nificant residual left-to-right shunts were demonstrated in any patient. The reported management of multiple ventricular septal defects has been successful in this series, even in neonates and infants with complex associated cardiac lesions. It appears safe, simple, and effective.

闭合多发性室间隔缺损的新方法:术中超声心动图检查和双补片夹层法修补缺损

这是一项对多发肌部室间隔缺损处理的新方法评估。用心外膜超声心动图对室缺进行定位,然后用一根金属导丝经右室游离壁径直穿入固定缺损。在心脏停跳情况下,经标准右房切口置入定做的多层双补片装置闭合室缺。这是一项对14例患者所作的回顾性研究。患者年龄中值和体重中值分别为40 d(从1周到8岁3个月)和4.1 kg(2.8~24 kg)。5例患者(36%)以前至少接受1次开胸手术,11例患者(78%)具有相关的心功能损害。12例患者(85%)成功闭合多发室缺。由于未能定位所有室缺导致2例患者行肺动脉缩窄术,1例6个月后经皮介入闭合残余缺损,另1例11月后按传统方法开胸闭合。该2例患者均植入永久性起搏器。在所有患者随访的279月次中,1例当天心跳停止,无早晚期死亡。除1例外其他患者未进行强心药物治疗。所有患者术后均无明显残余左右分流。所报道的多发室缺的处理方法在该组患者中获得了成功,甚至包括合并复杂心功能损害的新生儿和婴幼儿。该方法证明是安全、简单、有效的。

(0329~0331 高 峰 译 王亭忠 校)

0332. Evidence of pulmonary vascular disease after heart transplantation for Fontan circulation failure

Mitchell M. B. / Campbell D. N. / Ivy D. et al. –J. THORAC. CARDIOVASC. SURG. 2004, 128/5 (693–702)

Elevated pulmonary vascular resistance may contribute to late Fontan circulation failure but is difficult to assess in such patients. Our aims were to assess outcomes of patients with failed Fontan circulation after heart transplantation and to determine whether elevated pulmonary vascular resistance might have contributed to the failure. Fifteen patients (14 Fontan circulations, 1 Kawashima circulation) underwent transplantation. The most common indication was ventricular dysfunction(mean ventricular end-diastolic pressure 12.5mmHg). Patients with early failures(n=4) required transplantation less than 1 year after the Fontan operation. Those with late failures(n=11) underwent transplantation at least 1 year after the Fontan operation. Mean age at transplantation was 11.6 years. Mean Fontan-transplantation intervalwas 7.4 years. Mean pulmonary arterial pressure, transpulmonary gradient, and pulmonary vascular resistance before and after transplantation were assessed. Paired t tests of variable differences were used to compare variables. Survival was estimated by the Kaplan-Meier method. In-hospitalmortalitywas 7%. Therewere 2 late events(1 death, 1 retransplantation) related to compliance or rejection issues. Graft survivals were 93%, 82%, and 82% at 3, 5, and 7 years, respectively. Posttransplantation pulmonary vascular resistance was elevated(2.0Wood units m^2) in 11 of 14 survivors past initial hospitalization(mean 3.3 1.7Wood unitsm^2). Only patients with early Fontan failures(3 of 4) had normal posttransplantation pulmonary vascular resistance. In paired comparisons, posttransplantation transpulmonary gradient was increased by a mean of 6.8 mm Hg(P. 0001) relative to pretransplantation value. Outcomes after heart transplantation for failed Fontan circulation were good. Mild-to-moderate pulmonary vascular disease was evident after heart transplantation for late failure. Elevated pulmonary vascular resistance is a likely contributor to Fontan circulation failure.

Fontan循环衰竭行心脏移植术后肺血管疾病的证据

肺血管阻力增加可能会导致迟发性Fontan循环衰竭,但其作用在该类患者中却难以评估。本文旨在评价对Fontan循环衰竭的患者施行心脏移植的效果,并确定肺血管阻力增加是否会导致Fontan循环衰竭。总共对15例患者(14例Fontan循环,1例kawashima循环)进行了心脏移植术。最常见的手术指征是心室功能不全(平均舒张末期心室压为12.5 mmHg)。早发性循环衰竭患者($n=4$)接受Fontan手术后不足1年即需行心脏移植,而迟发性循环衰竭患者($n=11$)接受Fontan手术后至少1年才行心脏移植。移植时的平均年龄为11.6岁。Fontan手术——心脏移植术——的平均间期为7.4年。我们测定了心脏移植术前后的平均肺动脉压、跨肺压梯度及肺血管阻力。采用配对t检验来比较各变量值间的差异,用Kaplan–Meier法进行生存率评估。院内死亡率为7%,有2例迟发性事件(1例死亡,1例再次移植)与依从性或移植排斥反应有关。术后3年、5年及7年移植心脏成活率分别为93%、82%及82%。首次住院治疗后,14例存活者中有11例出现肺血管阻力增加

(>2.0 Wood 单位/m^2) (平均 3.3±1.7 Wood 单位/m^2)。只有早发性 Fontan 循环衰竭的患者(4 例中的 3 例)心脏移植术后肺血管阻力正常。在配对比较中,心脏移植术后跨肺压梯度值相对于移植术前平均增加了 6.8 mmHg(P=0.000 1)。Fontan 循环衰竭后行心脏移植术效果良好。迟发性循环衰竭行心脏移植可见轻、中度的肺血管疾病。肺血管阻力增加可能是一个导致 Fontan 循环衰竭的因素。

0333. Outcomes of mitral valve replacement in children: A competing-risks analysis

Kojori F. / Chen R. / Caldarone C. A. et al. -J. THORAC. CARDIOVASC. SURG. 2004, 128/5 (703-709)

We sought to define patient characteristics, outcomes, and associated factors after mitral valve replacement in children. We included 104 children undergoing at least one mitral valve replacement between 1980 and 2003 and reviewed clinical records. Competing-risks methodology was used to determine time-related prevalence and associated risk factors after initial mitral valve replacement for death and repeat replacement. The underlying mitral valve disease was congenital in 83%, rheumatic in 13%, Marfan syndrome in 3%, and isolated endocarditis in 1%, with 64% having primarily regurgitation, 16% having stenosis, 20% having both, and 32% having undergone previous valvotomy, valvuloplasty, or repair. There were 137 valve replacements, with 26 patients having more than one. Valve prosthesis type was St Jude Medical in 37%, Bjrk-Shiley in 25%, Carbomedics in 20%, Ionescu-Shiley in 10%, and other types in 8%. Both early and late complications were common. Median age at the initial replacement was 5.9 years(range, birth to 19 years). Competing-risks analysis predicted 19% to have died at 15 years after initial replacement, with risk factors including noncongenital valve morphology, lower weight, and longer duration of cardiopulmonary bypass. A repeat replacement was predicted for 71%, with risk factors including the presence of multiple left-heart obstructive lesions and Ionescu-Shiley valve prosthesis. Mitral valve replacement might be necessary in children with extremely dysplastic valves and severe hemodynamic impairment or after failed repair. However, with the appropriate selection of the prosthetic valve and reduction of cardiopulmonary bypass time, surgeons might decrease mortality and increase prosthesis longevity.

儿童二尖瓣置换术的效果:一项竞争性危险度分析

拟明确儿童接受二尖瓣置换术后的患者特点、手术效果及其相关因素。将 1980~2003 年间的 104 例接受过至少一次二尖瓣置换术的儿童患者纳入研究并回顾了他们的临床资料。应用竞争性危险度分析法来确定首次二尖瓣置换术对死亡及再次置换的时间相关发生率及有关危险因素。二尖瓣病变中,先天性疾病占 83%,风湿性疾病占 13%,马方综合征占 3%, 孤立性心内膜炎占 1%。其中 64% 的患者有原发性反流,16% 的患者有二尖瓣狭窄,20% 的患者二者均有,32% 患者先前接受过瓣膜切除术、瓣膜成形术或修补术。共有 137 次瓣膜置换,其中 26 例患者换瓣一次以上。人工瓣膜类型包括:St Jude Medical 瓣占 37%,Bjrk-Shiley 瓣占 25%,Carbomedics 瓣占 20%,Ionescu-Shiley 瓣占 10%,其他类型占 8%。早期和晚期并发症均常见。首次瓣膜置换的年龄中位数为 5.9 岁(范围:出生至 19 岁)。在具有瓣膜形态为非先天性、低体重和较长的体外循环时程等危险因素的患者中,竞争性危险度分析预测其首次瓣膜置换后 15 年的死亡率为 19%。在具有多发性左心梗死性病变和使用 Ionescu-Shiley 人工瓣膜这两个危险因素的患者中,竞争性危险度分析预测其再次瓣膜置换率为 71%。对瓣膜发育极端异常及血流动力学严重损害或行瓣膜修补术失败的儿童患者,二尖瓣置换术可能是必需的。然而,通过恰当选取人工瓣膜和缩短体外循环时程,外科医生可以降低死亡率并延长人工瓣膜的使用寿命。

0334. Left ventricular performance of pulmonary atresia with intact ventricular septum after right heart bypass surgery

Tanoue Y. / Kado H. / Maeda T. et al. -J. THORAC. CARDIOVASC. SURG. 2004, 128/5 (710-717)

The left ventricular performance in patients with pulmonary atresia with intact ventricular septum who were Fontan candidates before and after the bidirectional Glenn procedure and a staged total cavopulmonary connection was compared with that in patients with tricuspid atresia. Contractility(end-systolic elastance), afterload(effective arterial elastance), and ventricular efficiency (ventriculoarte- rial coupling, arterial elastance/end-systolic elastance ratio), and the ratio of stroke work and pressure-volume area were approximated on the basis of cardiac catheterization data before the bidirectional Glenn