

导管射频消融与药物治疗房颤合并射血分数保留型心力衰竭患者临床疗效比较

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摘要

目的: 分析比较导管射频消融术和药物治疗对心房颤动(Atrial fibrillation, AF)合并射血分数保留型心衰(Heart failure with preserved ejection fraction, HFpEF)患者的临床疗效。为临床患者治疗方案的制定提供一定的参考。方法: 回顾性分析2018年1月~2020年6月在青岛大学附属医院住院的AF-HFpEF患者, 选取339名作为研究人群。经spss26.0软件1:1倾向得分匹配(Propensity score matching, PSM), 最终确定192名患者, 根据治疗方案的不同分为导管射频消融(Radiofrequency catheter ablation, RFCA)组(n = 96)和药物治疗(Drug treatment, DT)组(n = 96)。RFCA采用肺静脉隔离(Pulmonary vein isolation, PVI)、线性消融。药物治疗用药包括琥珀酸美托洛尔、比索洛尔、胺碘酮、地高辛等, 使患者达到静息心率 < 110次/分的控制目标。随访观察30个月, 主要终点事件为因心力衰竭(heart failure, HF)住院发生率。观察指标为两组患者氨基末端B型利钠肽前体(N-terminal prohormone of brain natriuretic peptide, NT-proBNP)、左房内径(Left atrial diameter, LAD)、左心室射血分数(Left ventricular ejection fraction, LVEF)、左室质量指数(Left ventricular mass index, LVMI)、左心室舒张早期二尖瓣血流最大速度/舒张早期二尖瓣环峰值速度(E/e')、纽约心脏协会(New York heart association, NYHA)心功能分级。结果: RFCA组平均进行了1.1 ± 0.3次消融手术, 无房性心律失常复发率为75 (78.1%)例, 与DT组55 (57.3%)相比, 差异有统计学意义(P < 0.05)。主要终点的因心衰住院率, RFCA组较DT组显著降低(HR 0.25, 95% CI: 0.1~0.62; P = 0.009)。RFCA治疗后LVEF/LVMI、E/e'、NT-proBNP均较治疗前改善, 差异有统计学意义(P < 0.05); 治疗后NYHA分级1 (1, 2)较治疗前降低, 差异有统计学意义(P < 0.05)。DT组治疗后NYHA分级3 (1, 2)较治疗前增加, 差异有统计学意义(P < 0.05)。结论: 导管射频消融与药物治疗AF-HFpEF患者的房颤相比, 导管射频消融可以降低因心衰住院率, 减轻心力衰竭症状并改善心功能。

关键词

心房颤动, 射血分数保留型心力衰竭, 导管射频消融

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Comparison of Clinical Efficacy of Radiofrequency Catheter Ablation and Drug Therapy in Patients with Atrial Fibrillation Complicated with Ejection Fraction Retention Heart Failure

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Abstract

Purpose: To analyze and compare the clinical efficacy of radiofrequency catheter ablation and drug therapy in patients with atrial fibrillation (AF) combined with preserved ejection fraction (HFpEF), to provide a certain reference for the formulation of clinical treatment program. **Method:** Retrospective analysis. A total of 339 patients with AF-HFpEF who were hospitalized in the Affiliated Hospital of Qingdao University from January 2018 to June 2020 were retrospectively analyzed as the study population. A total of 192 patients were treated for Radiofrequency catheter ablation using spss26.0, a lot score matching (PSM). According to the different treatment regimens, they were divided into RFCA group (n = 96) and Drug treatment group (DT) (n = 96). RFCA uses Pulmonary vein isolation (PVI) and linear ablation. Medication included metoprolol succinate, Bisoprolol, amiodarone, digoxin, etc., to achieve the resting heart rate < 110 beats/min control target. At 30 months of follow-up, the primary endpoint event was the incidence of hospitalization due to heart failure (HF). The observation indexes were N-terminal prohormone brain natriuretic peptide (NT-proBNP), Left atrial diameter (LAD), Left ventricular ejection fraction (LVEF), Left ventricular mass index (LVMI), maximum left ventricular mitral flow velocity in early diastolic period/Peak mitral ring velocity in early diastolic period (E/e'), and New York heart association (NYHA) cardiac function grading. **Results:** In the RFCA group, 1.1 ± 0.3 ablation procedures were performed on average, and the recurrence rate of atrial arrhythmia-free patients was 75 (78.1%), compared with 55 (57.3%) in the DT group, the difference was statistically significant ($P < 0.05$). Hospitalization for heart failure in the primary endpoint was significantly lower in the RFCA group than in the DT group (HR 0.25; 95% CI: 0.1~0.62; $P = 0.009$). After RFCA treatment, LVEF/LVMI, E/e', NT-proBNP were improved, and the difference was statistically significant ($P < 0.05$). NYHA grade 1 (1, 2) was lower after treatment than before, and the difference was statistically significant ($P < 0.05$). NYHA grade 3 (1, 2) was higher in DT group after treatment than before treatment, and the difference was statistically significant ($P < 0.05$). **Conclusion:** Radiofrequency catheter ablation can reduce hospitalization for heart failure, reduce symptoms of heart failure, and improve cardiac function compared with drug therapy for AF-HFpEF patients with atrial fibrillation.

Keywords

Atrial Fibrillation, Ejection Fraction Retention Heart Failure, Radiofrequency Catheter Ablation



1. 引言

房颤是最常见的心律失常,患病率约为3%,老年人及患有高血压、心力衰竭、冠状动脉疾病、心脏瓣膜病、肥胖、糖尿病或慢性肾病等疾病的患者患病率更高,会导致患者频繁住院,增加发病率和死亡率[1]。随着全球人口老龄化加剧,心力衰竭的患病率及发病率也正在逐渐增加[2]。在所有的心力衰竭患者中, HFpEF 占心力衰竭(Heart failure, HF)一半以上,并以每年增加1%速度持续上升[3]。因为二者有相同的危险因素如高血压、糖尿病及心脏瓣膜病等, HFpEF 和 AF 常常共存并形成恶性循环[4] [5],会增加患者住院时间、中风和死亡率[6]。HFpEF 由于左室舒张功能受损,左室充盈压升高,左心房(Left atrial, LA)压力波动指数和壁应力升高,心房进行性纤维化和扩大,从而容易发生 AF [7]。反之亦然, AF 本身造成心房收缩功能丧失以及不规则和/或快速心室率引起左心室收缩力减弱,导致左心室功能障碍和心排量减少[8]。恢复窦性心律,可改善心衰患者血流动力学,减轻心衰症状,提高生活质量[9] [10]。包括胺碘酮在内的许多抗心律失常药物(Antiarrhythmic drugs, AADs)难以维持心衰患者的窦性心律,可能会致心律失常,并与死亡率增加相关[11],由于节律控制与心衰患者不良的心血管事件关联数据有限,使心衰患者的房颤治疗具有挑战性。最近指南将经导管射频消融术(Radiofrequency catheter ablation, RFCA)作为治疗房颤的基石[12],观察性研究发现 RFCA 恢复窦性心律(Sinus rhythm, SR)可以改善射血分数减低型心衰(Left ventricular ejection fraction, HFrEF)患者左室功能及心衰症状[13]。AATAC 和 CASTLE-AF 试验已经表明,在 AF-HFrEF 人群中, RFCA 比 AADs 更好控制 AF 患者的 SR,可改善左室射血分数(LVEF)、降低死亡率[14] [15]。由于 HFpEF 和 HFrEF 有着不同的病理生理机制,相较于 HFrEF 患者, AF-HFpEF 患者心衰住院、死亡率增加似乎更显著[16]。基于指南建议,目前除了抗凝之外尚没有确切的治疗方案被证实可以改善 AF-HFpEF 的长期预后[1]。由于针对 HFpEF 治疗的循证医学证据欠缺,治疗方案仍存在争议,目前的治疗措施旨在改善心力衰竭症状,治疗心血管基础疾病、合并症和危险因素。因此寻找 AF-HFpEF 恢复 SR 的有效手段迫在眉睫。已有研究证明导管射频消融术用于治疗 AF-HFpEF 是安全的[17]。近年来,在一些小型的研究中发现,如果通过 RFCA 或 AADs 能维持 AF-HFpEF 患者 SR,可逆转左心室重构及降低心血管死亡和心衰再住院率[18] [19]。但缺少比较 RFCA 和药物治疗 AF 对 AF-HFpEF 患者临床疗效的研究,本研究旨在调查 HFpEF 合并 AF 患者接受 RFCA 和药物治疗的临床结果。

2. 资料与方法

2.1. 一般资料

2.1.1. 研究对象

选取 2018 年 1 月~2020 年 6 月于青岛大学附属医院心内科住院治疗的房颤合并射血分数保留型心力衰竭患者 339 例,其中男性 191 (56.3%)名,女性 148 (43.7%)名,平均年龄 69 (62, 76)。所有受试者均已签署知情同意书,本研究符合我院医学伦理委员会要求。

2.1.2. 纳入标准

1) 符合《2018 年中国心力衰竭与治疗指南》及《心力衰竭的通用定义和分类》提出 HFpEF 诊断标准:具有心力衰竭症状和体征, LVEF \geq 50%;相关结构型心脏病证据,符合以下至少一条① 左心室肥厚和/或左心房扩大,② 舒张功能不全;末端 B 型钠尿肽前体(NT-proBNP) \geq 125 ng/L 或 B 型钠尿肽 \geq 35 ng/L;

- 2) 并采用纽约心脏病协会(NYHA)分级定级为 II~IV 级者;
- 3) 24 小时动态心电图或常规心电图检查诊断为 AF;
- 4) 卒中风险 CHA2DS2-VASc 评分(男性 ≥ 2 分, 女性 ≥ 3 分);
- 5) 相关临床资料完整。

2.1.3. 排除标准

- 1) 年龄 > 85 岁或年龄 < 18 岁;
- 2) 严重的心脏疾病(急性失代偿性心力衰竭或心源性休克);
- 3) 先前行瓣膜手术;
- 4) 恶性肿瘤;
- 5) 入组前已行第一次 AF 消融;
- 6) 先天性心脏病或室性心动过速的复杂消融;
- 7) 严重的肺部疾病和肝脏衰竭;
- 8) 血液透析;
- 9) 左房内径 > 55 mm;
- 10) 甲状腺功能亢进。

2.2. 研究方法

2.2.1. 研究人群

回顾性收集 2018 年 1 月~2020 年 6 月于在青岛大学附属医院住院治疗的有心衰症状(NYHAI-IV)的 AF 患者 339 例, 记录研究对象的年龄、性别、体质指数(BMI)、吸烟史、饮酒史、基础疾病, 用药情况(如胺碘酮、缬沙坦胶囊、螺内酯、呋塞米等)、实验室指标(包括 NT-proBNP、血肌酐、尿酸、总胆固醇、甘油三酯、低密度脂蛋白胆固醇等)及超声心电图指标。

2.2.2. 术前管理和手术方法

消融前所有患者行经食管超声心动图排除左心耳血栓。患者取平卧位, 消毒双侧腹股沟区皮肤, 铺无菌洞巾, 局麻下穿刺右股静脉, 置 6F 鞘, 沿鞘送冠状静脉窦电极至冠状静脉窦, 然后将 8.5 F Swartz 鞘插入上腔静脉。房间隔穿刺针沿鞘向卵圆窝方向穿刺房间隔。将 Swartz 鞘送至左心房, 星形定位电极沿着鞘放置在左心房。应用 Swartz 鞘行肺动脉造影, 在 Carto 系统的指导下建立左房模型。穿刺成功后, 静脉注射普通肝素钠 100 iu/kg。在此过程中每 0.5 h 监测 1 次活化全凝血时间(Activated clotting time, ACT)。阵发性房颤的消融策略为肺静脉隔离(Pulmonary vein isolation, PVI)。当双肺静脉达到双向电隔离时, 消融是成功的。对 PVI 后未成功转换为窦性心律的患者行直流电同步复律(Direct current cardioversion, DCC)。持续性房颤的消融策略为 PVI + 左心房根尖线和二尖瓣峡部线消融。当消融线两侧达到双向电隔离时, 消融成功, 房颤患者消融后给予 DCC。所有患者均达到消融终点, 未发生重大手术并发症, 如心包填塞、中风或栓塞事件。

2.2.3. 术后管理及临床随访

所有患者均给予个体化的基础心衰治疗, 随访期的开始定义为住院患者出院的当天。RFCA 组患者分别在 1 个月、3 个月和 6 个月以及以后每 6 个月安排一次门诊就诊, 包括临床评估、心电图或 24 小时动态心电图检查、心脏超声检查。DT 组采取电话随访结合 12 个月门诊随访方式。控制心率的药物包括(琥珀酸美托洛尔、比索洛尔和洋地黄)。控制节律药物 III 类抗心律失常药物包括(胺碘酮、决奈达隆)。患者因心衰住院或全因死亡则随访结束。消融后的 3 个月定义为空白期, 3 个月空白期从出院当天开始计算, 空白期内使用胺碘酮控制心律, 并给予利伐沙班或华法林抗凝治疗。反复出现的持续房性心动过速(Atrial tachycardia, AT)

采用电复律转复。3个月空白期后任何在心电图记录到的房性心律失常和动态心电图出现的30 s以上的AF、心房扑动(atrial flutter, AFL)、AT定义为复发[20]。可根据患者临床评估及意愿给予第二次射频消融。

2.2.4. 超声心电图和心衰症状评估

所有患者均于我院完善心脏超声检查, M型超声测量左室射血分数(LVEF)、左房前后径(LAD)、左心室舒张末内径(Left ventricular End Diastolic Diameter, LVEDD)、舒张末室间隔(Inter Ventricular Septum, IVS)厚度及左心室后壁(Left Ventricular Posterior Wall, LVPW)厚度, 根据公式计算左心室质量(Left Ventricular Mass, LVM) = $0.8 \times 1.04 \times [(IVS + LVEDD + LVPW)^3 - LVEDD^3] + 0.6 \text{ g}$, 左室质量指数(LVMI) = LVM/BSA。实验室采用免疫层析法测定 NT-proBNP 水平, 试剂盒由默沙克生物科技有限公司提供。采用脉冲波多普勒超声测量二尖瓣舒张早期血流峰速度(E)和二尖瓣环舒张早期运动峰速度(e')连续测量 3 个心动周期取平均值。计算获得 E/e'。依据 NYHA 分级评估患者心衰症状。

2.2.5. 统计学方法

采用 IBM SPSS Statistics 26.0 统计软件进行统计学分析, 使用 Graphpad Prism 9 软件进行作图。符合正态分布的计量资料以均数±标准差($\bar{x} \pm s$)表示, 组间比较采用独立样本 t 检验, 治疗前后采用配对样本 t 检验; 不符合正态分布的计量资料以 M(Q1, Q3)表示, 治疗前后采用配对样本 Wilcoxon 符号秩和检验, 组间比较采用独立样本 Wilcoxon 符号秩和检验; 计数资料以百分率表示, 比较采用 χ^2 检验。采用 Kaplan-Meier 生存曲线绘制患者 30 个月无终点事件累积生存率, 并以 Log Rank 检验两组有无统计学意义, $P < 0.05$ 为差异有统计学意义。卡钳值 0.02 进行 1:1 倾向得分匹配平衡基线资料的混杂因素。

3. 结果

3.1. 两组基线资料比较

两组倾向得分匹配前后的基线资料(包括年龄、性别、BMI、基础疾病、实验室检查、心功能指标及用药情况)参数对比, 接受药物治疗策略的患者明显年龄更大, CHA2DS2 评分更高, 血清 NT-proBNP 水平更高, 冠心病和脑梗死的患病率更高。倾向得分匹配后, 各参数差异无统计学意义($P > 0.05$), 详见表 1。

Table 1. Comparison of clinical baseline data before and after propensity score matching between the two groups

表 1. 两组患者倾向得分匹配前后临床基线资料比较

项目	倾向得分匹配前		P	倾向得分匹配后		P
	DT 组(n = 212)	RFCA 组(n = 127)		DT 组(n = 96)	RFCA 组(n = 96)	
年龄【岁, M(Q1, Q3)】	71 (65, 77)	66 (60~72)	<0.001	67.5 (61~74)	67 (61~73.75)	0.916
女性【例(%)】	98 (45.6)	50 (39.4)	0.263	47 (49)	38 (39.6)	0.191
BMI (kg/m ²)	25.6 ± 3.56	25.31 ± 2.93	0.438	25.2 ± 3.7	25.34 ± 2.92	0.78
CHA2DS2 评分	5 (4, 6)	4 (3, 5)	<0.001	5 (3, 6)	4 (3, 5)	0.005
NYHA 分级	2 (2~3)	2 (2~3)	0.067	2 (2, 3)	2 (2, 3)	0.187
阵发性房颤【例(%)】	64 (29.8)	31 (24.4)	0.285	26 (27.1)	28 (29.2)	0.748
吸烟【例(%)】	49 (22.8)	32 (25.2)	0.613	21 (21.9)	22 (22.9)	0.863
饮酒【例(%)】	32 (14.9)	22 (17.3)	0.550	12 (12.5)	12 (12.5)	1
合并症【例(%)】						
高血压	169 (78.1)	99 (78)	0.888	78 (81.3)	76 (79.2)	0.717
糖尿病	82 (38.1)	38 (29.9)	0.124	36 (37.5)	34 (35.4)	0.764

Continued

冠心病	157 (73)	70 (55.1)	0.01	65 (67.7)	59 (61.5)	0.365
心肌梗死	13 (6)	2 (1.6)	0.051	2 (2.1)	2 (2.1)	1
脑梗死	69 (32.1)	22 (17.3)	0.003	14 (14.6)	18 (18.8)	0.439
血脂异常	68 (31.6)	33 (26)	0.269	27 (28.1)	28 (29.2)	0.873
慢性肾脏病	29 (13.5)	9 (7.1)	0.069	3 (3.1)	8 (8.3)	0.12
肺动脉高压	47 (21.9)	29 (22.8)	0.427	21 (21.9)	20 (20.8)	0.86
实验室检查						
NT-proBNP (pg/ml)	784.9 (424.8, 1493)	590.2 (331.9, 1089)	0.006	631.4 (321.2, 1239)	668.9 (393.1, 1192.5)	0.95
UA (umol/L)	350 (294, 410)	331 (273, 398.95)	0.123	346.19 (287.64, 386.75)	332 (278.75, 407.75)	0.797
超声心动图						
LVMI	109 (101~124)	110 (106~117)	0.941	108 (99~118)	109 (101~117)	0.457
LAD	44.2 ± 4.8	44.1 ± 4.7	0.766	44.7 ± 5.2	44.1 ± 4.6	0.388
E/e'	13.2 (11.6~15.9)	12.9 (11~15.2)	0.186	13.4 (11.1~16.2)	13 (11.3~15.2)	0.44
口服治疗药物						
ACEI或ARB	105 (48.8)	61 (48)	0.885	47 (49)	46 (47.9)	0.68
β受体阻滞剂	127 (59.1)	52 (40.9)	0.01	46 (47.9)	46 (47.9)	1
他汀类	198 (93.4)	112 (88.2)	0.097	89 (92.5)	83 (86.5)	0.156
利尿剂	92 (42.8)	47 (37.0)	0.293	38 (39.6)	37 (38.5)	0.882

注意：数值显示为均数±标准差($\bar{x} \pm s$)或中位数(P25, P75); BMI: 体重质量指数; UA: 尿酸; LA: 左心房; LVMI: 左心室质量指数; ACEI: 血管紧张素转换酶抑制剂; ARB: 血管紧张素 II 受体阻断剂。

3.2. 两组临床观察指标变化情况比较

RFCA 组 LVMI、E/e'、NT-proBNP 均较治疗前下降, 差异有统计学意义($P < 0.05$); LVEF 较治疗前上升, 差异有统计学意义($P < 0.05$)。DT 组 LA 内径、LVMI、E/e'、NT-proBNP 均较治疗前上升, 差异无统计学意义($P > 0.05$); LVEF 较治疗前下降, 差异无统计学意义($P > 0.05$)。详见表 2。

Table 2. Comparison of changes in echocardiogram parameters between the two groups

表 2. 两组超声心动图参数变化情况比较

项目	RFCA 组		DT 组	
	治疗前	治疗后	治疗前	治疗后
LVEF (%)	60 (58, 62)	60 (59, 62)*	60 (58, 62)	60 (58, 62)
LA 内径(mm)	44.1 ± 4.6	43.9 ± 3.8	44.7 ± 5.2	44.9 ± 5.1
LVMI (g/m ²)	109 (101, 117)	108 (101, 114)**	108 (99, 118)	110 (100, 121)
E/e'	13 (11.3, 15.2)	11.7 (10.1, 13.6)***	13.4 (11.1, 16.2)	13.6 (11.5, 16.5)
NT-proBNP (pg/ml)	668.9 (393.1, 1192.5)	600 (408.3, 1149.8)**	631.4 (321.2, 1239)	741.4 (506.2, 1083.6)

注意：与治疗前相比较, *代表 $P < 0.05$; **代表 $P < 0.01$; ***代表 $P < 0.001$ 。

3.3. 两组治疗后临床观察指标比较

治疗后 RFCA 组 E/e'、NT-proBNP 均较 DT 组有明显改善, 差异有统计学意义($P < 0.05$)。RFCA 组 LVEF、LA 内径、LVMI 较 DT 组有改善, 差异无统计学意义($P > 0.05$)。详见表 3。

Table 3. Comparison of clinical observation indexes between the two groups after treatment**表 3.** 两组治疗后临床观察指标比较

项目	手术组	药物组	t/Z	P
LVEF (%)	60 (59, 62)	60 (58, 62)	1.122	0.236
LA (mm)	43.9 ± 3.8	44.9 ± 5.1	1.56	0.121
LVMI (g/m ²)	108 (101, 114)	110 (100, 121)	1.39	0.164
E/e'	11.7 (10.1, 13.6)	13.6 (11.5, 16.5)	4.1	<0.001
NT-proBNP (pg/ml)	600 (408.3, 1149.8)	741.4 (506.2, 1083.6)	2.04	0.041

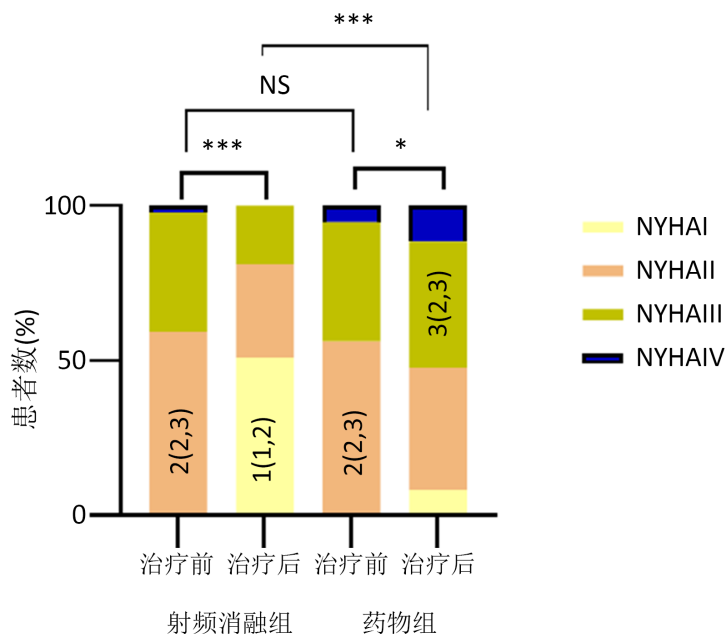
3.4. 两组心衰预后指标比较

3.4.1. 两组患者 NYHA 分级比较

RFCA 组治疗后 NYHA 分级 1 (1, 2) 较治疗前降低, 差异有统计学意义 ($P < 0.05$)。DT 组治疗后 NYHA 分级 3 (1, 2) 较治疗前增加, 差异有统计学意义 ($P < 0.05$)。详见表 4、图 1。

Table 4. Comparison of NYHA grades before and after treatment between the two groups**表 4.** 两组患者治疗前后 NYHA 分级比较

项目	射频消融组【例(%)】		药物组【例(%)】	
	治疗前	治疗后	治疗前	治疗后
NYHA I	0	49 (51)	0	6 (6.2)
NYHA II	52 (59.3)	29 (30.2)	54 (56.2)	31 (32.2)
NYHA III	37 (38.5)	18 (18.7)	37 (38.5)	45 (46.8)
NYHA IV	2 (2)	0	5 (5.2)	14 (14.5)

**Figure 1.** Comparison of NYHA grades before and after treatment between the two groups**图 1.** 两组患者治疗前后 NYHA 分级比较

3.4.2. 两组房性心律失常比较

RFCA 组房性心律失常 21 (21.9%)例, DT 组房性心律失常 55 (57.3%)例, 差异具有统计学意义($P < 0.001$)详见表 5。

Table 5. Comparison of atrial arrhythmias between the two groups

表 5. 两组房性心律失常比较

	窦性心律	房性心律失常	χ^2	P
RFCA 组	75 (78.1%)	21 (21.9%)	25.176	<0.001
DT 组	41 (42.7%)	55 (57.3%)		

3.4.3. 两组患者无心衰住院生存率比较

随访期间, RFCA 组患者共死亡 3 例, 1 例因多脏器衰竭死亡, 1 例因肝脓肿死亡, 1 例因心力衰竭死亡。DT 组有 2 例患者因心力衰竭死亡, 1 例因冠心病死亡, 3 例患者失访。因心力衰竭死亡的患者均因心衰住院后死亡, 对主要终点发生率无影响。与 DT 组相比, RFCA 组因心衰住院发生率显著降低(HR 0.25; 95% CI: 0.1~0.62; $P = 0.009$)。详见图 2。

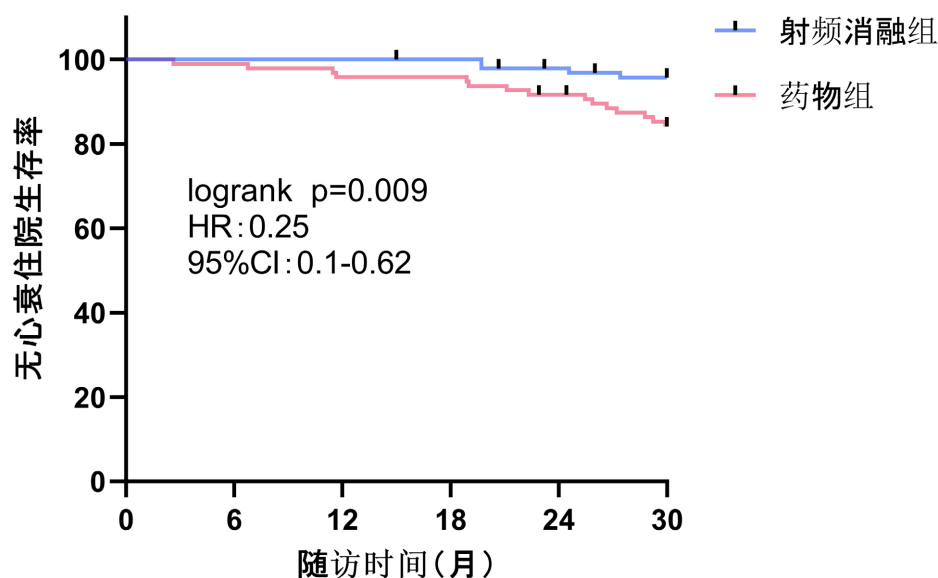


Figure 2. Comparison of hospitalized survival rates without heart failure between the two groups

图 2. 两组无心衰住院生存率比较

4. 讨论

心房颤动和心力衰竭是目前最常见的两种心血管疾病, 随着全球人口的增长、预期寿命的增加以及诊疗技术的提高, 导致人口老龄化问题更加严重, 发病率将逐年增加[16] [21]。两者有相似的危险因素和发病机制, 既相互促进, 又互为因果, 导致患者预后不佳[22] [23]。目前指南对 AF-HFpEF 患者治疗推荐只基于改善症状和生活质量上, 缺乏减少 AF-HFpEF 患者不良临床结局及预后的治疗手段。经导管射频消融术能够破坏房颤的触发和维持基质, 已经证实是阵发性房颤的一线治疗手段[24]。先前对伴有 HFpEF 的 AF 患者研究证实导管消融是安全的, 通过抗心律失常药物或多次消融维持窦性心律可以逆转心肌重构, 改善舒张功能, 减少心衰症状[17] [18] [19] [25]。在我们的研究中, AF-HFpEF 患者射频消融术后 LVEF、LVMI、E/e'较治疗前明显改善, 差异有统计学意义。术后 NYHA 分级评估的心力衰竭症状明显

改善,但在药物治疗中呈加重趋势。

与窦性心律相比,AF-HFpEF 患者有较差的运动能力,左室充盈压及 NT-proBNP 更高[26] [27],预后更差[28] [29] [30]。AF 可通过心房收缩和房室同步性丧失、快速心率和心室节律不规则引起或加重心衰,进而导致心排量减少、充盈压升高和神经激素激活。尽管有人认为恢复窦性心律对运动血流动力学、症状严重程度、生活质量有积极的影响[25] [31] [32],但对节律控制与 AF-HFpEF 患者的不良心血管事件发生关联性的数据有限。单中心实验认为有效的维持窦性心律是改善 AF-HFpEF 患者临床预后的关键[19] [33]。导管消融术较药物治疗 AF-HFpEF 患者维持窦性心律方面的研究较少,我们的实验发现射频消融术后无房性心律失常复发率在 30 个月随访时是 78%,相较于药物治疗的 42.7%,差异有显著的统计学意义。这与 Rattka M 等人[34]的研究相一致。此外,我们的研究还发现,射频消融因心衰住院发生率相较药物治疗显著降低(HR 0.25; 95% CI: 0.1~0.61; $P = 0.008$),而且两组心衰住院率在 12 个月后开始分离。

5. 结论

综上所述,这些心功能指标的改善与心血管不良事件的发生率降低相关。因此导管射频消融术是改善 AF-HFpEF 患者预后的有效治疗手段。

本研究局限性: 1) 本文为单中心、回顾性研究,样本量小,需要随机对照研究去验证。2) 出现严重左室功能障碍和症状的患者数量较以往研究减少,不能代表普遍 AF-HFpEF 患者,存在患者选择偏倚。3) 用于检测心律失常复发的方法有限,我们可能低估了复发率,使预后结果产生偏倚。最后,受研究条件影响,部分超声心动图数据未得到。

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