

· 临床研究 ·

导管射频消融术对房颤患者左心房结构的影响

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摘要:目的 评价导管射频消融术对心房颤动(AF, 房颤)患者左心房结构的影响。方法 43 例房颤患者接受治疗, 其中阵发性房颤 32 例, 持续性房颤 11 例。8 例行肺静脉电隔离术, 35 例行 Carto 指导下环肺静脉前庭隔离术, 消融终点均为双侧肺静脉完全电隔离。应用超声心动图测定其消融术前 1~3 d 和术后 1、3 个月静息时窦性心律下左心房内径, 分析消融术前、后左心房结构的变化。结果 43 例房颤患者均成功施行环肺静脉左房线性消融术, 随访时间(6±2)月, 最短 3 个月, 最长 14 个月, 治愈率 93.02%。左房内径消融术后 1 个月较术前无明显改变[(35.74±5.77)mm vs (35.69±6.25)mm, $P>0.05$], 随访 3 个月时左房内径较术前显著减小[(31.99±3.66)mm vs (35.69±6.25)mm, $P<0.01$]。结论 房颤患者于术后 3 个月时左房结构可逆重构。

关键词:电生理学技术; 心房颤动; 导管射频消融术; 左心房结构

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Evaluation of left atrial structure change after catheter ablation for atrial fibrillation

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Abstract: Objective To evaluate the left atrial structure change after radiofrequency catheter ablation(CA) for atrial fibrillation (AF). **Methods** 43 patients were enrolled, AF was paroxysmal in 32 patients, and persistent in 11 patients. Pulmonary vein isolation(PVI) was performed for earlier 8 patients; Electroanatomical systems(Carto) guided circumferential pulmonary veins antrum ablation(CPVA) was performed for the other 35 patients. All patients were successfully achieved the endpoint of ablation. Conventional echocardiography was performed 1-3 days before CA and 1, 3 months after CA. Echocardiographic parameters about left atrial (LA) diameter was measured at rest during sinus rhythm and the left atrial structure change was analyzed before and after the CA. **Results** CA was successfully performed in all 43 patients, and all these patients were followed-up after 3-14 months, average 6±2 months, and the cure rate was 93.02%. Compared with the 1-3 days pre-CA, LA diameter had no significant differences after 1 month CA[(35.74±5.77)mm vs (35.69±6.25)mm, $P>0.05$], while significantly decreased after 3-months follow-up[(31.99±3.66)mm vs (35.69±6.25)mm, $P<0.01$]. **Conclusion** 3-months follow-up has demonstrated anti-remodeling of LA structure after CA for atrial fibrillation.

Key words: electrophysiology; atrial fibrillation; catheter ablation; left atrial structure

心房颤动(atrial fibrillation, AF; 房颤)是临床最常见的心律失常之一^[1-2]。据 Framingham 的研究报告, 该病人群发病率为 0.5% 左右, 且随年龄增长该发病率增高^[3]。房颤常见的并发症有血栓栓塞、心功能衰竭、心动过速性心肌病等, 严重危害着人类的健康。治疗房颤最理想的目标是恢复窦性心律并长期维持窦性心律, 如今导管消融治疗房颤的成功率已经高达 90%^[4], 越来越多的专家认为, 导管消融治疗可以作为发作频繁症状严重的孤立性房颤的一线治疗方案^[2]。西南医院于 2005 年 10 月起对 43 例房颤患者应用导管射频消融术治疗, 对消融术前、后左心房结构的变化进行了分析, 现报道如下。

1 资料与方法

1.1 一般资料 选取 2005 年 10 月至 2009 年 1 月在西南医院心内科进行治疗的 43 例房颤患者, 其中男 29 例, 女 14 例, 年龄最小 18 岁, 最大 77 岁, 平均(51.93±13.94)岁。阵发性房颤 32 例, 持续性房颤 11 例, 房颤病程最短 0.17 年, 最长 20 年, 平均(5.68±6.61)年。有 15 例患者合并高血压, 4 例合并冠状动脉粥样硬化。

1.2 方法 所有患者术前常规抗凝, 持续性房颤患者术前继续使用抗心律失常药, 高血压患者口服降压药物如血管紧张素转换酶抑制剂(ACEI)或血管紧张素受体抑制剂(ARB)至血压达标(小于 140/90 mm Hg)后手术。8 例患者行 Lasso 环形标测电极指导下肺静脉电隔离术^[5], 其余 35 例患者行 Carto 指导下环肺静脉前庭电隔离术^[6-7]。所有患者均于术后即刻恢复为窦性心律。随访时间最短 3 个月, 最长 14 个月, 平均(6±2)个月, 43 例患者中有 40 例(93.02%)维持窦性心律。术前 1~3 d 和术后 1、3 个月由超声科经验丰富的医师采用美国超声心动图协会(ASE)推荐的测量方法, 应用 M 型超声技术测量患者左房内径(LAD), 记录心脏重构情况。

1.3 统计学处理 所有数据均采用 SPSS13.0 统计软件进行统计学处理, 以 $\bar{x} \pm s$ 表示, 配对比较采用 t 检验, 以 $P<0.05$ 为差异有统计学意义。

2 结果

随访 1 个月时左房内径较术前无明显改变[(35.72±5.77)mm vs (35.69±6.25)mm, $P>0.05$], 随访 3 个月时

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LAD 较术前显著减小 $[(31.99 \pm 3.66) \text{ mm vs } (35.69 \pm 6.25) \text{ mm}, P < 0.01]$ 。3 例复发患者均为持续性房颤者,术后转为阵发性房颤。3 例患者术前左房均增大明显,随访 3 个月时 LAD 亦较术前显著减小。

3 讨论

早在 1999 年 Thamilarasan 等^[8]就提出房颤可以引起左房扩大,Phang 等^[9]也证实孤立性房颤患者左房较年龄匹配的正常对照者增大。动物试验研究表明左房扩大与房颤发生关系密切:一方面,房颤可以导致左房扩大,一旦变为持续性 AF 左房将进行性扩大;另一方面,左房扩大又是房颤的易患因素,扩大的左房内心肌有效不应期缩短,传导延迟,可以容纳更多的折返环,从而易于房颤的发生和维持^[10-11]。另外,房颤导致左房电重构,细胞内钙平衡和血流动力学改变削弱了心肌细胞的收缩力,称为心律失常性心肌病,再加上快速而不规则的心室率,这些病理学改变均使左房肌受损,顺应性减低,使左房丧失有效的收缩和舒张活动。

目前已知左房结构重构参与了房颤的发生和维持机制,多组研究表明经导管消融术后左房结构重构可以逆转。Jayam 等^[12]对 51 例房颤患者行肺静脉电隔离术,术前和术后 6~8 周通过磁共振三维成像(MRA)测量 LAD 和肺静脉口直径变化,发现术后左房和肺静脉均发生结构逆重构,LAD 和肺静脉口径均减小,左房容积与肺静脉口径呈线性相关,并且与房颤的分类和是否消融成功无关。Pappone 等^[13]应用心脏超声观察 251 例房颤患者行环肺静脉左房线性消融术后 LAD 的变化,结果示不管术后房颤有无复发,LAD 均比术前减小。Beukema 等^[14]亦对发作频繁而药物治疗无效的 108 例房颤患者行环肺静脉左房线性消融术,术后 6 个月时通过心脏超声测量 LAD,结果示 LAD 在长期维持窦性心律者均变小。

本研究结果显示,房颤消融成功的患者长期随访 LAD 减小,左房结构重构可以逆转,早期预防心房扩大可以预防房颤复发,术后左房结构逆重构更有利于长期维持窦性心律。本研究结果还显示,术后房颤复发者在消融后左房仍呈缩小趋势。分析原因:(1)术后在药物的协同作用下房颤发作时间或频率减少;(2)消融能量对心房的破坏作用,形成的瘢痕收缩使心房容积减小,消融成功者在 2 个因素作用下左房发生的结构逆重构更明显。以上结论还需要更大规模的样本量予以证实。

房颤给患者带来诸多危害,有条件者应尽可能转复并维持窦性心律。导管射频消融术是有效治愈房颤的一种手段^[15],患者重建窦性心律后左房结构逆重构,更有利于长期维持窦性心律,同时心腔内恢复了有效的血流动力学,左房功能明显改善,可防止心功能的恶化或血栓栓塞事件的发生,患者不仅症状改善,生活质量亦得到进一步提高。

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