·临床研究·

超早期联合微创手术治疗基底节大量出血临床研究

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【摘要】 共151例高血压性基底节出血患者，于发病超早期接受经额钻孔引流联合经颞小骨窗血肿清除术（联合治疗组，68例）或去骨瓣减压血肿清除术（对照组，83例）。结果显示，联合治疗组与对照组患者术后短期及中远期疗效差异无统计学意义（均$P>0.05$），但联合治疗组患者术后苏醒快，且电解质紊乱、低蛋白血症发生率低于对照组（$P<0.05$）。提示采取超早期联合微创手术治疗基底节大量出血安全、有效。

【关键词】 颅内出血，高血压性； 基底神经节； 引流术； 外科手术，微创性

A study on the therapeutic effect of combined minimally invasive operation on the ultra-early stage of basal ganglia hemorrhage

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【Abstract】 In this study, 151 patients with hypertensive basal ganglia hemorrhage were divided into 2 groups based on different operation methods. One was combined treatment group including 68 patients, who accepted combined minimally invasive operation (transfrontal trepanation and drainage combined with transtemporal evacuation of hematoma) on the ultra-early stage of onset. Another was control group including 83 patients, who were treated by craniotomy evacuation of hematoma and decompressive craniectomy. Compared with control group, the short-term and long-term efficacy of combined treatment was not significantly different ($P > 0.05$, for all). However, the combined treatment group performed significantly much better than the control group on several aspects. Patients in combined treatment group had shorter revival time and lower incidence rate of electrolyte disturbance and hypoproteinemia, and the difference was statistically significant ($P < 0.05$). Combined minimally invasive operation on the ultra-early stage is a safe and effective method in the treatment of basal ganglia hemorrhage.

【Key words】 Intracranial hemorrhage, hypertensive; Basal ganglia; Drainage; Surgical procedures, minimally invasive

高血压性基底节出血约占脑出血的60%[1]，是发病率、病残率和病死率极高的脑血管疾病，病情凶险、进展迅速，大多数患者预后不良。基底节大量出血（≥ 60 ml）的首选治疗方法，是于全身麻醉下行去骨瓣减压血肿清除术。近年来，微创手术越来越受到神经外科医师的重视，但是手术时机和术式选择尚存有争议，天津市环湖医院神经外科2011年1月–2012年12月采用超早期（≤ 7 h）经额钻孔引流联合经颞小骨窗血肿清除术治疗68例基底节大量出血患者，取得良好疗效。

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资料与方法

一、临床资料

1. 纳入标准 （1）既往高血压病史或发病时血压 ≥ 160/90 mm Hg（1 mm Hg = 0.133 kPa），排除其他原因引起的自发性脑出血。（2）CT显示出血灶位于基底节区，根据多田公式计算出血量 ≥ 60 ml。（3）发病时间 ≤ 7 h，或脑疝形成（单侧瞳孔散大）时间 ≤ 1 h。（4）患者入院时生命体征相对平稳，Glasgow昏迷量表（GCS）评分 ≥ 5分。（5）年龄18～75岁。（6）能够坚持随访 > 6个月。（7）无构成手术禁忌的严重全身性疾病。

2. 排除标准 （1）非高血压性脑出血（如颅内动脉瘤、动-静脉畸形破裂出血或外伤性出血）。（2）CT

表1 联合治疗组与对照组患者一般资料的比较*

Table 1. Comparison of general data of patients in each group*

Group	N	Sex case (%)		Age ($\bar{x}\pm s$, year)	Duration ($\bar{x}\pm s$, h)	Bleeding ($\bar{x}\pm s$, ml)	GCS ($\bar{x}\pm s$, score)
		Male	Female				
Control	83	51 (61.45)	32 (38.55)	54.44 ± 2.25	6.20 ± 0.50	72.67 ± 11.74	8.47 ± 2.66
Combined treatment	68	41 (60.29)	27 (39.71)	53.18 ± 2.11	6.40 ± 0.50	71.71 ± 13.60	8.44 ± 2.09
χ^2 or t value		0.021		- 3.520	2.446	- 0.465	0.078
P value		0.885		0.001	0.016	0.642	0.938

*χ^2 test for comparison of sex; t test for others。GCS,Glasgow Coma Scale,Glasgow昏迷量表

显示血肿累及丘脑、脑干,或大量出血破入脑室。(3)发病时间>7 h,或脑疝形成(单侧瞳孔散大)时间>1 h。(4)入院时GCS评分<5分。(5)年龄<18岁或>75岁。(6)不能完成6个月的随访。(7)有明显手术禁忌证,如凝血功能异常,严重心、肺、肝、肾功能障碍,糖尿病等。(8)合并严重感染。

3.一般资料 据纳入与排除标准,选择2011年1月–2012年12月在我院神经外科住院治疗且诊断明确、临床资料完整的高血压性基底节出血患者共151例,根据不同术式分为两组。(1)经额钻孔引流联合经颞小骨窗血肿清除术组(联合治疗组):68例患者,男性41例,女性27例;年龄31~77岁,平均(53.18±2.11)岁;出血量60~110 ml,平均(71.71±13.60) ml;入院时GCS评分5~12分,平均(8.44±2.09)分。(2)传统去骨瓣减压血肿清除术组(对照组):共83例患者,男性51例,女性32例;年龄34~78岁,平均(54.44±2.25)岁;出血量60~120 ml,平均(72.67±11.74) ml;入院时GCS评分5~11分,平均(8.47±2.66)分。两组患者性别、出血量、GCS评分差异无统计学意义(均$P>0.05$),而年龄、发病时间差异具有统计学意义(均$P<0.05$,表1)。

二、手术方法

1.联合治疗组 (1)经额钻孔血肿抽吸引流术:患者仰卧位、局部麻醉,穿刺点位于眉弓上7.50~9 cm、中线旁开3.50 cm,切口长约0.50 cm,骨孔直径3 mm。根据术前CT定位,以血肿最大层面外1/3为穿刺点,颅内置管7.50~9 cm,首次抽吸血肿量的1/3(15~20 ml),引流通畅后缝合、固定并暂时夹闭引流管。(2)经颞小骨窗血肿清除术:患者侧卧位、全身麻醉,选择血肿最大、最近层面为小骨窗中心,纵行切口,长约6~8 cm,小骨窗直径约3.50 cm;再次经额抽吸血肿,减张硬脑膜后放射状剪开。手术显微镜下经侧裂或非功能区皮质(切口长为2~2.50 cm)进入血肿腔,尽可能清除血肿,仔细止血、确认引流管末端位于血肿腔内、引流通畅后,缝合硬脑膜并修补完全;骨瓣复位固定、逐层缝合头皮。

2.对照组 采用去骨瓣减压血肿清除术。患者侧卧位、全身麻醉。根据血肿大小和位置确定手术切口,一般采用经颞“马蹄”形切口或经额颞叶“问号”形切口,骨窗为10 cm×12 cm~12 cm×14 cm大小,视脑肿胀程度决定是否向颅底方向扩大骨窗。放射状剪开硬脑膜,经侧裂或非功能区皮质(切口长为2~2.50 cm)进入血肿腔,直视下完全清除血肿;仔细止血后减张缝合硬脑膜,人工硬脑膜或部分颞浅筋膜修补缺损部,硬脑膜外放置引流管、弃骨瓣,逐层缝合头皮。

3.术后处理 分别于术后第1、3、7和14天进行头部CT检查,联合治疗组患者若残留血肿<15 ml,可直接拔除引流管,否则血肿腔内注射尿激酶(20~50)×10^3 U,夹闭3 h后开放(1次/d),待残留血肿清除干净后拔管。对照组患者若残留血肿≥40 ml且有明显占位效应,则应即刻再次行血肿清除术,否则可拔除引流管。所有患者术后常规予以脱水、止血、控制血压、催醒、神经保护,以及祛痰、抑酸等对症处理。两组患者出院后均随访6个月。

4.疗效评价 (1)短期疗效评价:于术后14 d时,采用Glasgow预后分级(GOS)进行疗效评价,分为5级:1级,死亡;2级,植物状态生存;3级,重残,神志清醒,日常生活需他人照料;4级,轻残,可独立生活,并能在保护下工作;5级,良好,尽管遗留轻度缺陷,但能恢复正常工作和生活。其中,3~5级定义为恢复。(2)中远期疗效评价:于术后3和6个月时,采用Barthel指数(BI)评价患者日常生活活动能力(ADL),共包括10项内容,即进食、床椅转移、个

人修饰、如厕、洗澡、平地行走、上下楼梯、穿衣和大小便控制。每一项均根据是否需要帮助及帮助程度分为0、5、10、15分共计4级，总评分为100分，完全独立100分、轻度依赖>75~95分、中度依赖50~75分、中度依赖25~45分、完全依赖0~20分[2]。其中，完全独立、轻度依赖和中度依赖为有效，重度依赖和完全依赖为无效；术后3和6个月时计算总有效率，总有效率(%)=(完全独立例数+轻度依赖例数+中度依赖例数)/生存总例数×100%。(3)意识改善评价：①术后苏醒。患者生命体征平稳、自主呼吸、血氧饱和度>95%，双侧瞳孔等大、等圆，对光反射灵敏；刺激肢体可定位，能安全拔除气管插管。②意识清醒。患者自动睁眼，可言语或对语言刺激有明确反应，双侧瞳孔等大、等圆，对光反射存在；肢体能从嘱活动。(4)手术安全性评价：通过常见术后并发症发生率，评价手术安全性。包括肺部感染、上消化道出血、颅内感染、颅内再出血、电解质紊乱和低蛋白血症。

三、统计分析方法

采用SPSS 13.0统计软件进行数据分析。计量资料以均数±标准差($\bar{x}\pm s$)表示，采用两独立样本的t检验；计数资料以相对数构成比(%)或率(%)表示，行χ^2检验，两组总有效率的比较采用成组设计的秩和检验。以$P\leqslant 0.05$为差异有统计学意义。

结　果

术后14 d时，两组患者疗效差异无统计学意义($Z=-1.390$，$P=0.165$；表2)。术后3个月时，两组患者日常生活活动能力比较，差异无统计学意义($Z=-0.984$，$P=0.325$)；6个月时，联合治疗组总有效率为76.12%(51/67)、对照组66.25%(53/80)，组间差异亦无统计学意义($Z=-1.181$，$P=0.238$；表3)。但联合治疗组患者手术时间和术后意识恢复时间均较对照组短，两组差异有统计学意义(均$P=0.000$，表4)。

联合治疗组患者术后电解质紊乱、低蛋白血症发生率低于对照组，差异有统计学意义(均$P<0.05$)；而其他并发症发生率比较，差异无统计学意义(均$P>0.05$，表5)。

表2 联合治疗组与对照组患者术后第14天时疗效的比较* 例(%)

Table 2. Comparison of efficacy 14 d after operation between 2 groups* case (%)

Group	N	Death	Vegatative state	Recovery
Control	83	3 (3.61)	12 (14.46)	68 (81.93)
Combined treatment	68	1 (1.47)	6 (8.82)	61 (89.71)

*$Z=-1.390$, $P=0.165$

讨　论

基底节大量出血形成的占位效应在急性期可导致血肿周围脑组织广泛缺血、缺氧而诱发脑水肿，急性期后血肿降解产物和炎性因子继而对脑组织产生强烈的细胞毒作用，进一步加重脑水肿。超早期手术治疗可及时阻断这一病理反应过程，对改善和恢复神经功能具有重要意义[1-4]。

根据我们的临床经验，影响基底节大量出血手术成功的关键因素有两方面：一是“早期”，即手术时间越早越好；二是“完全”，即术中血肿清除越完全、止血越彻底越好。经额钻孔引流联合经颞小骨窗血肿清除术既可满足“早期”又能达到“完全”，二者取长补短。在出血超早期，血肿尚未完全凝固钙化时施行钻孔引流，可于发病后最短时间内迅速引流大量血肿，及时解除血肿对周围脑组织的压迫，防止继发性脑损害；而充分减压后，行小骨窗手术时发生急性脑膨出和嵌顿疝的风险大大降低，同时可以彻底清除残留血肿并严密止血，从而防止发生活动性出血[4-9]。

多数报道显示，钻孔血肿引流术一般选择血肿最大、最近平面，采用与血肿纵轴方向垂直角度，经颞叶穿刺[6-10]。而本组病例选择的是经额叶穿刺，其理由是：(1)穿刺路径基本为乏血管区和大脑皮质非功能区，放置引流管造成出血和神经损伤的概率极低。(2)血肿的压力梯度是由中线向皮质过渡，放置引流管的方向与血肿纵轴平行，可使引流管侧孔方向与血肿扩张方向垂直，以利于凝血块进入引流管。(3)对经颞叶入路手术无明显影响，术后可保留引流管，利于残留血肿和迟发性血肿的排出，避免再次手术。

联合微创手术所用时间明显少于传统开颅手术，其优点为：可缩短血肿在颅内存留时间，减轻继发性脑损害；减少脑组织在空气中的暴露时间，降低颅内感染风险；减少麻醉药物的摄入，术后复苏时间缩短；缩短呼吸机应用时间，术后较少发生肺部感染[8-13]。另外，手术采用直线切口、小骨窗，对

表3 联合治疗组与对照组患者术后3和6个月时疗效的比较 例(%)

Table 3. Comparison of prognosis 3 and 6 months after operation between 2 groups case (%)

Group	N	Independence	Mild dependence	Moderate dependence	Severe dependence	Complete dependence
3 months after operation*						
Control	80	5 (6.25)	15 (18.75)	30 (37.50)	18 (22.50)	12 (15.00)
Combined treatment	67	5 (7.46)	14 (20.89)	28 (41.79)	14 (20.89)	6 (8.96)
6 months after operation#						
Control	80	7 (8.75)	15 (18.75)	31 (38.75)	15 (18.75)	12 (15.00)
Combined treatment	67	6 (8.96)	16 (23.88)	29 (43.28)	10 (14.93)	6 (8.96)

*$Z = -0.984$, $P = 0.325$; #$Z = -1.181$, $P = 0.283$

表4 联合治疗组与对照组患者手术时间和术后意识恢复时间的比较($\bar{x} \pm s$)

Table 4. Comparison of operation duration and consciousness outcome between 2 groups ($\bar{x} \pm s$)

Group	N	Mean operating time (h)	Postoperative revival (h)	Consciousness regain (d)
Control	83	4.00 ± 0.50	6.31 ± 0.70	3.11 ± 1.00
Combined treatment	68	2.00 ± 0.47	3.14 ± 0.48	1.77 ± 1.00
t value		24.455	32.701	7.948
P value		0.000	0.000	0.000

表5 联合治疗组与对照组患者术后并发症发生率的比较 例(%)

Table 5. Comparison of postoperative complications between 2 groups case (%)

Group	N	Pulmonary infection	Upper gastrointestinal hemorrhage	Intracranial infection	Intracranial rebleeding	Electrolyte disturbance	Hypoproteinemia
Control	80	45 (56.25)	37 (46.25)	6 (7.50)	17 (21.25)	38 (47.50)	27 (33.75)
Combined treatment	67	28 (41.79)	21 (31.34)	2 (2.99)	12 (17.91)	19 (28.36)	12 (17.91)
χ^2 value		3.049	3.392	0.700	0.257	5.628	4.693
P value		0.081	0.066	0.403	0.612	0.018	0.030

正常解剖结构的破坏较少,可避免手术对脑组织造成的医原性损伤,术后较少发生应激性溃疡、上消化道出血,以及发热和水、电解质平衡紊乱等下丘脑损伤症状。同时,切口愈合迅速,明显缩短了住院时间[11-13]。与此同时,微创手术尚可最大程度地保留颅腔的密闭性和颅骨的完整性,有助于患者手术后尽快恢复正常颅内压,减少因颅内压波动而出现的头痛、头晕等症状;同时可减轻患者之经济负担和心理压力,增强治愈的信心[14-16],术后尽早开始并坚持康复治疗,可有效提高患者生活质量。

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European Stroke Conference

Time: May 6–9, 2014

Venue: Nice, France

Email: hennerici@eurostroke.eu

Website: www.eurostroke.eu; www.eurostroke.org

Deadline for abstract submission: January 12, 2014

The European Stroke Conference (ESC) was founded in 1990 by J. Bogousslavsky (Switzerland) and M.G. Hennerici (Germany). The first meeting was held in Düsseldorf and was attended by about 500 people and proved to be a great success. At that time only the North American conference existed for clinical researchers and basic scientists to present data from stroke research. The prospect to establish another European stroke meeting was highly challenging. After biannual meetings, 1992 in Lausanne and 1994 in Stockholm and increasing attendance, however, the European Stroke Conference became an annual, international, well-received and continuously growing stroke conference. In the meantime this meeting became a highly successful conference with more than 4200 attendees 2013 in London, UK.

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