

## . 论 著 .

## 机械取栓治疗急性基底动脉闭塞的疗效

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**【摘要】目的** 探讨机械取栓术治疗急性基底动脉闭塞的临床效果。**方法** 回顾性分析 2021 年 1 月至 2022 年 10 月机械取栓治疗的 16 例急性基底动脉闭塞的临床资料。根据 TICI 评分评估取栓后动脉再通情况,采用美国国立卫生研究院卒中量表(NIHSS)评分评估神经功能,术后 90 d 采用改良 Rankin 量表(mRS)评分评估预后状况。**结果** 16 例均使用 TrevoProVue 取栓支架进行取栓,术后 TICI 分级 3 级 14 例,2b 级 2 例,血管再通率为 100%。出院时 NIHSS 评分[(26.06±11.48)分]较入院时[(31.89±7.08)分]明显降低( $P<0.05$ )。术后 90 d, mRS 评分 0~2 分 4 例(25%), 3~5 分 12 例,其中 5 例术后 7 d 内死亡。**结论** 急性基底动脉闭塞的病死率及致残率很高,机械取栓术是一种安全、有效的治疗方法,但预后的影响因素较多,病人的预后仍有待改善。

**【关键词】** 急性基底动脉闭塞;机械取栓术;疗效

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### Clinical efficacy of mechanical thrombectomy for patients with acute basilar artery occlusion

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**【Abstract】 Objective** To investigate the clinical efficacy of mechanical thrombectomy for patients with acute basilar artery occlusion. **Methods** The clinical data of 16 patients with acute basilar artery occlusion treated by mechanical thrombectomy from January 2021 to October 2022 were retrospectively analyzed. The arterial recanalization after thrombectomy was evaluated according to the TICI grade, the neurological function was evaluated using the National Institutes of Health Stroke Scale (NIHSS) score, and the prognosis was evaluated using the modified Rankin Scale (mRS) score 90 days after surgery. **Results** All 16 patients were treated with TrevoProVue thrombectomy stent. TICI grade 3 was achieved in 14 patients and grade 2b in 2, and the vascular recanalization rate was 100%. The NIHSS score at discharge [(26.06±11.48) points] was significantly lower than that [(31.89±7.08) points] at admission ( $P<0.05$ ). A mRS score of 0~2 was achieved in 4 patients (25%) and a mRS score of 3~5 in 12 patients, of whom 5 died within 7 days after surgery. **Conclusions** The mortality and disability rates of acute basilar artery occlusion are very high. Mechanical thrombectomy is a safe and effective treatment method, but there are many prognostic factors, and the prognosis of patients still needs to be improved.

**【Key words】** Acute basilar artery occlusion; Mechanical thrombectomy; Clinical efficacy

脑卒中是我国人民残疾、死亡的首要原因,包括出血性和缺血性脑卒中,其中 75% 以上为缺血性脑卒中<sup>[1]</sup>。近年来,机械取栓术被认为是前循环血管闭塞再通的有效方法<sup>[2]</sup>,但对后循环大动脉闭塞尚未形成统一的明确的治疗共识。本文总结机械取栓术治疗急性基底动脉闭塞的经验。

## 1 资料与方法

**1.1 病例选择标准** 年龄≥18 周岁;影像学检查示基底动脉闭塞,发病时间<24 h;美国国立卫生研究院卒中量表(National Institutes of Health stroke scale, NIHSS)评分≥6 分;颅脑 CT 示无脑出血,无其他部位活动性出血或明显出血倾向;血糖<2.7 mmol/L 或>

22 mmol/L;无严重心、肝、肾等重要脏器功能不全。

**1.2 研究对象** 回顾性分析 2021 年 1 月至 2022 年 10 月机械取栓术治疗的 16 例急性基底动脉闭塞的临床资料,其中男性 13 例,女性 3 例;年龄 57~85 岁,平均(67.1±8.2)岁;发病时间 6 h 内 12 例,6~24 h 有 4 例;合并糖尿病 4 例、高血压病 14 例、高脂血症 3 例、房颤 2 例。入院 NIHSS 评分(31.89±7.08)分。本研究方案经天津市人民医院伦理委员会审查批准(编号为(2024)年快审第(B10)号),纳入的病人都签署知情同意书。

**1.3 治疗方法** 气管插管全身麻醉后取仰卧位,采用改良 Seldinger 技术行股动脉穿刺,置入动脉鞘,选择性行全脑血管造影以明确颅内动脉闭塞位置,若符合取栓手术指征,导丝引导下更换 6F 长鞘,路径图下,微导丝辅助微导管到达闭塞段动脉远端,将 TrevoProVue 取栓支架送至合适位置,并由闭塞段远端血管向近端释放,支架越过闭塞段动脉两端,支架

撑开后将取栓支架与微导管一起缓慢轻柔地拉出体外,同时导引导管保持负压抽吸。若一次不能完全取出血栓,则重复操作(一般不超过3次)。

1.4 疗效评估 根据TICI评分评估动脉再通情况:0级,无血流;1级,少量血流;2级,血流通而不畅,其中<50%供血区域充盈为2a级,≥50%供血区域充盈为2b级;3级,血流完全通畅。术后90 d采用改良Rankin量表(modified Rankin scale, mRS)评分评估预后,其中0~2分为预后良好,3~5分为预后不良。

2 结果

2.1 血管开通情况 16例均使用TrevorProVue取栓支架进行取栓。术后TICI分级3级14例(图1),2b级2例,血管再通率为100%。

2.2 临床预后 出院时NIHSS评分[(26.06±11.48)分]较入院时NIHSS评分明显降低( $P<0.05$ )。术后90 d,预后良好4例(25%),预后不良12例,其中5例术后7 d内死亡。

3 讨论

急性基底动脉闭塞约占急性缺血性脑卒的1%,

但病死率约80%,临床预后差<sup>[3,4]</sup>。该病好发于中老年人,近年来有逐年年轻化的趋势。本文病例平均年龄(67.1±8.2)岁,可能是中老年人身体条件较差,或基础疾病较多。本文14例有高血压病,4例有糖尿病,3例有高脂血症,2例有房颤。

发病后,缺血脑组织的主要血供来源于侧支代偿血管,使缺血脑组织得到代偿性灌注,故侧支循环代偿越差,临床症状越严重,NIHSS评分越高。基于脑血管造影的侧支代偿分级将侧支循环分为0~4级:0级,没有侧支血流到缺血区域;1级,缓慢的侧支血流到缺血周边区域,伴持续的灌注缺陷;2级,快速的侧支血流到缺血周边区域,伴持续的灌注缺陷,仅有部分到缺血区域;3级,静脉晚期可见缓慢但是完全的血流到缺血区域;4级,通过逆行灌注血流快速而完全的灌注到整个缺血区域。本文12例预后不良,侧支代偿分级为0~1级。有研究认为,术前NIHSS评分与预后密切相关,术前NIHSS评分<10分的病人预后较好<sup>[5]</sup>。本文病人入院NIHSS评分平均(31.89±7.08)分,>10分。

该病治疗的目标为尽快开通闭塞动脉,恢复血流。研究显示及时开通闭塞血管可以挽救半暗带的脑组织<sup>[6]</sup>。本文预后良好病人发病时间<6 h,但5例死亡病人中4例发病时间<6 h,可能缺血时间长短不是取栓术预后的决定因素。我们曾报道8例急性基底动脉闭塞超时间窗取栓术治疗后病情也得到改善<sup>[7]</sup>。以往研究发现溶栓治疗是急性缺血性脑梗死的重要治疗方法,但对大动脉闭塞的溶栓效果不理想<sup>[8]</sup>。研究发现静脉溶栓血管再通率低,机械取栓术血管再通率更高<sup>[9]</sup>。本文所有病人行机械取栓术治疗,闭塞血管再通率为100%,4例(25%)获得良好预后,比其他研究结果(29%)略低<sup>[10]</sup>。

脑梗死面积和术后出血是影响病人预后的重要因素,其中术后出血虽不常见,一旦出现,将严重威胁病人的生命,原因多考虑再灌注压突破、缺血再灌注损伤等<sup>[11]</sup>。我们对所有取栓术后病人都严格控制血压,以降低术后缺血再灌注损伤风险。本文16例中,12例(75%)预后不良,有5例(31.3%)在取栓治疗术后7 d内死亡,其中1例出现脑桥、丘脑出血,4例出现弥漫性脑肿胀,经颅后窝减压术、侧脑室钻孔引流术治疗仍无效。我们分析原因可能与侧支循环代偿差、缺血再灌注损伤关系密切。

综上所述,急性基底动脉闭塞的病死率和致残率很高,机械取栓术是一种安全、有效的治疗方法。一旦怀疑该病,应尽快到达有条件的医院,以得到最

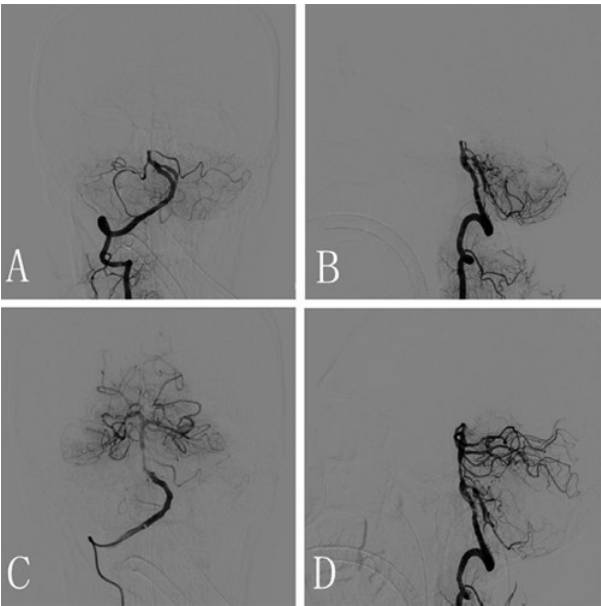


图1 基底动脉远心段急性闭塞机械取栓术前后DSA  
A、B. 术前椎动脉正侧位造影示基底动脉远心段闭塞;C、D. 机械取栓术后椎动脉正侧位造影,显示基底动脉及远端血流通畅  
Figure 1 DSA before and after mechanical thrombectomy for acute distal basilar artery occlusion  
A–B: Preoperative anterior and lateral vertebral artery angiography showed distal basilar artery occlusion. C–D: Postoperative anterior and lateral vertebral artery angiography showed patency of basilar artery and its distal part.

佳的救治。但该病预后的影响因素较多,本文病例数量较少,有待进一步研究,以便为缺血性脑卒中的救治提供帮助。

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