]. 现代生物医学进展, 2010, 10(6): 1143-1146
- Shi Xiao-bei, Wang Cheng-wei, Zhang Lin, et al. The Application of Intracranial Aneurysm by 64 Detector Row CT Angiography [J]. Progress in Modern biomedicine, 2010, 10 (6): 1143-1146
- [4] 薛哲, 孙正辉, 许百男, 等. 三维 CT 血管造影在颅内动脉瘤夹闭术后复查中的应用[J]. 现代生物医学进展, 2013, 13(18): 3550-3553
- Xue Zhe, Sun Zheng-hui, Xu Bai-nan, et al. Application of 3D CT Angiography in Review of Intracranial Aneurysm Clipping [J]. Progress in Modern biomedicine, 2013, 13 (18): 3550-3553
- [5] 王文浩, 林俊明, 黄巍, 等. 脑室镜辅助外科治疗外伤性慢性硬膜下积液[J]. 中国临床神经外科杂志, 2008, 13(4): 236-238
- Wang Wen-hao, Lin Jun-ming, Huang Wei, et al. Traumatic chronic subdural effusion clinical department of Neurosurgery magazine [J]. Chinese journal of clinical neurosurgery, 2008, 13 (4): 236-238
- [6] Lu J, Marmarou A, Lapane K L. Impact of GOS misclassification on ordinal outcome analysis of traumatic brain injury clinical trials [J]. J Neuro -trauma, 2012, 29(5): 719-726
- [7] 郭希高, 苏杭, 陈建民, 等. 中小骨窗开颅术治疗高血压脑出血的个体化设计(附 102 例报告) [J]. 中国微侵袭神经外科杂志, 2002, 7(2): 86-88
- Guo Xi-gao, Su Hang, Chen Jian-ming, et al. Individuated design of craniotomy with middle or small bone flap for hypertensive intracranial hemorrhage (a report of 102 cases) [J]. Chinese journal of minimally invasive neurosurgery, 2002, 7 (2): 86-88
- [8] 孟辉, 冯华, 王宪荣. 第三脑室底造瘘术治疗梗阻性脑积水与分流术的疗效比较[J]. 中华神经外科杂志, 2003, 19(6): 411-413
- Meng Hui, Feng Hua, Wang Xian-rong. Endoscopic third ventriculostomy versus shunt operation in obstructive hydrocephalus [J]. Chinese journal of neurosurgery, 2003, 19(6): 411-413
- [9] Gupta M, Verma R, Parihar A, et al. Perihematomal edema as predictor of outcome in spontaneous intracerebral hemorrhage [J]. J Neurosci Rural Pract, 2014, 5(1): 48-54
- [10] Zhou X, Chen J, Li Q, et al. Minimally invasive surgery for spontaneous supratentorial intracerebral hemorrhage: a meta-analysis of randomized controlled trials[J]. Stroke, 2012, 43(11): 2923-2930
- [11] Zhao JZ, Zhou DB, Zhou LF. The efficacy of three different approaches in treatment of hypertensive intracerebral hemorrhage: a multi-center single-blind study of 2464 patients [J]. National Medical Journal of China, 2005, 85(32): 2238-2242
- [12] 潘仁龙, 张晓峰, 郑春华, 等. 常规开颅手术与脑室镜辅助治疗高血压性脑出血疗效比较 [J]. 中国临床神经外科杂志, 2007, 12(2): 110-112
- Pan Ren-long, Zhang Xiao-feng, Zheng Chun-hua, et al. Operation and routine craniotomy surgery adjuvant treatment of hypertensive cerebral hemorrhage in comparison to the traditional surgery [J]. Chinese journal of clinical neurosurgery, 2007, 12 (2): 110-112
- [13] 许衍挺, 赵湛, 黄勇, 等. 严重脑外伤急性期血糖和血清胰岛素水平与病情及预后的关系[J]. 广东医学, 2005, 26(6): 827-829
- Xu Yan-ting, Zhao Zhan, Huang Yong, et al. The research of the blood glucose and serum insulin level and condition and prognosis in acute severe brain trauma [J]. Guangdong journal of medicine, 2005, 26 (6): 827-829
- [14] 许建强, 张记民, 马坤, 等. 硬膜外血肿增大的回顾性分析[J]. 中华神经外科杂志, 2011, 27(5): 503-505
- Xu Jian-qiang, Zhang Ji-min, Ma Kun, et al. Retrospective study on progressive epidural hematoma [J]. Chinese Journal of Neurosurgery, 2011, 27(5): 503-505
- [15] 傅国枢, 金道云. 纤维内窥镜在神经外科上的应用[J]. 国际神经病学神经外科学杂志, 1980, 5: 238-242
- Fu Guo-shu, Jin Dao-yun. The application of the fiber endoscope in the neurosurgery [J]. Journal of International Neurology and Neurosurgery, 1980, 5: 238-242
- [16] Siddique MS, Fernandes HM, Wooldridge TD, et al. Reversible ischemia around intracerebral hemorrhage: a single-photon emission computerized tomography study [J]. J Neurosurg, 2002, 96 (4): 736-741
- [17] Kim IS, Son BC, Lee SW, et al. Comparison of frame-based and frameless stereotactic hematoma puncture and subsequent fibrinolytic therapy for the treatment of supratentorial deep seated spontaneous intracerebral hemorrhage [J]. Minim Invasive Neurosurg, 2007, 50(2): 86-90
- [18] 程华东. 浅析高血压脑出血术式及手术时机选择[J]. 中国临床神经外科杂志, 2005, 10 (4): 286-287
- Cheng Hua-dong. Analysis of surgical timing of hypertension cerebral hemorrhage surgery [J]. Chinese journal of clinical neurosurgery, 2005, 10(4): 286-287
- [19] 梁敏, 汤树洪, 刘洁红, 等. 神经内镜手术治疗脑室出血的临床研究[J]. 微创医学, 2009, 4(4): 362-364
- Liang Min, Tang Shu-hong, Liu Jie-hong, et al. Neural endoscopic surgery clinical research for the treatment of ventricular hemorrhage [J]. Journal of minimally invasive medicine, 2009, 4(4): 362-364
- [20] 王平振, 邢伟, 杨光. 超早期小骨窗开颅显微手术治疗高血压脑出血 60 例[J]. 中国实用医刊, 2008, 35(11): 35-36
- Wang Ping-zhen, Xing Wei, Yang Guang. Microsurgical treatment of hypertensive cerebral hemorrhage through ultra -early craniotomy with small bone flap: report of 60 cases [J]. Chinese journal of practical medicine, 2008, 35(11): 35-36
- [21] Chen Y C, Wu Y R, Hsu W C, et al. Basal Ganglia-thalamic hemorrhage in young adults: a hospital-based study [J]. Cerebrovasc Dis, 2006, 22(1): 33-39