·临床研究·

老年患者卒中后3个月内吞咽障碍恢复状况调查

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【摘 要】 **目的** 调查老年脑卒中后合并吞咽障碍患者卒中后不同时间段的吞咽功能恢复状况,并分析影响患者卒中后不同时间段吞咽功能恢复状况的相关因素。**方法** 将2019年1月至2023年12月南京医科大学附属南京医院·南京市第一医院康复科收治的150例老年脑卒中后合并吞咽障碍患者作为观察组,且均进行院内摄食训练;同期收治的70例未行摄食训练的卒中后吞咽障碍者作为对照组。统计两组患者卒中后1、2及3个月吞咽功能恢复情况,采用二元logistic回归模型分析影响进行摄食训练者吞咽功能恢复的相关因素。采用SPSS 23.0软件进行数据分析。根据数据类型,组间比较分别采用t检验、方差分析、χ^2检验及Bonferroni检验。**结果** 150例老年脑卒中后吞咽障碍患者中有12例中途失访,剩余138例均完成随访;对照组70例患者中有4例失访,剩余66例均完成随访。观察组患者卒中后1、2及3个月洼田饮水试验得分均低于对照组同时间点水平,经口摄食功能评估量表(FOIS)得分以及吞咽功能恢复良好率均高于对照组同时间点水平,差异均有统计学意义(均$P<0.05$)。行二元logistic多因素回归分析结果提示,入院时洼田饮水试验分级4~5级($OR=5.726$,95%CI 2.103~15.589]、入院时美国国立卫生院卒中量表(NIHSS)评分>20分($OR=3.804$,95%CI 1.810~7.995)、合并认知障碍($OR=6.007$,95%CI 1.313~27.494)、中枢性面瘫($OR=4.035$,95%CI1.482~10.985)、管饲时间>7 d($OR=2.992$,95%CI 1.540~5.815)为观察组患者卒中后1个月吞咽功能恢复不良的危险因素($P<0.05$),而卒中后2 d内院内摄食训练($OR=0.429$,95%CI 0.214~0.862)是其保护因素($P<0.05$);入院时洼田饮水试验分级4~5级($OR=4.191$,95%CI 2.115~8.307)、入院时NIHSS评分>20分($OR=3.600$,95%CI 1.584~8.184)、中枢性面瘫($OR=3.304$,95%CI 1.520~7.179)是观察组患者卒中后2个月吞咽功能恢复不良的危险因素($P<0.05$),院外主要照顾者为亲属($OR=0.541$,95%CI 0.345~0.847)以及行院外康复训练($OR=0.465$,95%CI 0.249~0.870)为其保护因素($P<0.05$);年龄>79岁($OR=4.683$,95%CI 2.566~8.548)、入院时洼田饮水试验分级4~5级($OR=2.787$,95%CI 1.554~4.998)、入院时NIHSS评分>20分($OR=2.542$,95%CI 1.313~4.921)为观察组患者卒中后3个月吞咽功能恢复不良的危险因素($P<0.05$),院外主要照顾者为亲属($OR=0.513$,95%CI 0.315~0.835)以及行院外康复训练($OR=0.490$,95%CI 0.250~0.960)为其保护因素($P<0.05$)。**结论** 进行摄食训练能提高老年缺血性脑卒中后吞咽障碍患者吞咽功能的恢复,且大部分进行摄食训练者均在卒中后1个月内恢复吞咽功能,建议临床注重患者卒中后1个月内的吞咽功能训练,但依旧有部分患者在卒中2及3个月后才逐渐恢复吞咽功能。而入院时洼田饮水试验分级4~5级、NIHSS评分>20分以及高龄患者易发展为持续性吞咽障碍。

【关键词】 老年人;脑卒中;吞咽障碍;摄食训练;康复效果;影响因素
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Survey of dysphagia recovery status within 3 months after stroke in elderly patients

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【**Abstract**】 **Objective** To investigate the recovery status of swallowing function in elderly stroke patients with dysphagia at different time periods after stroke, and to analyze the related factors affecting the swallowing function recovery status at different time periods after stroke. **Methods** A total of 150 elderly patients with dysphagia after stroke admitted in our department from January 2019 to December 2023 were recruited and served as observation group, and all of them received in-hospital feeding training. During the same period, another 70 patients with dysphagia after stroke who did not receive feeding training were set as control group. The recovery status of swallowing function at 1, 2 and 3 months after stroke was assessed in both groups. Binary logistic regression model was employed to analyze the related factors affecting the swallowing function recovery of the patients after feeding training. SPSS statistics 23.0 was used for statistical analysis. Data comparison between two groups was performed using t test, analysis of variance, Chi-square test or Bonferroni test depending on data type. **Results** Among the 150 elderly patients from the observation group, 12 were lost during

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the follow-up, and the remaining 138 cases completed the follow-up. For the 70 patients from the control group, 4 cases were lost and the other 66 cases completed the follow-up. The scores of water swallow test at 1, 2 and 3 months after stroke were significantly lower, while the score of functional oral intake scale (FOIS) and the recovery rate of good swallowing function were obviously higher in the observation group than the control group ($P<0.05$). Binary logistic multivariate regression analysis showed that water swallow test grade 4-5 at admission ($OR=5.726$, 95%CI 2.103-15.589), National Institutes of Health Stroke Scale (NIHSS) score at admission >20 ($OR=3.804$, 95%CI 1.810-7.995), cognitive impairment ($OR=6.007$, 95%CI 1.313-27.494), central facial paralysis ($OR=4.035$, 95%CI 1.482-10.985), and tube feeding time >7 d ($OR=2.992$, 95%CI 1.540-5.815) were the risk factors for poor swallowing function recovery of the patients in the observation group at 1 month after stroke, and in-hospital feeding training at 2 d after stroke ($OR=0.429$, 95%CI 0.214-0.862) was a protective factor ($P<0.05$). Water swallow test grade 4-5 at admission ($OR=4.191$, 95%CI 2.115-8.307), NIHSS score at admission >20 points ($OR=3.600$, 95%CI 1.584-8.184), and central facial paralysis ($OR=3.304$, 95%CI 1.520-7.179) were the risk factors for poor recovery of swallowing function in the observation group at 2 months after stroke, and relatives as the main out-of-hospital caregivers ($OR=0.541$, 95%CI 0.345-0.847) and out-of-hospital rehabilitation training ($OR=0.465$, 95%CI 0.249-0.870) were the protective factors ($P<0.05$). Age >79 years ($OR=4.683$, 95%CI 2.566-8.548), water swallow test grade 4-5 at admission ($OR=2.787$, 95%CI 1.554-4.998), and NIHSS score at admission >20 points ($OR=2.542$, 95%CI 1.313-4.921) were risk factors for poor swallowing function recovery of the observation group at 3 months after stroke, and relatives as the main out-of-hospital caregivers ($OR=0.513$, 95%CI 0.315-0.835) and out-of-hospital rehabilitation training ($OR=0.490$, 95%CI 0.250-0.960) were the protective factors ($P<0.05$). **Conclusion** Feeding training can improve the recovery of swallowing function in elderly patients with dysphagia after ischemic stroke, and most patients can achieve swallowing function recovery within 1 month after feeding training. It is recommended that clinical attention should be paid to swallowing function training within 1 month after stroke, but some patients still gradually get recovery at 2 and 3 months after stroke. The patients with water swallow test grade 4-5 and NIHSS score >20 points at admission and senior age are prone to developing persistent dysphagia.

【Key words】 aged; stroke; dysphagia; feeding training; rehabilitation efficacy; influencing factors

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缺血性脑卒中后并发症较多,其中吞咽障碍发生率高达 37%~78%[1]。摄食功能训练是促进吞咽障碍恢复的重要手段,可通过提高患者吞咽技巧、调整进食姿势、调整一口量帮助患者恢复经口摄食能力[2]。目前,关于脑卒中后吞咽功能障碍的研究多集中在卒中后早期,而较少有研究关注到患者吞咽障碍恢复状况的动态变化[3]。有研究表示,卒中后吞咽障碍的恢复与梗死部位、梗死病灶大小、卒中严重程度及康复训练等多种因素相关,而对于首次发病且不累及重要部位的脑卒中患者,其吞咽障碍多在卒中后 1~3 个月内恢复,故卒中后 3 个月是吞咽障碍恢复的“黄金时期”[4]。本研究对老年缺血性脑卒中合并吞咽障碍者卒中后 3 个月内的吞咽功能恢复轨迹进行观察与研究,旨在为患者卒中后不同时间点吞咽功能的恢复及营养喂养途径的选择提供针对性参考,现将结果报道如下。

1 对象与方法

1.1 研究对象

将 2019 年 1 月至 2023 年 12 月南京医科大学附属南京医院·南京市第一医院康复科收治的 150 例老年脑卒中后合并吞咽障碍且进行摄食功能训练的患者作为观察组,同期收治的 70 例老年脑卒中后吞咽障碍但未进行摄食功能训练者作为对照组。观察组男性 86 例,女性 64 例;年龄 60~86(70.16±6.23)岁;合并高血压 89 例,糖尿病 63 例,慢性支气管炎感染 19 例;入院时美国国立卫生研究院卒中量表(the National Institutes of Health Stroke Scale, NIHSS)评分 5~24(17.45±2.06)分;吞咽障碍分级:Ⅱ级 43 例,Ⅲ级 60 例,Ⅳ级 47 例。对照组男性 40 例,女性 30 例;年龄 60~85(70.43±5.79)岁;合并高血压 33 例,糖尿病 26 例,慢性支气管炎感染 9 例;入院时 NIHSS 评分 5~23(17.64±2.11)分;吞咽障碍分级:Ⅱ级 20 例,Ⅲ级 26 例,Ⅳ级 24 例。两组基线资料比较,差异无统计学意义($P>0.05$)。

纳入标准:年龄≥60 岁;符合《中国急性缺血性脑卒中诊治指南 2018》[5]中相关诊断标准,经颅脑电子计算机断层扫描(computed tomography, CT)或磁共振(magnetic resonance imaging, MRI)确诊为缺血性脑卒中;发病 1 周内入院;首次脑卒中;经救治后生命体征平稳,可配合相关研究;入院后 24 h 内由康复治疗师与康复护士采用洼田饮水试验及改良容积-黏度吞咽测试确定存在吞咽障碍;由相同资历的康复护士进行摄食训练。排除标准:合并心肝肾等重要器官功能严重障碍;合并恶性肿瘤;合并精神障碍;脑卒中前已合并咽喉部、口腔占位性病变;先天性聋哑。

1.2 方法

1.2.1 摄食功能训练 由资历相当的康复护士进行摄食功能训练,训练内容包括:根据患者病情选择合适的进食体位,饭勺轻压舌底促进患者吞咽,吞咽

时指导患者将头偏向健侧,喂食选择糊状食物,视患者病情状况逐日递增干预次数及摄食量,至递增至30~50 ml/次,3~4 次/d。同时要求患者及其家属学习摄食功能训练方法,在出院前评估患者及其家属是否完全掌握摄食训练相关要点,并要求患者出院后继续进行摄食功能训练。

1.2.2 资料收集 根据相关文献资料及临床经验,收集以下可能影响脑卒中后吞咽障碍摄食康复训练康复效果的因素作为调查指标。(1)一般人口学资料:年龄、性别、高血压、糖尿病及慢性支气管感染。(2)病情资料:入院时洼田饮水试验分级、入院时NIHSS、入院时格拉斯哥昏迷评分、出院时改良Rankin评分、出院时Barthel指数;院内摄食训练开始时间、有无构音障碍、视听觉障碍、认知障碍、中枢性面瘫、管饲时间。(3)院外康复信息:主要照顾者、是否进行摄食康复训练、摄食康复训练依从性(根据患者拒绝或拖延训练的频率评估训练依从性,拒绝或拖延训练频率<10%为优,拒绝或拖延训练频率<30%为良,拒绝或拖延训练频率≥30%为差)。

1.2.3 吞咽功能恢复效果评估 分别在患者卒中后1、2及3个月时,采用经口摄食功能评估量表(functional oral intake scale, FOIS)[6]评估患者吞咽功能恢复效果。量表采用7级评分法,1分为不能经口进食,7分为完全经口进食,没有限制。得分越高提示经口摄食功能越好,将得分6~7分者纳为吞咽功能恢复良好组,得分1~5分者纳为吞咽功能恢复不良者。

1.3 统计学处理

采用SPSS 23.0统计软件进行数据分析。符合正态分布的计量资料用均数±标准差($\bar{x}\pm s$)表示,组内多时间点比较采用方差分析,检验有意义者两两比较采用LSD-t检验;计数资料用例数(百分率)表示,组间比较采用χ^2检验,多组间两两比较采用Bonferroni法。采用二元logsitic回归模型分析影响患者卒中后不同时间段吞咽功能恢复效果的相关因素。$P<0.05$为差异有统计学意义。

2 结 果

2.1 老年脑卒中后吞咽障碍患者摄食功能的纵向统计

观察组中150例老年脑卒中后吞咽障碍患者中有12例中途失访,剩余138例患者完成随访;对照组70例患者中有4例失访,共66例完成随访。两组患者卒中24 h内,卒中后1、2及3个月,患者洼田饮水试验得分均呈依次下降趋势,FOIS得分均呈依次上升趋势,组内不同时间比较,差异均有统计学意义($P<0.05$);且观察组患者卒中后1、2及3个月洼田饮水试验得分均低于对照组同时间点水平,FOIS得分均高于对照组同时间点水平,差异均有统计学意义($P<0.05$;表1)。

2.2 老年脑卒中后吞咽障碍患者吞咽障碍恢复状况的纵向统计

两组卒中后1、2及3个月,患者吞咽功能恢复良好率均呈依次上升趋势,组内不同时间点内比较,差异均有统计学意义($P<0.05$);且观察组患者卒中后1、2及3个月吞咽障碍恢复良好率均高于对照组同时间点水平,差异有统计学意义($P<0.05$;表2)。

表1 老年脑卒中后吞咽障碍患者摄食功能的纵向统计

Table 1 Longitudinal statistics of feeding function in elderly patients with dysphagia after stroke (points, $\bar{x}\pm s$)

Group	n	Within 24 h after stroke	One month after stroke	Two months after stroke	Three months after stroke	F	P value
Observation	138						
Water swallow test		4.15±1.35	2.81±0.43*▲	2.27±0.33*#▲	1.24±0.29*#△▲	368.257	<0.001
FOIS score		3.46±0.84	4.75±0.94*▲	5.24±1.17*#▲	6.17±1.23*#△▲	157.394	<0.001
Control	66						
Water swallow test		4.23±1.29	3.36±0.84*	2.89±0.67*#	1.98±0.26*#△	80.557	<0.001
FOIS score		3.38±0.71	3.65±0.78*	4.37±0.69*#	5.29±1.05*#△	71.577	<0.001

FOIS: functional oral intake scale. Compared with within 24 h after stroke, *$P<0.05$; compared with one month after stroke, #$P<0.05$; compared with two months after stroke, △$P<0.05$; compared with control group, ▲$P<0.05$.

表2 老年脑卒中后吞咽障碍患者吞咽障碍恢复状况的纵向统计

Table 2 Longitudinal statistics of dysphagia recovery status in elderly patients with dysphagia after stroke [n(%)]

Group	n	One month after stroke	Two months after stroke	Three months after stroke	χ^2	P value
Observation	138				22.755	<0.001
Good recovery		84(60.87)△	101(73.19)*△	119(86.23)*#△		
Poor recovery		54(39.13)	37(23.91)	19(13.77)		
Control	66				8.857	0.012
Good recovery		23(34.85)	33(50.00)*	40(60.61)*#		
Poor recovery		43(65.15)	33(50.00)	26(39.39)		

Compared with one month after stroke, *$P<0.05$; compared with two months after stroke, #$P<0.05$; compared with control group, △$P<0.05$.

2.3 影响老年脑卒中后吞咽障碍患者摄食功能康复效果的单因素分析

老年脑卒中后 1 个月吞咽功能恢复不良者入院时洼田饮水试验分级、入院时 NIHSS 评分均高于恢复良好组，院内摄食训练开始时间晚于恢复良好组，合并认知障碍、中枢性面瘫者占比高于恢复良好组，管饲时间长于恢复良好组，差异均有统计学意义（$P<0.05$）。脑卒中后 2 个月吞咽功能恢复不良者入院时洼田饮水试验分级、入院时 NIHSS 评分均高于恢复良好组，中枢性面瘫者占比高于恢复良好组，院外主要照顾者为亲属、行院外康复训练者占比低于恢复良好组，差异有统计学意义（$P<0.05$）。脑卒中后 3 个月吞咽功能恢复不良者年龄、入院时洼田饮水试验分级、入院时 NIHSS 评分均高于恢复良好组，院外主要照顾者为亲属、行院外康复训练者占比低于恢复良好组，差异均有统计学意义（$P<0.05$；表 3）。

表 3 影响老年脑卒中后吞咽障碍患者摄食效果的单因素分析

Table 3 Univariate analysis of feeding effect in elderly patients with dysphagia after stroke [n(%)]

Factor	One month after stroke				Two months after stroke				Three months after stroke			
	Good recovery (n=84)	Poor recovery (n=54)	χ^2	P value	Good recovery (n=101)	Poor recovery (n=37)	χ^2	P value	Good recovery (n=119)	Poor recovery (n=19)	χ^2	P value
Gender			0.212	0.645			0.318	0.573			0.258	0.612
Male	50(59.52)	30(55.56)			60(59.41)	20(54.05)			70(58.82)	10(52.63)		
Female	34(40.48)	24(44.44)			41(40.59)	17(45.95)			49(41.18)	9(47.37)		
Age			2.179	0.140			1.876	0.171			18.799	<0.001
60-79 years	47(55.95)	37(68.52)			58(57.43)	26(70.27)			81(68.07)	3(15.79)		
>79 years	37(44.05)	17(31.48)			43(42.57)	11(29.73)			38(31.93)	16(84.21)		
Hypertension	50(59.52)	36(66.67)	0.714	0.389	66(65.35)	20(54.05)	1.471	0.225	72(60.50)	14(73.68)	1.212	0.271
Diabetes mellitus	31(36.90)	28(51.85)	3.000	0.083	40(39.60)	19(51.35)	1.527	0.217	47(39.50)	12(63.16)	3.748	0.053
Chronic bronchitis infection	13(15.48)	4(7.41)	1.981	0.159	10(9.90)	7(18.92)	2.029	0.153	13(10.92)	4(21.05)	1.556	0.212
Water swallow test at admission			10.039	0.002			14.524	<0.001			8.308	0.004
Grade 2-3	64(76.19)	27(50.00)			76(75.25)	15(40.54)			84(70.59)	7(36.84)		
Grade 4-5	20(23.81)	27(50.00)			25(24.75)	22(59.46)			35(29.41)	12(63.16)		
NIHSS score at admission			12.488	0.002			13.303	0.001			10.595	0.005
5-15 points	20(23.81)	3(5.56)			20(19.80)	3(8.11)			22(18.49)	1(5.26)		
16-20 points	39(46.43)	21(38.89)			50(49.51)	10(27.03)			56(47.06)	4(21.05)		
>20 points	25(29.76)	30(55.55)			31(30.69)	24(64.86)			41(34.45)	14(73.68)		
Glasgow coma score at admission			0.830	0.660			1.152	0.562			0.805	0.669
3-8 points	13(15.48)	6(11.11)			12(11.88)	7(18.92)			16(13.45)	3(15.79)		
9-14 points	21(25.00)	12(22.22)			25(24.75)	8(21.62)			30(25.21)	3(15.79)		
≥15 points	50(59.52)	36(66.67)			64(63.37)	22(59.46)			73(61.34)	13(68.42)		
Modified Rankin score at discharge			2.281	0.131			2.819	0.093			1.621	0.203
<3 points	63(75.00)	34(62.96)			67(66.34)	30(81.08)			86(72.27)	11(57.90)		
≥3 points	21(25.00)	20(37.04)			34(33.66)	7(18.92)			33(27.73)	8(42.10)		
Barthel index at discharge			2.451	0.294			3.450	0.178			5.905	0.052
≤40 points	57(67.86)	32(59.26)			63(62.38)	26(70.27)			80(67.23)	9(47.37)		
40-60 points	13(15.48)	7(12.96)			13(12.87)	7(18.92)			18(15.13)	2(10.53)		
>60 points	14(16.66)	15(27.78)			25(24.75)	4(10.81)			21(17.65)	8(42.10)		
Starting time of in-hospital feeding training			19.332	<0.001			0.163	0.922			5.610	0.060
Within 2 d after stroke	28(33.33)	9(16.67)			28(27.72)	9(24.32)			35(29.41)	2(10.53)		
Within 2 to 4 d after stroke	47(55.95)	22(40.74)			50(49.50)	19(51.35)			60(50.42)	9(47.37)		
5 d after stroke	9(10.71)	23(42.59)			23(22.77)	9(24.32)			24(20.17)	8(42.11)		
Cognitive impairment	21(25.00)	25(46.30)	6.708	0.010	30(29.70)	16(43.24)	2.234	0.135	40(33.61)	6(31.58)	0.031	0.861
Dysarthria	20(23.81)	10(18.52)	0.541	0.462	24(23.76)	6(16.22)	0.906	0.341	26(21.85)	4(21.05)	0.006	0.938
Central facial paralysis	6(7.14)	15(27.78)	10.848	<0.001	11(10.89)	10(27.03)	5.465	0.019	19(15.97)	2(10.53)	0.376	0.540
Trachea cannula	55(65.48)	42(77.78)	2.382	0.123	68(67.33)	29(78.38)	1.584	0.208	84(70.59)	13(68.42)	0.037	0.848
Tube feeding time			12.160	0.002			0.816	0.665			0.263	0.877
<3 d	30(35.71)	10(18.52)			30(29.70)	10(27.03)			35(29.41)	5(26.32)		
4-7 d	40(47.62)	21(38.89)			46(45.55)	15(40.54)			53(44.54)	8(42.11)		
>7 d	14(16.67)	23(42.59)			25(24.75)	12(32.43)			31(26.05)	6(31.58)		
Main out-of-hospital caregivers			0.035	0.852			7.178	0.007			16.239	<0.001
Relatives	71(84.52)	45(83.33)			90(89.11)	26(70.27)			106(89.08)	10(52.63)		
Others	13(15.48)	9(16.67)			11(10.89)	11(29.73)			13(10.92)	9(47.37)		
Out-of-hospital rehabilitation training	20(23.81)	9(16.67)	1.010	0.315	26(25.74)	3(8.11)	5.073	0.024	29(24.37)	0(0.00)	4.486	0.034

NIHSS: National Institutes of Health Stroke Scale.

2.4 影响老年脑卒中后吞咽障碍患者卒中后1个月吞咽功能恢复的二元logistic多因素回归分析

以老年脑卒中后吞咽障碍患者卒中后1个月吞咽功能恢复状况作为因变量(Y；0=吞咽功能恢复良好,1=吞咽功能恢复不良),以单因素分析中有意义的指标作为自变量,行二元logistic多因素回归分析提示,入院时洼田饮水试验分级4~5级、入院时NIHSS评分>20分、合并认知障碍、中枢性面瘫、管饲时间>7 d为卒中后1个月吞咽功能恢复不良的危险因素,而卒中后2 d内院内摄食训练是其保护因素(P<0.05;表4)。

2.5 影响老年脑卒中后吞咽障碍患者卒中后2个月吞咽功能恢复的多因素回归分析

以老年脑卒中后吞咽障碍患者卒中后2个月吞咽功能恢复状况作为因变量(Y;0=吞咽功能恢复良好,1=吞咽功能恢复不良),以单因素分析中有意义的指标作为自变量,行二元logistic多因素回归分析提示,入院时洼田饮水试验分级4~5级、入院时NIHSS评分>20分、中枢性面瘫是患者卒中后2个月吞咽功能恢复不良的危险因素,院外主要照顾者为亲属以及行院外康复训练为其保护因素(P<0.05;表5)。

2.6 影响老年脑卒中后吞咽障碍患者卒中后3个月吞咽功能恢复的多因素回归分析

以老年脑卒中后吞咽障碍患者卒中后3个月吞咽功能恢复状况作为因变量(Y;0=吞咽功能恢复良好,1=吞咽功能恢复不良),以单因素分析中有意义的指标作为自变量,行二元logistic多因素回归分析,结果提示年龄>79岁、入院时洼田饮水试验分级4~5级、入院时NIHSS评分>20分为患者卒中后3个月吞咽功能恢复不良的危险因素,院外主要照顾者为亲属以及行院外康复训练为其保护因素(P<0.05;表6)。

表4 影响老年脑卒中后吞咽障碍患者卒中后1个月吞咽功能恢复的二元logistic多因素回归分析

Table 4 Binary logistic multivariate regression analysis of recovery of swallowing function at one month after stroke in elderly patients with dysphagia after stroke

Factor	β	SE	$Wald\ \chi^2$	OR	95%CI	P value
Water swallow test grade 4-5 at admission	1.754	0.511	11.661	5.726	2.103-15.589	<0.001
NIHSS score at admission						
5-15 points	-	-	-	1.000	-	-
16-20 points	1.294	0.847	2.334	3.647	0.693-19.185	0.127
>20 points	1.336	0.379	12.426	3.804	1.810-7.995	<0.001
Starting time of in-hospital feeding training						
5 d after stroke	-	-	-	1.000	-	-
Within 2 to 4 d after stroke	-0.943	0.566	2.776	0.389	0.128-1.181	0.096
Within 2 d after stroke	-0.846	0.356	5.647	0.429	0.214-0.862	0.018
Cognitive impairment	1.793	0.776	5.339	6.007	1.313-27.494	0.021
Central facial paralysis	1.395	0.511	7.453	4.035	1.482-10.985	0.007
Tube feeding time						
<3 d	-	-	-	1.000	-	-
4-7 d	1.043	0.594	3.083	2.838	0.886-9.091	0.080
>7 d	1.096	0.339	10.453	2.992	1.540-5.815	0.001

NIHSS: National Institutes of Health Stroke Scale. -: no datum.

表5 影响老年脑卒中后吞咽障碍患者卒中后2个月吞咽功能恢复的多因素回归分析

Table 5 Multivariate regression analysis of swallowing function recovery at two months after stroke in elderly patients with dysphagia after stroke

Factor	β	SE	$Wald\ \chi^2$	OR	95%CI	P value
Water swallow test grade 4-5 at admission	1.433	0.349	16.859	4.191	2.115-8.307	<0.001
NIHSS score at admission						
5-15 points	-	-	-	1.000	-	-
16-20 points	1.379	0.779	3.134	3.971	0.863-18.281	0.077
>20 points	1.281	0.419	9.347	3.600	1.584-8.184	0.002
Central facial paralysis	1.195	0.396	9.106	3.304	1.520-7.179	0.003
Relatives as the main out-of-hospital caregivers	-0.615	0.229	7.212	0.541	0.345-0.847	0.008
Out-of-hospital rehabilitation training	-0.765	0.319	5.751	0.465	0.249-0.870	0.017

NIHSS: National Institutes of Health Stroke Scale. -: no datum.

表 6 影响老年脑卒中后吞咽障碍患者卒中后 3 个月吞咽功能恢复的多因素回归分析

Table 6 Multivariate regression analysis of recovery of swallowing function at three months after stroke in elderly patients with dysphagia after stroke

Factor	β	*SE*	*Wald* χ^2	*OR*	95%*CI*	*P* value
Age >79 years	1.544	0.307	25.294	4.683	2.566-8.548	<0.001
Water swallow test grade 4-5 at admission	1.025	0.298	11.831	2.787	1.554-4.998	<0.001
NIHSS score at admission						
5-15 points	-	-	-	1.000	-	-
16-20 points	0.891	0.643	1.920	2.438	0.691-8.596	0.167
>20 points	0.933	0.337	7.665	2.542	1.313-4.921	0.006
Relatives as the main out-of-hospital caregivers	-0.668	0.249	7.197	0.513	0.315-0.835	0.008
Out-of-hospital rehabilitation training	-0.713	0.343	4.321	0.490	0.250-0.960	0.038

NIHSS: National Institutes of Health Stroke Scale. -: no datum.

3 讨 论

吞咽障碍会降低吞咽有效性及安全性,增加营养不良、误吸、吸入性肺炎等发生风险。有研究数据显示,经皮内镜下胃造口术(percutaneous endoscopic gastrostomy, PEG)能有效降低反流性食管炎、消化道出血及管移位风险,改善患者预后[7,8]。故美国心脏协会及卒中协会推荐卒中后吞咽障碍持续 2~3 周者行 PEG,经 PEG 途径进行营养喂养[4]。但 PEG 属于有创操作,不少患者因顾虑手术风险不愿进行 PEG,且也有研究数据显示,有部分患者在卒中后 2~3 个月才能完全恢复吞咽功能[9]。故观察卒中后吞咽障碍患者吞咽功能恢复轨迹,分析其相关影响因素,在提高患者吞咽功能恢复效果,帮助临床选择合适的营养喂养途径中均具有重要意义。本研究对老年缺血性脑卒中合并吞咽障碍者吞咽功能的恢复轨迹进行调查与分析,结果显示,卒中后 3 个月内,无论是否进行摄食功能训练,合并吞咽障碍者的吞咽功能均逐渐好转,其洼田饮水试验得分均呈依次下降趋势,FOIS 得分呈依次上升趋势。这与随时间流逝,患者脑梗塞逐渐恢复,进而缓解脑梗塞相关并发症症状相关[10]。此外,本研究还表明,进行摄食训练的观察组患者卒中后各时间点吞咽功能恢复效果均优于对照组,提示摄食训练在促进卒中后吞咽障碍恢复的重要性。

了解进行摄食训练的吞咽障碍者卒中后吞咽障碍恢复轨迹,在指导患者术后恢复中具有一定意义。本研究发现,观察组卒中后 1 个月内,有 60.87%的患者吞咽功能恢复良好,提示大部分患者的吞咽功能可在卒中后 1 个月内恢复,此外,卒中后 2 及 3 个月,吞咽功能恢复良好率随时间推移分别增加至 73.19%及 86.23%。进一步行二元 logistic 回归分析发现,影响老年患者卒中后不同时间段内吞咽功能恢复效果的相关因素不尽相同,但入院时洼田饮水试验分级及 NIHSS 评分是其共同影响因素,提示存在严重吞咽障碍及神经缺损程度的患者易导致吞咽功能恢复不良,这可能与这部分患者往往存在较为严重的吞咽生物力学损伤及神经功能缺损有关,即使在进行相关训练后依旧难以恢复正常的吞咽功能相关[11]。故建议临床重视存在严重吞咽障碍及神经缺损程度的患者的吞咽功能训练,同时联合体表神经肌肉电刺激、咽腔电刺激、重复经颅电刺激等方式提高吞咽功能恢复效果,并根据患者吞咽功能恢复状况尽早选择合适的营养供给途径以改善预后。

卒中后 1 个月是患者吞咽功能恢复的关键时间,该时间段内患者吞咽功能恢复效果受到多种因素影响。本研究发现,除了入院时洼田饮水试验分级及 NIHSS 评分外,合并认知障碍、中枢性面瘫、管饲时间>7 d 为患者卒中后 1 个月吞咽功能恢复不良的危险因素,而卒中后 2 d 内开始院内摄食训练是其保护因素。分析其原因:(1)合并认知障碍及中枢性面瘫均将影响患者院内摄食训练依从性,降低训练效率,进而影响吞咽功能恢复效果[12];(2)管饲时间越长,胃管对胃肠肌造成的不良影响越严重,同时胃管还可能引起鼻咽部黏膜损伤,造成口咽部有害菌定植,降低吞咽功能恢复效果[13];(3)尽早开始摄食训练能促进患者对口腔肌肉的控制能力,提高吞咽功能恢复效果,故建议临床在患者病情稳定后,尽早开始摄食功能训练。

而院外主要照顾者为亲属以及行院外康复训练为老年患者卒中后 2 及 3 个月吞咽功能恢复不良的共同保护因素,分析其原因:(1)亲属能为患者提供更多的情感支持,满足患者精神需求,帮助患者克服困难,积极面对并配合相关训练,存进吞

咽功能恢复相关[14,15]；(2)院外自主进行康复训练可延长康复训练时间，提高训练效果，进而提高吞咽功能恢复可能性。针对此，建议患者家属积极参与患者的康复过程，提高患者家庭支持水平，同时建议患者出院后自主进行相关训练，以提高吞咽功能恢复效果。此外，卒中后2个月吞咽功能恢复还受中枢性面瘫影响，卒中后3个月吞咽功能还受患者年龄影响。建议临床同时注重患者中枢性面瘫的治疗干预，同时给予高龄患者更多关注。

综上，进行摄食训练能提高老年缺血性脑卒中后吞咽障碍患者吞咽功能的恢复，且大部分进行摄食训练者均在卒中后1个月内恢复吞咽功能，但依旧有部分患者在卒中2及3个月后才逐渐恢复吞咽功能。而入院时洼田饮水试验分级4～5级、NIHSS评分>20分以及高龄患者易发展为持续性吞咽障碍，建议临床重视具有以上特征患者的吞咽功能干预，并根据患者吞咽功能恢复效果，尽早改变其营养给予途径。但本研究样本量仅来源于一所医院，属于单中心研究，且研究样本量较小，同时收到研究条件的限制，本研究并未收集到院外康复训练持续时间、依从性等资料，所得结论存在一定的偏倚。后续可针对以上不足进一步修改研究方案。

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