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## Hunt-Hess I~IV 级脑动脉瘤破裂出血实施显微镜手术 夹闭瘤颈的最佳手术时机

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**[摘要]** 目的: 探讨Hunt-Hess I~IV级脑动脉瘤破裂出血患者实施显微镜手术夹闭瘤颈的最佳手术时机。方法: 前瞻性选取2016年1月至2019年3月期间在三亚市中心医院神经外科诊治的120例脑动脉瘤破裂出血患者, Hunt-Hess分级I~IV级。患者均接受显微镜手术夹闭瘤颈治疗, 患者和/或家属知晓本研究潜在风险和收益后, 签署研究知情同意书。将65例脑动脉瘤破裂出血72 h内接受手术者设为A组, 将55例脑动脉瘤破裂出血72 h后接受手术者设为B组。两组围手术期护理均相同, 采用格拉斯哥预后评分(Glasgow outcome score, GOS)评估两组及不同Hunt-Hess分级患者的手术疗效, 术后均随访6个月统计并发症发生情况。结果: 两组病死率比较差异无统计学意义( $\chi^2=0.007$ ,  $P>0.05$ ); A组恢复良好率83.08%高于B组65.45%, 差异有统计学意义( $\chi^2=4.934$ ,  $P<0.05$ ); A组Hunt-Hess分级I~II级恢复良好率(88.24%)略高于B组(82.14%), 差异无统计学意义( $\chi^2=1.843$ ,  $P>0.05$ ); 但A组Hunt-Hess分级III~IV级恢复良好率(80.65%)明显高于B组(55.56%), 差异有统计学意义( $\chi^2=4.244$ ,  $P<0.05$ )。两组术后均出现动脉瘤再破裂、脑积水和脑血管痉挛等并发症, 其中A组Hunt-Hess分级I~II级, III~IV级总并发症率分别为5.88%, 6.45%, 与B组14.29%, 22.22%比较, 差异无统计学意义( $\chi^2=0.010$ , 1.838,  $P>0.05$ ), A组总并发症率(6.15%)低于B组(18.18%), 差异有统计学意义( $\chi^2=4.376$ ,  $P<0.05$ )。结论: Hunt-Hess I~IV级脑动脉瘤破裂出血患者在早期(出血 $\leq$ 72 h)接受显微镜手术夹闭瘤颈治疗, 能有效降低并发症率和改善预后, 尤其以Hunt-Hess III~IV级患者获益显著。

**[关键词]** 脑动脉瘤破裂出血; 显微镜手术夹闭瘤颈; 格拉斯哥预后评分; 并发症

## Best operation opportunity of microsurgery to clamp the neck of ruptured aneurysm in hunt Hess grade I-IV

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**Abstract** **Objective:** To explore the best opportunity for microsurgery to clamp the aneurysm neck in patients with hunt Hess grade I-IV cerebral aneurysm rupture and hemorrhage. **Methods:** A total of 120 patients with Hunt Hess grade I to IV ruptured cerebral aneurysms from January 2016 to March 2019 in Department of Neurosurgery of

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Sanya Central Hospital were selected prospectively. The patients were all treated with microsurgical clipping of the aneurysms neck. After the patients and/or their families knew the potential risks and benefits of this study, they signed the informed consent. Sixty-five patients with ruptured cerebral aneurysms and bleeding within 72 hours were recorded as group A, and 55 patients with ruptured cerebral aneurysms and bleeding 72 hours later were recorded as group B. The perioperative nursing of the two groups were the same. Glasgow prognosis (GOS) score was used to evaluate the surgical efficacy of the two groups and different Hunt Hess grade patients. The complications were followed up for 6 months. **Results:** There was no significant difference in mortality between the two groups ( $\chi^2=0.007, P>0.05$ ). The recovery rate of group A was 83.08% higher than that of group B (65.45%) ( $\chi^2=4.934, P<0.05$ ). The good recovery rate of hunt Hess grade I-II in group A was 88.24%, slightly higher than 82.14% in group B ( $\chi^2=1.843, P>0.05$ ), but the good recovery rate of hunt Hess grade III-IV in group A was 80.65%, which was significantly higher than that in group B ( $\chi^2=4.244, P<0.05$ ). There were complications such as aneurysm rupture, hydrocephalus and cerebral vasospasm in both groups. The total complications of hunt Hess I-II and III-IV in group A were 5.88% and 6.45%, respectively. There was no significant difference compared with 14.29% and 22.22% in group B ( $\chi^2=0.010, 1.838, P>0.05$ ). The total complication rate in group A was 6.15% lower than that in group B ( $\chi^2=4.376, P<0.05$ ). **Conclusion:** In the early stage (bleeding  $\leq 72$  hours), the patients with ruptured and bleeding of hunt Hess grade I-IV cerebral aneurysm received microsurgery to clamp the tumor neck, which can effectively reduce the complication rate and improve the prognosis, especially in hunt Hess grade III-IV patients.

**Keywords** cerebral aneurysm rupture and hemorrhage; microsurgical clipping of aneurysm neck; Glasgow prognosis score; complications

脑动脉瘤是指脑动脉内腔的局限性异常扩大所致动脉壁的瘤状突出, 先天性缺陷和腔内压力增高是主要病因。脑动脉瘤易受用力过度、劳累过度或情绪激动等影响发生破裂和大出血。作为造成蛛网膜下腔出血(subarachnoidhemorrhage, SAH)的首要病因, 脑动脉瘤破裂出血不仅引起患者剧烈头痛、呕吐和视力视野障碍等症状, 还会增加脑水肿、脑血管痉挛等并发症和心脑血管系统疾病风险, 若治疗不及时, 再次破裂出血发生率高达35%~50%, 致残、致死率均较高<sup>[1-2]</sup>。显微镜手术夹闭瘤颈是目前治疗脑动脉瘤破裂出血的主要术式, 但关于手术时机目前尚未完全统一, 尤其对Hunt-Hess高分级患者的手术处理尚存在争议<sup>[3]</sup>。为了最大化让患者获益和改善预后, 本研究旨在探讨出血 $\leq 72$  h内和出血 $> 72$  h后实施显微镜手术夹闭瘤颈治疗的效果。

## 1 对象与方法

### 1.1 对象

前瞻性选取三亚中心医院神经外科2016年1月至2019年3月收治的120例脑动脉瘤破裂出血患者。纳入标准: 1)发病急剧, 表现为剧烈头

痛、频繁呕吐、大汗淋漓等症状, 可伴有体温升高、意识障碍甚至昏迷, 实验室检查白细胞计数 $> 10 \times 10^9/L$ , 均经脑血管造影(digital subtraction angiography, DSA)确诊脑动脉瘤破裂出血; 2)年龄 $\leq 70$ 岁, 均首次破裂出血, Hunt-Hess分级为I-IV级; 3)患者和/或家属对本研究知情同意, 知晓手术的潜在风险和收益。排除标准: 1) Hunt-Hess分级V级者, 患者去大脑强直, 濒死状态; 2)不具备显微镜手术夹闭瘤颈指征的巨型动脉瘤者; 3)不具备术后随访条件者; 4)脑痴呆、癫痫史者。

将脑动脉瘤破裂出血72 h内和72 h后接受显微镜手术夹闭瘤颈的患者分别设为A组( $n=65$ )、B组( $n=55$ )。A组男32例, 女33例; 年龄35~70( $50.95 \pm 5.76$ )岁; Hunt-Hess I级11例, II级23例, III级21例, IV级10例; 动脉瘤共72个, 其中大脑中动脉瘤33个, 大脑前动脉瘤9个, 前交通动脉瘤17个, 颈内后交通动脉瘤13例; 合并脑内水肿23例, 包括额叶直回血肿12例, 颞叶血肿6例, 出血破入脑室5例。B组男26例, 女29例; 年龄32~70( $50.93 \pm 5.80$ )岁; Hunt-Hess I级8例, II级20例, III级17例, IV级10例; 动脉瘤共62个, 包括大脑中动脉瘤29个, 大脑前动



表2 两组不同Hunt-Hess分级GOS评分比较

Table 2 Comparison of GOS scores of different hunt Hess grades in two groups

组别	n	GOS评分/[例(%)]		
		1分	2~3分	4~5分
Hunt-Hess I~II级				
A组	34	0 (0.00)	4 (11.76)	30 (88.24)
B组	28	0 (0.00)	7 (25.00)	21 (75.00)
Hunt-Hess III~IV级				
A组	31	0 (0.00)	6 (19.35)	25 (80.65)
B组	27	1 (3.70)	11 (40.74)	15 (55.56)*

与A组比较, \* $P < 0.05$ 。

Compared with group A, \* $P < 0.05$ .

表3 两组术后随访6个月并发症比较

Table 3 Comparison of complications between the two groups after 6-month follow-up

组别	n	并发症/[例(%)]			合计
		动脉瘤再破裂	脑积水	脑血管痉挛	
Hunt-Hess I~II级					
A组	34	1 (2.94)	0 (0.00)	1 (2.94)	2 (5.88)
B组	28	0 (0.00)	2 (7.14)	2 (7.14)	4 (14.29)
Hunt-Hess III~IV级					
A组	31	0 (0.00)	1 (3.23)	1 (3.23)	2 (6.45)
B组	27	3 (11.11)	1 (3.70)	2 (7.41)	6 (22.22)
合计					
A组	65	1 (1.54)	1 (1.54)	2 (3.08)	4 (6.15)
B组	55	3 (5.45)	3 (5.45)	4 (7.27)	10 (18.18)*

与A组比较, \* $P < 0.05$ 。

Compared with group A, \* $P < 0.05$ .

### 3 讨论

随着动脉瘤诊断技术和外科手术的不断发展, 脑动脉瘤及破裂出血的早期诊断准确率明显提高, 致残致死率有所下降, 但目前神经外科学术界关于最佳手术时机仍存在不同观点。倾向于早期(出血72 h内)实施显微镜下夹闭瘤颈术的学者<sup>[4-5]</sup>认为: 虽然部分动脉瘤破裂后在机体凝血机制作用下能逐渐封闭, 有初步止血的效果, 但仅局限于部分直径较小的动脉瘤, 且仍存在较高的再次破裂出血风险。临床经验表明: 动脉瘤再破裂出血多出现在首次出血的4~9 d, 一旦发生再出

血, 患者预后往往欠佳, 可见首次出血后若治疗不及时, 会增加患者致残和病死风险, 因此宜早期实施手术迅速解除患者血肿压迫症状, 减轻出血对脑组织的损伤, 有效减少再破裂出血和相关并发症发生, 让患者充分获益。质疑早期实施手术的学者<sup>[6-7]</sup>认为: 脑动脉瘤破裂出血早期脑肿胀严重, 脑脆性增加, 脑组织的抗牵拉能力下降, 术中分离蛛网膜下腔和牵拉脑组织等操作存在较高风险, 增加手术难度, 若处理不当, 易引起脑水肿和进一步加重脑损伤, 不利于神经系统的重建和功能修复, 出于规避手术风险考虑, 宜先给予保守治疗降低颅内压和减轻脑水肿等, 待患

者生命体征趋于平稳后择期(出血3~14 d)手术。随着对脑动脉瘤破裂出血认识加深和显微镜夹闭瘤颈术的不断完善,为早期实施瘤颈夹闭术提供了有利条件<sup>[8]</sup>。

本研究A组在出血72 h内实施显微镜手术夹闭瘤颈治疗,结果显示患者恢复良好率明显高于B组,与文献<sup>[9]</sup>结论吻合,说明早期实施显微镜夹闭瘤颈对减轻患者脑损伤和改善预后积极作用。笔者认为在脑动脉瘤破裂出血患者身体状况允许前提下,均宜积极进行早期夹闭瘤颈手术,及时清除蛛网膜下腔的积血和脑内血肿,降低急性脑积水和脑血管痉挛的发生风险,快速止血和减轻脑损伤,促进认知功能恢复,术中在显微镜监视下分离脑裂、载瘤动脉和动脉瘤颈,解剖侧裂时遵循循序渐进的原则等,可降低手术难度和避免不必要的手术创伤<sup>[10-11]</sup>。本研究出于手术安全和伦理学考虑,排除Hunt-Hess V级高危重患者,手术均由具有丰富手术经验的神经外科医师操作,Hunt-Hess I~IV级早期实施手术均取得成功,未出现死亡病例。有回顾性分析<sup>[12]</sup>报道指出手术时机是影响SAH预后的重要因素,早期手术对减少SAH并发症、脑认知障碍的发生有显著作用。

本研究还显示两组Hunt-Hess低分级(I~II)患者手术疗效无显著差异,但A组Hunt-Hess III~IV级患者恢复良好率明显高于B组,总并发症率低于B组,与徐苑源<sup>[13-14]</sup>结论相似,提示Hunt-Hess III~IV级患者早期实施夹闭瘤颈术能充分获益。笔者认为Hunt-Hess III~IV级病情程度相对严重,择期手术虽然患者体征相对稳定,但存在较高再破裂出血和脑血管痉挛风险。临床中有部分患者等待手术期间出现再破裂出血,进而失去手术治疗机会,预后往往较差,而早期手术能较好规避上述择期手术的不足,能快速解除血肿压迫和止血,加上术后继续给予综合治疗,有效减轻脑水肿,减少再破裂、脑血管痉挛的发生风险,改善了患者预后<sup>[15-16]</sup>。此外也有报道<sup>[17]</sup>指出超早期(出血24 h内)显微手术对前交通动脉动脉瘤(anterior communicating artery aneurysm, ACoAA)破裂合并颅内血肿也有积极疗效,术后GOS评分明显提高,但该报道缺乏对照分析,且临床多适用于病情危重(IV~V级)患者,超早期手术与早期手术的预后差异尚需后续论证。

综上,本研究验证了Hunt-Hess I~IV级脑动脉瘤破裂出血患者早期实施显微镜夹闭瘤颈的显著优势,尤其是Hunt-Hess III~IV级患者能充分获益,对提高手术疗效和改善预后具有重要意义。

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