recent and ongoing studies, to act in presumed interest of their patients without waiting for the controlled trials to be completed.

There is much yet to be learned about the optimal treatment of heart failure. Indeed, the mechanisms are so heterogeneous that it is highly unlikely that all patients should be treated the same. But we have learned enough about pathophysiology and pharmacologic response to apply this new knowledge to patient care when the likelihood of benefit clearly outweighs the risk. That is certainly the standard used in all medical therapy, most of which is applied without access to \( p \) values.

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References

Coarctation of the Aorta: Long-term Follow-up and Prediction of Outcome After Surgical Correction

The report by Cohen and colleagues1 summarizing the Mayo Clinic experience with coarctation is, as usual from that institution, very well done in terms of the initial medical and surgical care and in terms of the analysis and reporting. Their emphasis on hypertension as a key to long-term problems and as an important indication for surgical repair is well placed. Nevertheless, their recommendation that “Surgery should be offered to patients after age 1 year or sooner if hypertension is severe” is not supported by the data presented.

Although 26% of their patients with uncomplicated coarctations operated on before the age of 1 year required reoperation and although the survival rate was 93% compared with only 1% reoperation and a survival rate of 96% for those operated on at 5–9 years, they justify the recommendation for infant surgery on a lower prevalence of hypertension in the infant group at follow-up (after reoperation), 7% compared with 16% in the older group. Unfortunately, they used a simplistic definition of hypertension, greater than 150/90 mm Hg, which fails to adjust for either age or sex. The median duration of follow-up for the Mayo study was 20 years, the effect of which makes age and sex important variables for normal values. For example, the actual upper limit of normal for blood pressure in 18-year-old males is 140/86 and only 127/84 mm Hg for females that age. We2 found that systolic blood pressure increased an average of 1.5 mm Hg per year during childhood; the Bogalusa study3 reported an increase of 1.7 mm Hg per year. The increase in systolic, and to a lesser extent diastolic, pressure continues throughout life. Therefore, use of a fixed definition of hypertension will automatically result in a higher proportion of older patients surpassing that limit, and patients operated on at an older age will have higher blood pressures at any time in the study period, regardless of operations.

The argument that 1 or 2 years of “severe” hypertension in infancy produces irreversible cardiovascular changes is undocumented in this study and is contrary to the evidence from studies in adults. Removing risk factors such as smoking, obesity, and hypertension by medical intervention after years of exposure does lower mortality from cardiovascular diseases. That is not to say that surgical repair should be postponed to middle age, but the higher risk for infant surgery compared with that for 1–9-year-old patients should not be accepted on the basis of theory alone.

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References

Reply
Dr. Guntheroth correctly points out that the established upper limits of normal for blood pressure are partially dependent on age and sex, and therefore, our use of one value (≥150/90 mm Hg) for all members of the study cohort will to some extent affect our results. This effect, however, should be minimal. By far, most of our patients were less than 50 years old at the time of their last follow-up: The mean age at operation for the 646 patients studied was 16 years, and the median follow-up was 20 years. A blood pressure of 150/90 mm Hg or more would be considered abnormal for anyone less than 50 years of age. If anything, our results underestimated the true prevalence of hypertension in our study population.

We agree with Dr. Guntheroth that in general coarctectomy for the infant is still a higher risk than for 1–9-year-old children. More long-term studies are needed to identify the best timing for surgery in infants with hypertension.

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Coarctation of the aorta: long-term follow-up and prediction of outcome after surgical correction.
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