· 第四次全国心血管病学术会议获奖论文栏 ·

同种原位心脏移植二例

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摘要　本院于 1992 年 7 月 5 日和 11 日在 6 天内连续为 2 例晚期扩张型心肌病患者施行同种原位心脏移植术。2 例患者术后已度过 1 年 3 个月，现健康状况良好。

关键词　心脏移植，原位　　心肌病，扩张型

我院在 1992 年 7 月 5 日和 11 日对 2 例晚期扩张型心肌病患者行同种原位心脏移植，迄今患者健康情况良好，现报告如下。

临　床　资　料

2 例患者均为男性，年龄分别为 55 岁和 38 岁，均患扩张型心肌病，心功能 IV 级。飘浮导管血液动力学检查，肺动脉收缩压(PASP)分别为 6.4kPa 和 6.7kPa(48 和 50mmHg)，肺血管阻力(PVR)分别为 6.6 和 7.1Wood 单位。经积极内科治疗，疗效不佳。

术前准备：供体者为 2 例脑死亡者均为男性，分别为 18 和 23 岁。两组供、受体血型相同，分别为 A 型和 B 型。供、受体及血源的巨细胞病毒、EB 病毒、肝炎病毒及爱滋病病毒均为阴性。

2 例患者于术前 4 小时口服环孢霉素 A(CSA)4mg／kg，硫唑嘌呤(AZ)4mg／kg。静脉滴注头孢噻肟钠 2g。

供体心脏的摘取：在第 5 肋间横向双开胸，横断胸骨，纵形剪开心包腔，经主动脉注入肝素 3mg／kg。剪断下腔静脉，钳闭升主动脉，在其根部灌注托马斯液 1000ml，迅速取出心脏，常规保护。

手术经过：例 1 因心力衰竭严重，开胸后心脏即停跳。经紧急建立体外循环方转危为安。体外循环采取浅低温(32℃)高流量，既保证了其它衰竭器官的灌注，又可缩短体外循环时间。2 例均用全层连续吻合方法。保留供心的左房后壁以扩大其吻合口径；减小受体的心房残缘以缩小其吻合口径，尽量使吻合口径匹配。但受体心房残缘口径仍过大，除采用放射状吻合法外，在例 2 双心房下部还采用“三明治”缝合方法，缝闭心房腔，使每个心房周径缩小 8cm。术中注意用大量冰盐水，使供心表面降温，而未灌注停跳液。2 例均自动复苏，并顺利脱离体外循环。此时给甲基强的松龙(MP)500mg。术中主要参数见附表。

附表　术中主要时间参数(分)

	吻合时间	阻断主动脉时间	体外循环时间	心肌供血时间
例 1	35	45	78	85
例 2	45	55	80	92

术后近期处理：术后第一天，MP120mg 日三次，CSA6mg·kg^{-1}／d，AZ2mg·kg^{-1}／d，第二天停用 MP，改用强的松 0.1mg·kg^{-1}／d，其它治疗不变。从术后即刻开始使用头孢噻肟钠 2g，6 小时一次。共 5 天。

开放循环后，2 例均恢复窦性心律。用 5～10ng·kg^{-1}／min 异丙肾维持心率在 100～110 次 1min，其它生命指征平稳。术后 1—2 天，2 例患者均发生急性右心衰竭，静脉压分别高达 1.8 和 2.7kPa(18 和 28cmH_2O)。经用酚妥拉明、硝酸甘油和硝普钠 4 天后恢复正常。说明术前 PVR 越高，术后右心衰竭越重。大量血管扩张剂可使之缓解。2 例分别于术后第 3 天及第 8 天，发现 CSA 血浓度升高达 1372ng／ml 和 1781ng／ml。虽尿量正常，但比重降至 1.002。2～3 天后肌酐、尿素氮和 GPT 开始增高。CSA 减量 5～6 日后方降至正常。GPT 的升高和恢复均比肌酐和尿素氮迟发 4～5 天。例 1 在术后第 18 和 39 天，例 2 在术后第 10 天发生中度急性排斥，临床表现为血压下降，周身乏力，低热。超声心动图见室壁增厚，伴异常光点，舒缩功能异常和心包积液。X 线示心影增大，肺淤血和胸腔积液。B 超引导下的心内膜心肌活检证实急性排斥诊断。给 MP 1g／d 冲击疗法，3 天后排斥反应迅速消退。此后例 1 曾出现高血压脑病、肺炎、细菌性肠炎及单纯疱疹；例 2 曾出现轻微消化道出血，对症治疗后均获缓解。经严格保护隔离 1 个月后转入普通病房。

术后远期治疗：手术 3 个月后，CSA 减至 2～

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3mg·kg^{-1}/d，CSA 血浓度维持在 400ng/ml 以下，AZ 随 WBC 值增减。例 1 因 WBC 始终低于 50×10^9/L，而一直停用 AZ。强的松剂量不变。术后 4 个月内的 6 次活检及此后综合观察均表明，2 例均无明显排斥反应，亦无明显感染。迄今未再做活检。例 2 甘油三酯曾一度增高，经治疗后降至正常。2 例均无高血压。2 例术后 1 年冠状动脉造影均正常；CT 扫描和综合检查均未发现肿瘤。目前 2 例患者活动自如，能从事一般体力劳动。

讨　论

同种原位心脏移植是治疗晚期心脏病的唯一有效方法。本手术的受体应为预期不能活过半年的心功能 IV 级的晚期心脏病人。原则上以 PVR＜6Wood 单位为限。阻力稍大者也可勉强手术，但应重视和正确矫治术后出现的急性右心衰竭。

病人进入体外循环前，应尽量采用对呼吸和循环扰动小的麻醉措施。对危重者应采取非常规手段紧急建立体外循环。浅低温高流量体外循环是维护其他功能衰竭的脏器和缩短体外循环时间的有效方法。缩短吻合时间和妥善心肌保护是达到理想心脏复苏的关键。

保留供体左房后壁、减少受体心房残缘，放射状吻合法及“三明治”缝闭受体过大心房腔方法均使供受心吻合口径相匹配的有效措施。

术后不同程度右心衰竭是受体术前肺循环高压的必然结果，须与急性排斥反应所致的左心衰竭相鉴别。大量应用血管扩张剂可使缓解。

国人对 CSA 的承受力较西方人低，在术前有严重心衰者更易使肝肾损伤。故使用时应酌减剂量，并注意其他药物对 CSA 代谢的影响。CSA 过量一般首先损伤肾功能，后损伤肝功能。但偶尔也可肝脏单独受损的情况。

心脏 B 超是诊断急性排斥反应的有效手段，在其引导下的心内膜心肌活检不仅可减少交叉感染，而且也是诊断急性排斥的有效方法。临床综合判断也不失为重要辅助手段。

小剂量的 CSA 和激素对国人既能防止因慢性排斥而引起的冠状动脉病变，又不至引起高血压。

2 例同种原位心脏移植术的经验证明，急性排斥反应和感染均为心脏移植术后可控制的并发症。

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ENGLISH ABSTRACTS OF SELECTED ORIGINAL ARTICLES

Orthotopic heart transplantation——a report of two cases *Liu Xiao-cheng, Zhang Dai-fu, Han Shi-hua, et al. Mudanjiang Cardiovascular Hospital, Mudanjiang, Heilongjiang* 157011

Two male patients, 55 and 38 years of age, in their end stage of dilated cardiomyopathy received orthotopic heart transplantation on July 5th and 11th, 1992, respectively. In case 1, because of severe cardiac dysfunction, his heart was arrested soon after sternotomy. He was rescued by emergent cardiopulomonary bypass. To match with the giant atrial circumference of the recipient, we reserved the whole posterior wall of the donor's left atrium as a flap, and used converging suture technique for both cases. In case 2, we had to additionally use "Sandwich" method to plicate each of his inferior artial wall. The cross-clamping time of the aorta was 45 and 55 minutes respectively. Since the patients were only cooled down to 32℃ and myocardium was well protected, the extracorporeal circulation time were shortened to 78 and 80 minutes respectively. Because both patients had long term preoperative heart failure, which caused high pulmonary vascular resistance——6.6 and 7.1 Wood units, their CVP rose up to 18 and 28cm H_2O around ten hours after operation respectively, and mild systemic hypotension occurred. For case 1, 8μg / kg • m of regitine was used. Four days later, he recovered from right heart dysfunction. For case 2, 10μg / kg • m of regitine and 3μg / kg • m of nitroglycerin were used in combination. His CVP decreased to normal five days later. Both cases are treated with cyclosporine A, azathioprine and prednisone as routine post-operative immunosuppressive therapy. Clinical manifestation and echo-guided endomyocardial biopsy proved moderate degree of acute rejection on day 18 and 39 in case 1, and on day 10 in case 2, which was effectively controlled by methylprednisolone (1g × 3 days) as a "pulse therapy". There has been no rejection thereafter.

One year after the transplantation, their coronary angiograms were normal, and no neoplasm was found by clinical examination and CT scanning. Both of them have been well and returned to their normal lives more than one year after the operations.

(*Original article on page* 12)

Radiofrequency current catheter ablation in 561 cases with tachyarrhythmias *Hu Da-yi, Ding Yan-sheng, Ma Chang-shen, et al. First Teaching Hospital of Beijing Medical University, Beijing* 100034

Five hundred and sixty one cases with tachyarrhythmias were treated by radiofrequency current (RFC) catheter ablation. The patient population consisted of 273 males and 288 females. There were 413 patients with 429 atrioventricular (AV) accessory pathways (APs), including 343 left-sided APs, 86 right-sided APs and 4 APs with slow, decremental and retrograde-only conduction properties. One hundred and forty two cases had AV nodal reentrant tachycardias (AVNRT), there were 3 cases with atrial tachycardia (AT), 2 cases with atrial flutter (AF) and one case with ventricular tachycardia (VT) from right ventricular outflow tract (RVOT) and without organic heart disease.

The catheter in coronary sinus was used as a landmark of AP mapping. The ablation catheter was manipulated to map the target site of ablation accurately. The characteristics of local electrocardiogram at the ablation target site of overt APs were short AV interval (<40ms), long V-delta interval (>20ms) and A / V ratio<1. When concealed APs were ablated, AP mapping was performed during ventricular pacing or induced atrioventricular reentrant tachycardias (AVRT). The characteristicsof the local electrocardiogram were short VA interval (<40ms) and A / V ratio <1. AP potential might also be of value in predicting successful ablation.

Transseptal approach was the alternative procedure for left-sided APs with anterior location, or