·临床研究·

老年心血管病患者衰弱综合评估与强化教育对健康结局的影响

陈月英[1],杨睿[2],曹文哲[3],侯惠如[1*],董蔚[4*]
(解放军总医院第二医学中心:[1] 护理部,[3] 老年医学研究所,北京 100853;解放军总医院第一医学中心:[2] 血管外科,[4] 心血管内科,北京 100853)

【摘　要】 **目的** 探讨衰弱综合评估与强化教育对老年心血管病住院及出院患者健康结局的影响。**方法** 采用连续入组方式于2019年2月至5月选取解放军总医院心血管内科的老年心血管疾病住院患者100例,开展Fried衰弱表型及老年综合评估研究,并从多个时间节点进行强化教育并观察疗效。**结果** 老年心血管疾病住院患者衰弱和不衰弱分别为24例和76例,logistic回归分析显示3米起立行走计时测试(OR=1.151,95%CI 1.029~1.288, P=0.014)、心绞痛(OR=8.510,95%CI 1.753~41.307, P=0.008)和D-二聚体(OR=2.925,95%CI 1.161~7.369, P=0.023)是衰弱的影响因素。研究未显示衰弱对心血管疾病住院患者的并发症有影响,且所有患者未发生死亡、跌倒与骨折等不良事件。衰弱和不衰弱患者在出院后6个月内有跌倒、骨折、再入院事件发生分别为9例和19例,差异无统计学意义(P>0.05)。2组患者出院后3个月抑郁评估得分均较住院时下降,长期口服药种类不衰弱组较住院时减少(P<0.05)。出院后6个月不衰弱组FRAIL衰弱评分及BMI指数均较住院时降低(P<0.05),衰弱组变化不显著。2组患者出院后与住院时基本日常生活活动量表(BADL)评分比较,差异均无统计学意义(P>0.05)。**结论** 老年心血管病住院患者衰弱综合评估与强化教育有助于减少住院和出院后不良事件的发生,在改善患者出院后衰弱、抑郁、体质量指数及多重用药方面,不衰弱组比衰弱组效果显著。

【关键词】 老年人;心血管疾病;衰弱;老年评估;教育
【中图分类号】 R592;R494　　【文献标志码】 A　　【DOI】 10.11915/j.issn.1671-5403.2021.01.002

Effects of comprehensive evaluation of frailty and corresponding intensive education on health outcomes of elderly patients with cardiovascular disease

CHEN Yue-Ying[1], YANG Rui[2], CAO Wen-Zhe[3], HOU Hui-Ru[1*], DONG Wei[4*]
([1]Nursing Department, [3]Institute of Geriatrics, Second Medical Center of Chinese PLA General Hospital, Beijing 100853, China; [2]Department of Vascular Surgery, [4]Department of Cardiology, First Medical Center of Chinese PLA General Hospital, Beijing 100853, China)

【Abstract】 **Objective** To investigate effects of comprehensive evaluation of frailty and corresponding intensive education on the health outcomes in the elderly patients with cardiovascular disease during hospitalization and after discharge. **Methods** A total of 100 consecutive elderly patients with cardiovascular disease were selected for the study, who were admitted to the Department of Cardiology of Chinese PLA General Hospital from February to September 2019. Fried frailty phenotype and comprehensive evaluation of the elderly were analyzed. Intensive education was conducted from multiple time points, and the efficacy was observed. **Results** Of all the included patients, 24 had frailty and 76 did not. Logistic regression analysis of the factors affecting frailty showed that 3-meter timed up & go test (OR=1.151,95%CI 1.029-1.288, P=0.014), angina (OR=8.510, 95%CI 1.753-41.307, P=0.008) and D-dimer (OR=2.925, 95%CI 1.161-7.369, P=0.023) were risk factors of frailty. Our study showed that frailty had no effect on the complications in patients hospitalized with cardiovascular disease, and no adverse events such as death, falls, or fractures occurred in all patients. The incidence of falls, fractures and readmission within 6 months after discharge occurred in 9 frailty patients and 19 non-frailty patients without significant difference. The scores of depression assessment at 3 months after discharge in both groups were lower than that on hospitalization, and the number of long-term oral medicines was lower than that during hospitalization in the non-frailty group (P<0.05). The FRAIL score and BMI in the non-frail group decreased at 6 months after discharge compared with that during hospitalization (P<0.05), and the frailty group did not change significantly. There was no significant difference between the two groups in basic activities of daily living (BADL) score (P>0.05). **Conclusion** Comprehensive evaluation of frailty and corresponding intensive education in the elderly inpatients with cardiovascular disease contribute significantly to the reduction in the incidence of

收稿日期:2020-03-22;接受日期:2020-08-16
基金项目:国家重点研发计划(2018YFC0910700)
通信作者:侯惠如,E-mail:hhr610626@163.com;董蔚,E-mail:301dongw@sina.com

adverse events after hospitalization and discharge, which has more significant effects on modifying frailty, depression, body mass index and multiple medication in the non-frailty group than in the frailty group.

【Key words】 aged; cardiovascular disease; frailty; geriatric assessment; education

This work was supported by National Key R&D Program of China(2018YFC0910700).

Corresponding author: *HOU Hui-Ru*, *E-mail*: *hhr*610626@ 163. *com*; *DONG Wei*, *E-mail*: 301*dongw*@ *sina. com*

近年来,老年心血管病患病率及病死率逐年递增[1],而衰弱与疾病预后息息相关,是老年患者发生不良结局的重要预测指标[2]。目前国内对老年衰弱相关的综合评估、强化教育与预后关系的研究报道较少。本研究采用 Fried 表型(frailty phenotype, FP)及老年综合评估识别住院衰弱患者,评估衰弱状况及影响因素,同时强化对老年心血管病住院患者预防衰弱的教育,研究其对住院期间及出院后患者健康结局的影响,为心血管专科开展老年衰弱评估与干预提供参考。

1 对象与方法

1.1 研究对象

通过连续入组选取 2019 年 2 月至 5 月入住解放军总医院心血管内科老年心血管疾病住院患者 100 例。入选标准:年龄≥65 岁;因患高血压、冠心病、血脂异常、心律失常和心脏瓣膜病等心血管疾病住院的患者,包含≥2 种心血管疾病;病情和生命体征平稳,能配合完成各项评估,并签署知情同意书。排除标准:因各种原因(严重认知功能障碍、失聪等)无法配合完成问卷及随访;因病情或躯体活动障碍无法配合评估;各种疾病终末期,如恶性肿瘤、严重心力衰竭和多器官衰竭等。

1.2 方法

1.2.1 基线资料 收集患者一般资料,性别、年龄、文化程度、婚姻、体质量指数(body mass index, BMI)、吸烟饮酒史、日常锻炼、合并慢性疾病数量、服药种类,及血生化、心电图、超声心动图检查结果等。

1.2.2 评估方法 组建综合评估团队,包括心血管病医师、老年心血管病专科护士和老年评估师。待患者病情平稳,适应住院环境后,由专职老年评估师进行老年综合评估。(1) Fried 表型评估。包括非自主性体质量下降、疲乏、握力减弱、步行速度减慢及体力活动降低 5 个方面。当出现≥3 个症状诊断为衰弱,1~2 个症状为衰弱前期,没有症状则无衰弱[3]。(2)老年综合评估[4]。内容包括慢性疾病、用药情况、家庭社会支持、跌倒风险、视力障碍、听力障碍、睡眠障碍、失禁、慢性便秘和慢性疼痛评估。同时进行以下量表评估:基本日常生活活动量表(basic activities of daily living, BADL)、工具性日常生活活动量表(instrumental activities of daily living, IADL)、简明精神状态检查量表(mini-mental state examination, MNSE)、老年抑郁量表(geriatric depression scale, GDS-5 items)、老年焦虑量表(hospital anxiety and depression scale, HADS)、微型营养评估简表(mini-nutritional assessment short form, MNASF)、睡眠自测量表(Athens insomnia scale, AIS)、虚弱症量表(Edmonton frail scale, EFS)、简易体能状况量表(short physical performance battery, SPPB)、5 次起坐测试(five times sit and stand test, FTSST)、3 米起立行走计时测试(timed up & go test, TUGT)和衰弱筛查量表(the FRAIL scale, FRAIL)。

1.2.3 多时点强化衰弱教育 患者入院首日,由老年心血管病专科护士进行疾病及安全知识宣教,示范防跌倒措施与方法,发放老年衰弱健康手册。综合评估后,由老年评估师再次向患者(包括家属和陪护)强化衰弱可能导致的不良健康事件如跌倒、骨折、院内感染、血栓形成和术后谵妄等[5],对营养不良、跌倒风险高、家庭社会支持差和有认知能力下降的患者,列为重点关注和管理对象。手术前 1 天,指导患者做术前放松、呼吸和排尿训练,术后血管穿刺侧肢体制动,预防出血,行五指对合及下肢踝泵运动,预防血栓;减少卧床、增加床边及走廊活动等[6]。出院前 1 天,护士再次对患者和家属进行宣教,指导日常饮食、运动、心理调适、居家安全防跌倒方法[6],及合理规范用药、突发急症处置和定期复查要求;针对衰弱患者,强调运动重要性,指导居家运动康复方法。

1.2.4 患者随访 出院后 3 和 6 个月,由老年评估师负责电话随访,评估患者日常活动、用药、体质量、抑郁及 FRAIL 衰弱等[7],记录是否发生跌倒、骨折、再入院及任何原因的死亡,发生任何上述不良健康事件定义为发生不良结局。

1.3 统计学处理

采用 SPSS 22.0 进行数据分析。计量资料以均数±标准差($\bar{x}\pm s$)或中位数(四分位间距)[$M(Q_1,Q_3)$]表示,组间比较采用 t 检验或秩和检验;计数资料以例数(百分率)表示,组间比较采用 χ^2 检验,运用多因素 logistic 回归分析衰弱影响因素。$P<0.05$ 为差异有统计学意义。

2 结果

2.1 2组患者基线资料及衰弱现状

100例老年患者,年龄75.0(65.0~95.6)岁,85岁以上17例,男性73例, BMI异常64例,有吸烟饮酒史均为50例,已婚且配偶健在80例,独居10例。评估显示衰弱组24例(24%)、不衰弱组76例(76%),衰弱5个指标中体质量下降7例(7%)、疲乏49例(49%)、握力下降44例(44%)、步速下降51例(51%)及体力活动降低26例(26%)。对衰弱有影响的单因素有外出锻炼、饮酒史、合并慢病数量、外出活动受限、生活不能完全自理、患冠心病、患心绞痛和使用硝酸酯药8项,差异有统计学意义(P<0.05;表1)。

表1 2组患者基线资料与衰弱的单因素分析

Table 1 Baseline data of patients and univariate analysis of frailty

Item	Frailty group(n=24)	Non-frailty group(n=76)	P value
Gender [n (%)]			0.063
Male	14(58.3)	59(77.6)	
Female	10(41.7)	17(22.4)	
Age [years, n (%)])			0.658
65≤age<75	14(58.3)	37(48.7)	
75≤age<85	6(25.0)	26(34.2)	
age≥85	4(16.7)	13(17.1)	
BMI [kg/m^2, n (%)]			0.437
≤18.5	2(8.3)	1(1.3)	
18.6-23.9	8(33.3)	25(32.9)	
≥24.0	14(58.4)	50(65.8)	
Smoking history[n (%)]			0.083
Yes	8(33.3)	42(55.3)	
No	16(66.7)	34(44.7)	
Drinking history[n (%)]			0.001
Yes	5(20.8)	45(59.2)	
No	19(79.2)	31(40.8)	
Marriage[n (%)]			>0.999
Spouses living	20(83.3)	64(84.2)	
Divorced or widowed	4(16.7)	12(15.8)	
History of falls[n (%)]			0.457
Yes	5(20.8)	9(11.8)	
No	19(79.2)	67(88.2)	
Exercise outside[n (%)]			0.036
Yes	6(25.0)	37(48.7)	
No	18(75.0)	39(51.3)	
Residence status[n (%)]			0.596
Living with family	20(83.3)	70(92.1)	
Living alone	4(16.7)	6(7.9)	
Movement restriction[n (%)]			<0.001
Yes	7(29.2)	0(0.0)	
No	17(70.8)	76(100.0)	
Unable to take care of oneself[n (%)]			0.017
Yes	6(25.0)	4(5.3)	
No	18(75.0)	72(94.7)	
Hypertension[n (%)]	19(79.2)	61(80.3)	>0.999
Coronary heart disease[n (%)]	23(95.8)	53(69.7)	0.009
Angina[n (%)]	19(79.2)	43(56.6)	0.047
Atrial fibrillation[n (%)]	3(12.5)	17(22.4)	0.447
Diabetes mellitus[n (%)]	8(33.3)	25(32.9)	0.968
Dyslipidemia[n (%)]	8(33.3)	22(28.9)	0.683
Heart failure[n (%)]	4(16.7)	10(13.2)	0.925
Stroke[n (%)]	6(25.0)	10(13.2)	0.673
Cancer[n (%)]	4(16.7)	8(10.5)	0.650
Renal insufficiency[n (%)]	2(8.3)	4(5.3)	0.953
ACEI[n (%)]	1(4.2)	6(7.9)	0.869
ARB[n (%)]	7(29.2)	22(28.9)	0.984
CCB[n (%)]	12(50.0)	38(50.0)	>0.999
β-blocker[n (%)]	12(50.0)	35(46.1)	0.736
New anticoagulants[n (%)]	2(8.3)	10(13.2)	0.784
Lipid drug[n (%)]	23(95.8)	68(89.5)	>0.999
Nitrate esters[n (%)]	13(54.2)	23(30.3)	0.033
Antiplatelet drugs[n (%)]	18(75.0)	55(72.4)	0.800
Comorbidity number[n, $M(Q_1,Q_3)$]	4(4,5)	4(3,5)	0.036
Medication number[n, $M(Q_1,Q_3)$]	6(5,7)	6(5,7)	0.539

BMI: body mass index; ACEI: angiotensin converting enzyme inhibitor; ARB: angiotensin receptor blocker; CCB: calcium channel blocker.

2.2　2组老年综合评估情况

100例老年患者综合评估显示,各项目对衰弱的影响差异无统计学意义(P>0.05;表2);临床血液生化、心电图及心脏超声检查指标中的甘油三酯、INR、D-二聚体、每搏输出量、非特异性ST-T改变、房室传导阻滞和QRS间期7项,及其他体能和量表评估中的FTSST、TUGT、BADL、IADL、EFS和SPPB 6项对衰弱有影响,差异有统计学意义(P<0.05;表3)。

表2　2组患者老年综合征评估比较

Table 2　Evaluation of geriatric syndrome in two groups　[n (%)]

Item	Frailty group (n=24)	Non-frailty group (n=76)	P value
Dysaudia	3(12.5)	7(9.2)	0.953
Visual impairment	5(20.8)	10(13.2)	0.572
Masticatory obstacle	6(25.0)	6(7.9)	0.063
Dyssomnia	8(33.3)	15(29.7)	0.178
Uracratia	3(12.5)	2(2.6)	0.168
Chronic constipation	7(29.2)	20(26.3)	0.881
Chronic pain	9(37.5)	21(27.6)	0.378

2.3　衰弱logistic回归分析

logistic回归分析纳入的变量包括患者基本资料、临床检查和老年综合评估中对衰弱有影响的因素,结果显示,TUGT、心绞痛和D-二聚体是衰弱的影响因素,饮酒史是衰弱的保护因素(P<0.05;表4)。

2.4　2组患者住院及出院后不良结局情况

所有患者住院期间均未发生死亡、跌倒、骨折及院内感染等情况。随访6个月,不良事件发生率为28%,其中衰弱组不良事件共9例(37.5%)[再入院8例、跌跤4例(面部淤血1例、软组织损伤1例)];不衰弱组不良事件共19例(25.0%)[再入院18例、跌跤5例(骨折1例)],均无死亡,2组患者出院后不良事件的发生率差异无统计学意义(P=0.265)。2组患者出院后3个月,抑郁评估得分均较住院时下降,长期口服药种类不衰弱组较住院时减少(P<0.05);出院后6个月,不衰弱组FRAIL衰弱评分及BMI指数均较住院时降低(P<0.05),衰弱组变化不显著;2组患者BADL日常活动能力评分出院后与住院时差异均无统计学意义(P>0.05;表5)。

表3　2组患者其他综合评估比较

Table 3　Other comprehensive assessments in two groups

Item	Frailty group(n=24)	Non-frailty group(n=76)	P value
FTSST[s, M(Q_1,Q_3)]	20(18,26)	16(13,19)	0.005
TUGT[s, M(Q_1,Q_3)]	17(10,17)	13(10,15)	<0.001
GDS-5 items[points, M(Q_1,Q_3)]	1(0,1)	0(0,1)	0.249
HADS[points, M(Q_1,Q_3)]	2(0,3)	0(0,2)	0.240
MNSE[points, M(Q_1,Q_3)]	28(27,29)	28(27,29)	0.464
AIS[points, M(Q_1,Q_3)]	2(0,6)	1(0,4)	0.179
BADL[points, M(Q_1,Q_3)]	6(5,6)	6(6,6)	0.012
EFS[points, M(Q_1,Q_3)]	6(5,7)	4(3,6)	<0.001
SPPB[points, M(Q_1,Q_3)]	6(4,7)	8(6,10)	<0.001
IADL[points, M(Q_1,Q_3)]	8(3,8)	8(7,8)	0.036
MNASF[points, M(Q_1,Q_3)]	14(11,14)	14(12,14)	0.328
Triglyceride[mmol/L, M(Q_1,Q_3)]	2(1,2)	1(1,2)	0.030
INR[M(Q_1,Q_3)]	1.02(0.98,1.07)	1.08(1.01,1.13)	0.021
D-dimer[mg/L, M(Q_1,Q_3)]	1(0,1)	0(0,1)	0.004
Output per beat[ml/beat, M(Q_1,Q_3)]	44(42,55)	55(47,65)	0.022
QRS interval[ms, M(Q_1,Q_3)]	86(80,92)	94(84,104)	0.005
Nonspecific ST-T changes[n (%)]	9(37.5)	11(14.5)	0.033
Atrioventricular block[n (%)]	4(16.7)	2(2.6)	0.042
Hospital stay length[d, M(Q_1,Q_3)]	10(6,15)	10(6,13)	0.857
Hospitalization costs[RMB, yuan, M(Q_1,Q_3)]	22 699(14 326,48 874)	29 726(11 829,68 048)	0.986

FTSST: five times sit and stand test; TUGT: timed up & go test; GDS-5 items: geriatric depression scale; HADS: hospital anxiety and depression scale; MNSE: mini-mental state examination; AIS: Athens insomnia scale; BADL: basic activities of daily living; EFS: Edmonton frail scale; SPPB: short physical performance battery; IADL: instrumental activities of daily living; MNASF: mini-nutritional assessment short form; INR: international normalized ratio.

表4 老年住院患者衰弱 logistic 回归分析

Table 4 Logistic regression analysis of frailty of elderly hospitalized patients

Factor	*B*	*OR*	95% *CI*	*P* value
Angina	2.141	8.510	1.753-41.307	0.008
D-dimer	1.073	2.925	1.161-7.369	0.023
TUGT	0.141	1.151	1.029-1.288	0.014
Drinking history	-1.655	0.191	0.053-0.689	0.011
Comorbidity number	0.119	1.127	0.870-1.460	0.366
Nonspecific ST-T changes	1.275	3.577	0.826-15.491	0.088

TUGT: timed up & go test.

表5 2组患者住院及出院后评估结果比较

Table 5 Comparison of evaluation results of hospitalized and discharged patients between two groups [$M(Q_1, Q_3)$]

Item	Frailty group (*n*=24)				Non-frailty group (*n*=76)			
	Hospitalization	3 months after discharge	6 months after discharge	*P* value	Hospitalization	3 months after discharge	6 months after discharge	*P* value
GDS-5 items (poinits)	1(0,1)	0(0,0)	-	0.001	0(0,1)	0(0,0)	-	<0.001
Medication (*n*)	6(5,7)	6(5,8)	-	0.655	6(5,7)	5(5,7)	-	0.005
FRAIL(points)	2(1,3)	-	1(0,3)	0.051	1(0,1)	-	0(0,1)	0.017
BMI(kg/m^2)	26(22,27)	-	25(23,27)	0.904	26(23,27)	-	25(23,27)	0.001
BADL(points)	6(5,6)	-	6(5,6)	0.546	6(6,6)	-	6(6,6)	0.103

GDS-5 items: the geriatric depression scale; FRAIL: the FRAIL scale; BMI: body mass index; BADL: basic activities of daily living.

3 讨 论

随着老龄化进程和现代医疗手段进步,高龄和合并慢病越来越普遍,心血管疾病患者衰弱的发生率也逐年增加[8]。本研究以老年心血管病住院患者为研究对象,男性和高龄比例高,合并慢病多,患高血压病和冠心病比例达80%,高脂血症和糖尿病30%~33%,而长期口服药种类中位数达6种,其中使用调脂药和抗血小板药达91%和71%,近半数患者使用β受体阻滞剂和钙离子拮抗剂。本研究衰弱5个指标中疲乏、步速下降和握力下降比例高,衰弱发生率为24%,低于国内赵海珍等[9]同类研究结果37.5%,可能与其入组人群年龄更大有关。我国社区老年人衰弱的发生率3.9%~10.0%[10, 11],远低于住院人群。基线资料中,日常外出锻炼、外出活动受限和生活不能完全自理在2组人群中有显著差异,这3种因素均与活动减少有关,衰弱既是活动减少的原因,同时也可能是活动减少的结果,有研究提出,较少的体育活动是老年人衰弱的重要预测指标[12]。

老年综合征评估中,虽然患慢性疼痛、睡眠障碍和慢性便秘比例较高,但所有项目均未发现对患者是否患衰弱有显著影响。临床常规检查指标中的甘油三酯、INR、D-二聚体、每搏输出量、非特异性ST-T改变、房室传导阻滞和QRS间期7项与衰弱有关,反映了衰弱的心血管病患者的特征性变化,提示临床要重视这些指标的改变;其他评估中的FTSST、TUG、SPPB、BADL、IADL和EFS等6项也与衰弱有关,其中前3项与肌肉功能有关,后3项与日常活动能力有关,提示心血管病患者不宜长期"静养",在身体条件允许时适当增加活动量,改善肌肉功能,对改善衰弱有明显益处。

对上述与衰弱有关的因素进行logistic回归分析显示,心绞痛发作、D-二聚体水平和TUGT是老年心血管病住院患者衰弱的影响因素,而其他研究显示,年龄、女性、ADL和慢病数量是衰弱影响因素[9, 10],此差异可能与本研究对象为老年心血管病患者、且心绞痛往往是患者住院的原因有关;另有分析显示,有饮酒史是衰弱的保护因素,但本研究饮酒患者样本量太少,尚不能据此得出确切结论。本研究结果提示,老年心血管病患者要积极做好抗凝管理和预防心绞痛发作,同时,积极参与运动康复锻炼,改善肌肉质量和功能,以预防和减缓衰弱的发生[13]。

衰弱是与年龄相关的生理储备减少的状态,增加不良临床结局的风险,国外衰弱患者心脏手术后谵妄发生率达47.1%[14]。本研究未发现衰弱对住院期间并发症和不良事件发生率有影响,所有入组患者均未发生死亡、跌倒、骨折及院内感染等,这可能是由于本研究人群以药物及介入手术治疗为主,且对老年患者实施衰弱综合评估与强化教育对住院期间并发症和不良事件可能起到良好的预防效果。本研究患者出

院后未进行强化干预,仅由老年评估师于出院后即刻和 6 个月对其进行电话随访。结果显示,出院后 6 个月内不良结局发生率 28%,低于国内吕卫华等[15]报道的 46.8%,住院期间的评估和教育仍对改善老年患者出院后不良结局有积极影响。出院后 3~6 个月,非衰弱组患者在老年抑郁评分、改善多重用药、FRAIL 衰弱评分和体质量指数方面均较住院时明显改善,而衰弱组仅在老年抑郁评分方面明显改善,其他 3 项改善不明显。研究结果显示,老年不衰弱患者通过住院期间衰弱综合评估和强化教育的远期效果较衰弱患者显著,对老年衰弱患者尚需采取进一步积极干预,如定期、个体化的现场康复指导。

综上,老年心血管病住院患者衰弱综合评估与强化教育有助于减少院内不良事件及并发症发生,在改善患者出院后衰弱、抑郁、体质量指数及多重用药方面也起到积极作用。本研究不足之处在于系单中心研究,样本例数较少,随访时间较短。未来还需要大样本多中心的前瞻队列研究,组建多学科管理团队,扩大干预维度(营养、运动和心理等综合干预)[16];建立现场或构建微信及网络信息平台,专职人员督促和反馈,提高干预力度。为以后的研究提供更多科学可靠的证据,以更好地评估各种干预措施对衰弱的影响。

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(编辑: 郑真真)