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室性早搏患者射频消融术预后与起源部位的相关性 *

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摘要 目的:探讨室性早搏(PVCs)患者射频消融术(RFCA)预后与起源部位的相关性。**方法:**回顾性分析 2016 年 12 月~2017 年 12 月第二军医大学第一附属医院长海医院心血管内科收治并接受 RFCA 治疗的 PVCs 患者的临床资料,根据起源部位分为右心室组(n=58),左心室组(n=24)。记录两组 RFCA 手术时间、X 线曝光时间及手术成功率等指标,术后随访 6 个月,比较两组术后心功能指标的改善情况,记录 24h PVCs 总数及复发情况。**结果:**与左心室组比较,右心室组手术时间、X 线曝光时间明显延长,手术成功率明显下降(*P<0.05*)。术后 3 个月,右心室组 LVESD、LVEDD 均明显减小,LVEF 明显升高(*P<0.05*);术后 6 个月,两组 24h PVCs 数均较术前显著降低,且右心室组下降幅度更为显著(*P<0.05*)。术后 6 个月,两组各心功能指标均较术前明显改善,右心室组较术后 3 个月进一步改善,且明显优于左心室组(*P<0.05*)。**结论:**射频消融术治疗 PVCs 的预后与起源部位存在一定相关性,右心室起源相对左心室起源的 PVCs 手术成功率更高,更有利于抑制心室重构、改善心功能。

关键词:室性早搏;射频消融术;起源部位;预后

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Correlation between the Prognosis of Radiofrequency Ablation and the Origins in Patients with Premature Ventricular Contractions*

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ABSTRACT Objective: To explore the correlation between the prognosis of radiofrequency ablation (RFCA) and the origins in patients with premature ventricular contractions (PVCs). **Methods:** Clinical data of PVCs patients admitted to the department of cardiovascular medicine of Changhai hospital, the first affiliated hospital of the second military medical university, and treated with RFCA from December 2016 to December 2017 were retrospectively analyzed, and were divided into right ventricle group (n=58) and left ventricle group (n=24) according to the origins. The operation time of RFCA, X-ray exposure time, operation success rate and other indicators of the two groups were recorded. The patients were followed up for 6 months after the operation. The improvement of cardiac function indicators in the two groups after the operation was compared, and the total number of 24h PVCs and the recurrence were recorded. **Results:** Compared with the left ventricle group, the operation time and X-ray exposure time in the right ventricle group were significantly prolonged, and the success rate of surgery was significantly decreased (*P<0.05*). At 6 months after surgery, the number of 24h PVCs in both groups was significantly lower than that before surgery, and the decline was more significant in the right ventricle group (*P<0.05*). Three months after surgery, LVESD and LVEDD were significantly decreased and LVEF was significantly increased in the right ventricle group (*P<0.05*). At 6 months after surgery, all cardiac function indicators in the two groups were significantly improved compared with those before surgery, and the right ventricle group was further improved compared with that at 3 months after surgery, and was significantly better than that in the left ventricle group (*P<0.05*). **Conclusions:** The prognosis of PVCs has a certain correlation with the site of origin. The success rate of right ventricular origin PVCs is higher than that of left ventricular origin, which is more conducive to improving cardiac structural remodeling and function.

Key words: Premature ventricular contractions; Radiofrequency ablation; Prognosis; Origins

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前言

室性早搏（PVCs）是一种常见的心律失常，患病率约为6%,可发生于各年龄段人群[1-3]。导管射频消融(RFCA)已被广

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泛证实为根治 PVCs 安全有效的方法，能够有效缓解临床症状，逆转 PVCs 相关心动过速性心肌病，手术成功率高达 80%~90%，但仍有部分患者手术失败或术后复发[4-6]。近年来，研究发现 RFCA 成败及复发与起源部位存在一定关联，但不同起源 PVCs 的 RFCA 对心功能、结构及预后是否存在差异仍缺乏循证学依据[7,8]。本研究通过比较不同起源 PVCs 患者 RFCA 术后心功能变化，分析预后与 PVCs 起源部位的相关性。

1 资料与方法

1.1 一般资料

选择 2016 年 12 月 ~2017 年 12 月第二军医大学第一附属医院长海医院心血管内科收治的 PVCs 患者，共 82 例。入组标准：① 均符合《室性心律失常治疗和心脏性猝死预防指南》[9]，并经 24h 动态心电图检查确诊；② 近 1 个月未服用抗心律失常药物，拟行 RFCA 治疗者；③ 术中明确 PVCs 的起源部位为右心室；④ 排除合并心房颤动、室性心动过速或其他器质性心脏病、电解质紊乱及严重肝肾功能异常者。其中男 49 例，女 33 例；年龄 32~74（46.9± 5.1）岁；体质量指数（BMI）20.1~25.8（22.9± 2.3）kg/m²；根据起源部位进行分组，右心室起源 58 例（间隔 41 例，游离壁 17 例）（右心室组），左心室起源 24 例（左心室组）。各组研究对象的年龄、性别、BMI 等基本资料比较，差异无统计学意义（P>0.05）。

1.2 方法

所有患者术前停用抗心律失常药物 5 个半衰期以上，穿刺患者右股静脉或股动脉，送入 8F 加硬消融电极导管至目标位置。连接多导电生理仪，在美国强生公司三维电标测系统（CARTO）引导下，利用电激动标测和起搏标测相结合的方法定位 PVCs 起源部位，最早激动且与起搏标测获得的图形完全一致的点即为起源点，以 30W、42℃、35~30 mL/min 流速进行放电消融。所有手术均由同一术者进行。

1.3 观察指标

1.3.1 手术相关指标 记录两组患者 RFCA 手术时间、X 线曝光时间及手术成功率等指标。其中 RFCA 手术成功的标准：术毕 PVCs 消失，继续观察 30 min，PVCs 小于 5 次或消失未复发；且术后 24h 总早搏数小于术前的 25%，胸闷、心悸等症状明显缓解。

1.3.2 术后随访 术后 3、6 个月定期门诊随访，采用 GE 公司生产的 LOGIQ C9 彩色超声诊断仪，选择左心室长轴切面位置，在窦性心律下由同一超声室医生测量患者同一心动周期的心功能指标，包括左室收缩末期内径（LVESD）、左心室舒张末期内径（LVEDD），取 5 个心动周期的平均值作为最终值，并采用 Simpson 法计算左心室射血分数（LVEF）。采用动态心电图记录术后 6 个月 24h PVCs 总数及复发情况。

1.4 统计学方法

采用 SPSS 20 版统计软件包，计量资料以（$\bar{x}\pm s$）表示，比较采用独立或配对样本 t 检验，计数资料以率（%）表示，比较采用 χ^2 检验。P<0.05 视为有统计学意义。

2 结果

2.1 两组手术相关指标及成功率比较

与左心室组比较，右心室组手术时间、X 线曝光时间明显延长，手术成功率明显下降，差异均有统计学意义（P<0.05）。见表 1。

表 1 两组手术相关指标及成功率比较

Table 1 Comparison of surgical indicators and success rates between the two groups

Origins	N	Operation time(min)	X-ray exposure time(min)	Operation success rate(n,%)
Right ventricle group	58	87.05± 26.74	12.24± 3.11	2(96.6)
Left ventricle group	24	102.25± 31.38	16.04± 4.72	4(83.3)
t/χ^2		2.22	4.29	4.24
P		0.029	<0.001	0.037

2.2 两组 RFCA 术后 24h PVCs 数及复发情况比较

术前，两组 24h PVCs 数比较，差异无统计学意义（P>0.05）；术后 6 个月，两组 24h PVCs 数均较术前显著降低，且右心室组下降幅度更为显著，差异均有统计学意义（P<0.05）。术后 6 个月，两组 PVCs 复发率比较，差异无统计学意义（P>0.05）。见表 2。

表 2 两组 RFCA 术后 24h PVCs 数及复发情况比较

Table 2 Comparison of PVCs number and recurrence at 24h after RFCA operation between the two groups

Origins	N		Number of 24h PVCs(time)	Recurrence(n,%)
Right ventricle group	58	Before operation	13087.49± 3426.74	
		6 months after operation	714.16± 106.87①②	2(3.45)
Left ventricle group	24	Before operation	12902.14± 3670.45	
		6 months after operation	926.17± 136.26①	2(8.33)

Note: ①Compared with before operation, P<0.05; ②Compared between groups during the same period, P<0.05.

2.3 两组 RFCA 术后不同时间心功能比较

术前，两组 LVESD、LVEDD、LVEF 比较，差异均无统计学

意义(P>0.05)；术后 3 个月，右心室组 LVESD、LVEDD 均明显减小，LVEF 明显升高，差异均有统计学意义(P<0.05)；术后 6 个月，两组各心功能指标均较术前明显改善，右心室组较术后 3 个月进一步改善，且明显优于左心室组，差异均有统计学意义(P<0.05)。见表 3。

表 3 两组 RFCA 术后不同时间心功能比较($\bar{x}\pm s$)

Table 3 Comparison of cardiac function between the two groups at different time after RFCA($\bar{x}\pm s$)

Origins	N		LVESD(mm)	LVEDD(mm)	LVEF(%)
Right ventricle group	58	Before operation	42.59± 3.57	54.06± 3.73	59.62± 4.26
		3 months after operation	40.44± 2.19[◇]	51.17± 4.12[◇]	63.19± 4.02[◇]
		6 months after operation	38.51± 1.86[◇◇]	48.96± 3.60[◇◇]	67.53± 4.47[◇]
Left ventricle group	24	Before operation	42.16± 3.81	54.53± 3.69	59.34± 4.59
		3 months after operation	41.17± 3.80	52.13± 4.12	61.81± 5.14
		6 months after operation	40.24± 2.39[◇]	51.24± 3.43[◇]	62.36± 4.91[◇]

Note: Compared with before operation,[◇] P<0.05; Compared with 3 months after operation, [◇] P<0.05; Compared between groups during the same period, [◇] P<0.05.

3 讨论

PVCs 既往被视为一种良性病变，但近年来随着研究的深入，PVCs 尤其是频发性 PVCs 可引起左室收缩与舒张功能异常，进而诱发心动过速性心肌病，同时还会导致左房增大、重构以及功能障碍，随着 PVCs 负荷的增加，对心脏损害越大，严重者可导致猝死[10-12]。有研究认为，当负荷低于 10%时心动过速性心肌病的发生风险较小[13,14]。李可等[15]研究发现，与正常人群比较，PVCs 患者 LVEDD、LVESD 明显增大，且 LVEF 呈下降趋势。目前 RFCA 治疗 PVCs 的技术日臻成熟，特别对右心室流出道等常见部位起源的 PVCs 具有较高的成功率。PVC 起源部位不同直接影响术式的选择，右心室来源的 PVCs 通过选择右股静脉通道穿刺消融，而左心室来源的 PVCs，则根据具体情况行股动脉逆行法或穿房间隔消融，但目前对于不同起源的 RFCA 的预后尚未达成共识[16-18]。

本研究结果显示，与左心室组比较，右心室组患者手术时间、X 线曝光时间明显延长，手术成功率也明显下降，但术后 6 个月右心室组 24h PVCs 数显著降低(P<0.05)，与张俊蒙等[19]研究结果一致。导致上述差异的原因考虑主要与以下几个方面因素有关。(1)根据术前体表心电图判断疑似右心室起源 PVCs 患者，术者通常先标测消融右侧，无效后再行左心室消融；(2)右心室起源的 PVCs 以右心室流出道居多，该部位经股静脉穿刺即可到达，易于操作；而左心室则需经股动脉或房间隔穿刺。(3)左心室 PVCs 分布相对分散，可见源于主动脉瓣 - 二尖瓣连接处、左前 / 后分支、乳头肌等部位，导管不易到位，操作难度较大[20-22]。

有研究指出，右心室起源的 PVCs 患者左心功能障碍相对较重[23,24]，但本研究未发现左、右心室起源的 PVCs 患者 RFCA 术前的左心室结构及功能指标的明显差异(P>0.05)。本研究随访发现，随着消融后心室内压力的下降，右心室组术后 3 个月 LVESD、LVEDD 出现明显改善，LVEF 明显升高，逐渐趋于正常(P<0.05)，且术后 6 个月进一步改善，且明显优于左心室组(P<0.05)，而左心室组的心室结构及心功能于术后 6 个月才出现显著好转，由此进一步表明右心室起源的 PVCs 患者左心功能的恢复速度及程度优于左心室起源的 PVCs 患者，考虑其原因在于左心室起源的 PVCs 患者表现为右束传导阻滞，而右心室起源的则以左束传导阻滞为主，主要导致右心室负荷增大，但对左心室影响较小，因此较易恢复[25-29]。叶茂等[30]究结果发现，RFCA 术后右心室起源的频发型 PVCs 患者的左心房射血分数、左心房应变、左心室收缩期左心房应变率及左心室舒张期左心房应变率等左房结构及功能指标均较术前显著改善，且优于左心室起源的同类患者。

综上所述，RFCA 治疗 PVCs 患者效果好，手术成功率高，PVCs 的预后与起源部位存在一定相关性，右心室起源相对左心室起源的 PVCs 手术成功率更高，更有利于改善心脏结构重构和功能。

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