·神经病理性疼痛·

微血管减压术治疗老年三叉神经痛的有效性和安全性分析

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【摘要】 **目的** 探讨微血管减压术治疗老年三叉神经痛的有效性和安全性。**方法** 共286例原发性三叉神经痛患者[≥70岁50例(老龄组),<70岁236例(低龄组)]均采用患侧枕下经乙状窦后入路行微血管减压术,记录术后并发症,包括术侧面部麻木感、术侧听力下降、脑脊液漏、手术切口愈合欠佳、颅内感染、脑积水;采用Barrow神经病学研究所(BNI)三叉神经痛分级评价疼痛缓解;记录随访期间复发率。**结果** 286例患者中36例(12.59%)出现术后并发症,低龄组29例(12.29%),老龄组7例(14%),组间差异无统计学意义($\chi^2=0.110$,$P=0.740$),为术侧面部轻度麻木感18例(6.29%)、术侧听力下降13例(4.55%)、脑脊液漏1例(0.35%)、手术切口愈合欠佳1例(0.35%)、颅内感染2例(0.70%)和脑积水1例(0.35%)。随访29.43个月,随访的216例低龄组患者中170例(78.70%)疼痛完全缓解(BNI分级Ⅰ级),10例(4.63%)疼痛部分缓解(BNI分级Ⅱ~Ⅲ级),14例(6.48%)疼痛无缓解(BNI分级Ⅳ~Ⅴ级),22例(10.19%)复发;随访的44例老龄组患者中35例(79.55%)疼痛完全缓解(BNI分级Ⅰ级),2例(4.55%)疼痛部分缓解(BNI分级Ⅱ~Ⅲ级),1例(2.27%)疼痛无缓解(BNI分级Ⅳ~Ⅴ级),6例(13.64%)复发,组间预后差异无统计学意义($\chi^2=1.530$,$P=0.675$)。Kaplan-Meier曲线显示,随着随访时间的延长,两组患者术后疼痛完全缓解率均逐渐下降。**结论** 单纯微血管减压术治疗老年三叉神经痛安全、有效,未出现死亡或神经功能障碍等严重并发症。

【关键词】 三叉神经痛; 显微外科手术; 手术后并发症; 老年人

Efficacy and safety of microvascular decompression for the treatment of elderly patients with trigeminal neuralgia

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【**Abstract**】 **Objective** To analyze the efficacy and safety of microvascular decompression (MVD) for the treatment of elderly patients with trigeminal neuralgia (TN). **Methods** A total of 286 primary TN patients [50 cases of age ≥ 70 years (older group) and 236 cases of age < 70 years (younger group)] underwent MVD via suboccipital sigmoid approach. Postoperative complications were recorded, including facial numbness of operation side, hearing loss of operation side, cerebrospinal fluid (CSF) leakage, poor wound healing, intracranial infection and hydrocephalus. Barrow Neurological Institute (BNI) grade was used to evaluate the relief of TN before and after surgery and during the follow-up. The recurrence rate during follow-up period was recorded. **Results** Of all cases, 36 (12.59%) presented with postoperative complications, including 18 cases (6.29%) of facial numbness of operation side, 13 cases (4.55%) of hearing loss of operation side, one case (0.35%) of CSF leakage, one case (0.35%) of poor wound healing, 2 cases (0.70%) of intracranial infection and one case (0.35%) of hydrocephalus. In those 36 cases, 29 cases (12.29%) were in younger group and 7 cases (14%) were in older group, and there was no significant difference between 2 groups ($\chi^2=0.110$, $P=0.740$). The mean follow-up period was 29.43 months. During the follow-up, 170 cases (78.70%) had complete pain relief (BNI grade Ⅰ), 10 cases (4.63%) had partial pain relief (BNI grade Ⅱ–Ⅲ), 14 cases (6.48%) had no pain relief (BNI grade Ⅳ–Ⅴ), and 22 (10.19%) recurred TN in 216 cases of the younger group; 35 cases (79.55%) had complete pain relief (BNI grade Ⅰ), 2 cases (4.55%) had partial pain relief (BNI grade Ⅱ–Ⅲ), one case (2.27%) had no pain relief (BNI grade

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Ⅳ – Ⅴ), and 6 cases (13.64%) recurred TN in 44 cases of the older group. There was no significant difference on prognosis between 2 groups ($\chi^2 = 1.530$, $P = 0.675$). Kaplan-Meier curve showed the rate of complete pain relief was decreased with time. **Conclusions** Pure MVD for treating elderly patients with TN is safe and effective, without postoperative death or severe complications.

【Key words】 Trigeminal neuralgia; Microsurgery; Postoperative complications; Aged

微血管减压术(MVD)是临床治疗三叉神经痛的最有效方法[1],且较甘油注射术、立体定向伽马刀放射治疗、经皮射频热凝术的复发率降低[2-4],但是微血管减压术创伤较大,老年三叉神经痛患者能否耐受手术以及手术的有效性和安全性是讨论热点。本研究回顾分析单中心行微血管减压术的老年三叉神经痛患者的临床资料,以评价其有效性和安全性。

对象与方法

一、研究对象

选择2011年1月–2016年12月在首都医科大学宣武医院神经外科住院治疗的原发性三叉神经痛患者共286例,均经卡马西平或奥卡西平等药物治疗效果欠佳、药物过敏或不愿长期服药而行单纯微血管减压术。男性120例,女性166例;年龄为25~81岁,平均(58.23±11.25)岁;病程1~300个月,中位病程76.61(24.00,120.00)个月;既往有高血压病史45例(15.73%),冠心病病史7例(2.45%),糖尿病病史13例(4.55%),脑卒中病史3例(1.05%);疼痛累及三叉神经V1支11例(3.85%),三叉神经V2支68例(23.78%),三叉神经V3支50例(17.48%),V1和V2支36例(12.59%),V2和V3支101例(35.31%),V1、V2和V3支20例(6.99%);术前Barrow神经病学研究所(BNI)三叉神经痛分级Ⅲ级41例(14.33%),Ⅳ级126例(44.06%),Ⅴ级119例(41.61%);术前MRI三维稳态构成干扰(3D-CISS)序列或三维时间飞跃(3D-TOF)MRA显示责任血管分别为动脉225例(78.67%),静脉20例(6.99%),动脉和静脉36例(12.59%),无血管压迫5例(1.75%);行左侧微血管减压术103例(36.01%),行右侧微血管减压术183例(63.99%)。根据年龄分为老龄(≥70岁)组(50例)和低龄(<70岁)组(236例),两组患者仅三叉神经受累分布差异有统计学意义($P=0.044$),性别、病程、既往史、术前BNI三叉神经痛分级、责任血管、手术侧别组间差异均无统计学意义($P>0.05$,表1),具有可比性。本研究经首都医科大学宣武医院道德伦理委员会审核批准,所有患者或其家属均知情同意并签署知情同意书。

二、研究方法

1.微血管减压术 患者侧俯卧位,气管插管全身麻醉,于患侧枕下经乙状窦后入路作弧形切口,上至上项线上1.50 cm、下至乳窦尖下1 cm处,分层切开皮肤和皮下组织,枕骨钻孔,咬除枕鳞,骨窗约3 cm×3 cm大小,前至乙状窦、上至横窦,充分释放脑脊液后,经小脑水平裂和小脑脑桥裂入路,锐性分离三叉神经入脑桥区(REZ)周围蛛网膜,显露三叉神经桥前池段全程,松解并游离三叉神经,小心游离责任血管并将Teflon垫片置于责任血管与三叉神经之间,使二者充分垫离,严格止血,连续水密缝合硬脑膜,逐层关颅和缝合皮肤。

2.疗效和安全性评价 所有患者术后均采用电话或门诊随访,包括术后并发症、术后疼痛缓解和复发情况。(1)术后并发症:包括术侧面部麻木感、术侧听力下降、脑脊液漏、手术切口愈合欠佳、颅内感染、脑积水。(2)疼痛缓解:采用BNI三叉神经痛分级评价疼痛,术后BNI分级降至Ⅰ级为疼痛完全缓解,Ⅱ~Ⅲ级为疼痛部分缓解,Ⅳ~Ⅴ级为疼痛无缓解。(3)复发:"复发"定义为术后疼痛完全缓解(BNI分级Ⅰ级)患者随访期间BNI分级达Ⅱ~Ⅴ级,终点事件为三叉神经痛复发或死亡。

3.统计分析方法 本研究数据采用SPSS 22.0统计软件进行处理与分析。计数资料以相对数构成比(%)或率(%)表示,采用Fisher确切概率法或χ^2检验;两组患者预后的比较采用秩和检验。呈正态分布的计量资料以均数±标准差($\bar{x}\pm s$)表示;呈非正态分布的计量资料以中位数和四分位数间距[$M(P_{25},P_{75})$]表示,采用Mann-Whitney U检验。采用Kaplan-Meier曲线绘制术后疼痛完全缓解率。以$P\leqslant 0.05$为差异具有统计学意义。

结 果

本组286例患者中82例(28.67%)术中可见三叉神经扭曲成角,其中低龄组66例(27.97%)、老龄

表1 老龄组与低龄组患者一般资料的比较

Table 1. Comparison of general data between 2 groups

Item	Younger (N = 236)	Older (N = 50)	Statistic value	*P* value
Sex [case (%)]			0.104	0.747
Male	98 (41.53)	22 (44.00)		
Female	138 (58.47)	28 (56.00)		
Duration [*M* (P_{25}, P_{75}), month]	57.00 (50.00, 62.00)	74.00 (71.00, 76.25)	-0.771	0.441
Hypertension [case (%)]	33 (13.98)	12 (24.00)	3.122	0.077
Coronary heart disease [case (%)]	5 (2.12)	2 (4.00)	0.077	0.781
Diabetes [case (%)]	10 (4.24)	3 (6.00)	0.029	0.865
Stroke [case (%)]	2 (0.85)	1 (2.00)	0.000	1.000
Pain distribution [case (%)]			11.391	0.044
V1	6 (2.54)	5 (10.00)		
V2	62 (26.27)	6 (12.00)		
V3	38 (16.10)	12 (24.00)		
V1 and V2	31 (13.14)	5 (10.00)		
V2 and V3	83 (35.17)	18 (36.00)		
V1, V2 and V3	16 (6.78)	4 (8.00)		
Preoperative BNI [case (%)]			0.408	0.815
Grade Ⅲ	34 (14.41)	7 (14.00)		
Grade Ⅳ	102 (43.22)	24 (48.00)		
Grade Ⅴ	100 (42.37)	19 (38.00)		
Offending vessel [case (%)]			2.571	0.463
Artery	182 (77.12)	43 (86.00)		
Vein	17 (7.20)	3 (6.00)		
Artery and vein	32 (13.56)	4 (8.00)		
No vascular compression	5 (2.12)	0 (0.00)		
Location of operation [case (%)]			0.000	1.000
Left side	85 (36.02)	18 (36.00)		
Right side	151 (63.98)	32 (64.00)		

Mann-Whitney *U* test for comparison of duration, adjusted χ^2 test for comparison of coronary heart disease, diabetes and stroke, and χ^2 test for comparison of others。BMI, Barrow Neurological Institute, Barrow神经病学研究所

组16例(32%),组间差异无统计学意义($\chi^2 = 0.328$, $P = 0.567$)。

本组286例患者中36例(12.59%)出现术后并发症,低龄组29例(12.29%),老龄组7例(14%),组间差异无统计学意义($P = 0.740$,表2),包括术侧面部轻度麻木感18例(6.29%),其中低龄组13例、老龄组5例;术侧听力下降13例(4.55%),其中低龄组11例、老龄组2例;脑脊液漏1例(0.35%),为低龄组患者,行腰大池引流术后痊愈;手术切口愈合欠佳、出现排异反应1例(0.35%),为低龄组患者,再次手术将骨蜡和修补的钛网取出后切口愈合良好;颅内感染2例(0.70%),均为低龄组患者,予抗生素治疗后痊愈;脑积水1例(0.35%),为低龄组患者,考虑与术中岩静脉分支损伤致小脑水肿有关,予脑室外引流术后痊愈。

本组286例患者电话或门诊随访1~77个月,平均29.43个月;失访26例(9.09%),低龄组20例,老龄组6例。随访的216例低龄组患者中170例(78.70%)疼痛完全缓解(BNI分级Ⅰ级),10例(4.63%)疼痛部分缓解(BNI分级Ⅱ~Ⅲ级),14例(6.48%)疼痛无缓解(BNI分级Ⅳ~Ⅴ级),22例(10.19%)复发;随访的44例老龄组患者中35例(79.55%)疼痛完全缓解(BNI分级Ⅰ级)、2例(4.55%)疼痛部分缓解(BNI分级Ⅱ~Ⅲ级)、1例(2.27%)疼痛无缓解(BNI分级Ⅳ~Ⅴ级)、6例(13.64%)复发,其中1例(2.27%)因心脏病死亡,两组患者预后差异无统计学意义($P = 0.675$,表3)。Kaplan-Meier曲线显示,随着随访时间的延长,两组患者术后疼痛完全缓解率均逐渐下降(图1)。

讨 论

三叉神经痛是临床最常见的颅内神经痛,发病率较高,年发病率约为4.7/10万[5],高峰发病年龄>50岁、平均63岁[6],是老年人的常见疾病,严重影响生活质量,治疗方法包括药物治疗、立体定向伽马刀放射治疗、射频热凝术、微血管减压术等。目前关于微血管减压术治疗老年三叉神经痛的研究相对较少且样本量较小,各项研究对"老龄"的定义和年龄的划分不同,缺乏高级别证据进行有效性和安全性分析,此外,随着立体定向伽马刀放射治疗和经皮射频热凝术等微创技术的发展,采用微血管减压术的老年三叉神经痛病例数减少,因此,该问题迄今仍在热议中[7]。

Sekula等[7]对8项临床研究纳入的441例行微血管减压术的老年三叉神经痛患者进行Meta分析,其中1项临床研究将"老龄"定义>60岁[8],4项定义为>65岁[9-11],1项定义为>70岁[12],2项定义为>75岁[13-14],终点事件为术后并发症,包括死亡、脑卒中、颅内出血、脑神经损伤、脑脊液漏和感染,结果显示,老龄组与低龄组患者术后并发症发生率差异无统计学意义。Rughani等[15]回顾分析美国国家住院患者样本(NIS)数据库1999–2008年的微血管减压术资料,共3273例患者,>65岁患者术后心脏、肺、血栓栓塞和脑血管并发症风险较高,且随年龄

表2 老龄组与低龄组患者术后并发症的比较[例(%)]

Table 2. Comparison of the incidence of postoperative complications between 2 groups [case (%)]

Item	Younger (N = 236)	Older (N = 50)	χ^2 value	*P* value
Postoperative complication	29 (12.29)	7 (14.00)	0.110	0.740
Facial numbness of operation side	13 (5.51)	5 (10.00)		
Hearing loss of operation side	11 (4.66)	2 (4.00)		
CSF leakage	1 (0.42)	0 (0.00)		
Poor healing of the incision	1 (0.42)	0 (0.00)		
Intracranial infection	2 (0.85)	0 (0.00)		
Hydrocephalus	1 (0.42)	0 (0.00)		

CSF, cerebrospinal fluid, 脑脊液

表3 老龄组与低龄组患者预后的比较[例(%)]

Table 3. Comparison of prognosis between 2 groups [case (%)]

Prognosis	Younger (N = 216)	Older (N = 44)	χ^2 value	*P* value
Complete pain relief	170 (78.70)	35 (79.55)	1.530	0.675
Partial pain relief	10 (4.63)	2 (4.55)		
No pain relief	14 (6.48)	1 (2.27)		
Recurrence	22 (10.19)	6 (13.64)		

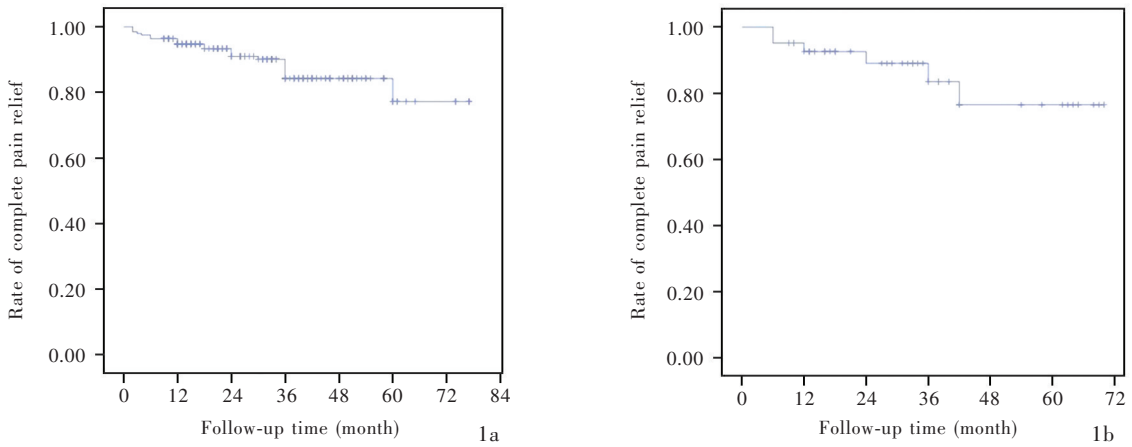

图1 Kaplan-Meier曲线所见 1a 低龄组患者随着随访时间的延长,术后疼痛完全缓解率逐渐下降 1b 老龄组患者随着随访时间的延长,术后疼痛完全缓解率逐渐下降

Figure 1 Kaplan-Meier curve The rate of postoperative complete pain relief in the younger group decreased gradually (Panel 1a). The rate of postoperative complete pain relief in the older group decreased gradually (Panel 1b).

的增长,术后并发症发生率逐渐增加,但年龄并非微血管减压术后并发症发生率增加的独立危险因素。Phan等[16]对11项关于微血管减压术治疗老年三叉神经痛的临床研究(包括Rughani等[15]的研究)进行系统评价,亦得出与Rughani等[15]相似的结论。

微血管减压术治疗老年三叉神经痛的安全性方面,本研究老龄组与低龄组患者术前基线资料和术后并发症发生率差异无统计学意义,术后均未出现死亡、脑卒中、颅内出血等严重并发症,并发症多为术侧面部麻木感和听力下降,考虑与术中对第Ⅴ和第Ⅷ对脑神经过度牵拉有关;此外,低龄组分别有1例脑脊液漏、1例手术切口愈合欠佳、2例颅内感染和1例脑积水患者,老龄组未出现这些并发症,推测单纯微血管减压术治疗老年三叉神经痛安全性较高,可能与老年患者存在脑萎缩,术中脑桥小脑角(CPA)区显露清晰,便于分离血管与三叉神经,缩短手术时间,从而减轻对脑组织的损伤有关[17]。

微血管减压术治疗老年三叉神经痛的有效性方面,Phan等[16]的系统评价显示,老龄组患者术后疼痛完全缓解率与低龄组差异无统计学意义,而复发率低于低龄组。本研究老龄组患者术后疼痛无缓解比例低于低龄组,考虑与老年患者脑池较宽、责任血管易辨认和分离有关[17],但两组预后差异无统计学意义,可能与样本量较小有关。本研究Kaplan-Meier曲线显示,随访期间老龄组患者疼痛完全缓解率低于低龄组,即复发率高于低龄组,不同于其他研究[16],但两组预后差异无统计学意义。

研究显示,立体定向伽马刀放射治疗术后3年疼痛缓解率为34%~56%[18-20],射频热凝术后5年疼痛缓解率为45.3%~66.0%[21-23]。微血管减压术治疗三叉神经痛的有效性仍是目前所有治疗方法中最显著的,术后即刻疼痛缓解率达87%~98%,术后

1～2年疼痛缓解率为78%～80%，术后5年为72%～76%[24-25]，术后8～10年仍达58%～68%[26-27]。因此，对于预期寿命较长的老年三叉神经痛患者，采用立体定向伽马刀放射治疗和经皮射频热凝术等微创治疗，复发风险较高，不仅面临再次手术风险，而且三叉神经毁损术后的面部麻木严重影响部分患者生活质量，故单纯微血管减压术不失为理想选择。

综上所述，微血管减压术治疗老年三叉神经痛安全、有效，未出现死亡或神经功能障碍等严重并发症，仔细的术前评估有助于老年患者获得较好的疗效和较高的安全性。

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