level and the risk of restenosis, suggesting that lipid fractions could be important in the pathogenesis and prevention of restenosis after successful percutaneous transluminal coronary angioplasty (PTCA). Furthermore, the authors report a significant difference of plasminogen activator inhibitor-1 (PAI-1) activity levels between the study groups (restenosis and nonrestenosis), with a tendency toward lower PAI-1 activity levels in the restenosis group after PTCA. This finding appears to be unexpected, because elevated PAI-1 activity levels have been shown to be positively associated with coronary artery disease and its acute manifestations.

In a recent publication including 104 consecutive patients of whom 34 (32.7%) developed coronary restenosis, we were able to demonstrate a strong relation between the fluctuations of circulating plasma levels of PAI-1 activity after PTCA (determined in plasma samples obtained after 3 days, 3 months, and 6 months) and the tendency to develop coronary restenosis. In all patients, coronary angiography was performed at time of renewed onset of angina or in asymptomatic patients at 6 months to prove or exclude restenosis. Decreasing PAI-1 levels during the follow-up period were indicative of patients without restenosis, whereas an increase or no alteration of PAI-1 activity levels was related to restenosis. Pre-PTCA levels of PAI-1 activity were slightly lower in patients of the restenosis group (6.4±0.6 IU/ml, mean±SEM) than in those of the nonrestenosis group (7.5±0.5 IU/ml), which, however, did not reach statistical significance. Angiographic and clinical data before PTCA were comparable in both study groups.

In the study of Shah and Amin, 68 consecutive patients with successful PTCA and without emergency PTCA were included. The authors did not present data about angiographic severity of coronary sclerosis or symptom classes at the time of intervention. However, PAI-1 plasma levels might be related to the anatomic extent and clinical severity of coronary artery disease. This might also explain the significant differences found in pre-PTCA PAI-1 plasma levels.

The findings of both studies concerning the relation between fibrinolytic parameters and coronary restenosis indicate that PAI-1 activity levels before PTCA seem to be not predictive for the development of restenosis. However, it might be of clinical value to determine PAI-1 levels after PTCA as a noninvasive marker of restenosis formation or long-term clinical improvement.

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References

Fontan Procedure for Hypoplastic Left Heart Syndrome
Farrell and colleagues reported their outcomes with a Fontan procedure after a Norwood procedure in the neonatal period and an intermediate procedure at 6 months of age, a superior cavo-pulmonary anastomosis. They reported survival of only 58% at 12 months after the Fontan. The longest postoperative interval reported was only 4 years.

In an accompanying editorial, John Mayer stated that “HLHS [hypo plastic left heart syndrome] is now a defect that is treatable by conventional means” (as opposed to transplantation). He appears to recommend that all infants with this unfortunate disorder undergo surgery.

We are not given the original number at the start of this series of operations. I am confident that it contains a great many more infants than the 76 that had the Fontan operation. To judge the reasonableness of Dr. Mayer’s recommendation, we must know how many succumbed after the first two operations.

The costs of these heroic efforts in relation to the final achievement have several dimensions. The financial costs are, of course, substantial. What were the average hospital and surgical costs for the survivors of all three operations? This should not be the deciding factor, given what is spent on the geriatric patient with coronary artery bypass graft surgery, pacemakers, and implantable defibrillators, but when we as a nation stint on prenatal and well-child care, exceptional medical costs should be considered.

I am more concerned about the emotional costs to these children and their parents, particularly their mothers. How normal emotionally can a child be who has spent most of its infancy in an intensive care unit? Also, the effects of chronic childhood disease on marriages are grim. I can say with conviction that I would recommend against either transplant or the Norwood procedures for my grandchildren because of the suffering on many levels, considering that the survivor will rarely achieve adolescence, let alone a normal life.

I am not criticizing palliation for the older child. What I am addressing is the newborn who is a candidate for a Norwood procedure, whose death will have far less impact on the family than that of a charming but symptomatic three-year-old; in that circumstance, relief of symptoms is certainly justified, even though life is only mildly prolonged.

I recognize that some, perhaps most, parents will accept the challenge and ask that everything possible be done for their newborn. For those families I am grateful for the efforts of Dr. Norwood; I am sure it has been a long and sometimes lonely effort. However, I believe that cardiologists should be scrupulously honest in presenting the entire costs and the limited benefits to the parents before rushing off to the operating theater. Physicians should explicitly accept a choice of the parents not to operate.

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