To the Editor: There is limited information on the late results of stent implantation (SI) for adult coarctation of the aorta (CoA) (1–3). This study reports the initial and 5-year results in 46 patients who underwent SI for adult CoA.

Between April 1999 and November 2002, a total of 46 patients underwent SI for CoA. There were 26 women and 20 men, with a median age of 33 years (range 23 to 62 years) and median body weight of 63 kg (range 50 to 80 kg). Twenty-five and 21 patients had isolated native and recurrent CoA, respectively. Forty-three patients had discrete CoA and 3 patients had tubular stenosis, and 39 of the 46 patients (85%) were hypertensive (systolic blood pressure ≥140 mm Hg and/or diastolic pressure ≥90 mm Hg), receiving antihypertensive medications. The study excluded patients with hypoplasia of the distal aortic arch or aortic isthmus and those with complex CoA: complete near atresia and associated aneurysm. Hypoplasia was defined as a ratio of the diameter of aortic arch or isthmus to the diameter of the descending aorta at diaphragm of <0.6. Native CoA or re-coarctation was diagnosed if systemic hypertension and/or an arm-to-leg pressure gradient ≥20 mm Hg were present, and CoA was confirmed with magnetic resonance imaging (MRI).

All patients underwent cardiac catheterization and angiography under general anesthesia. An SI was performed in cases with a systolic pressure gradient ≥20 mm Hg and angiographic evidence of significant CoA (diameter of CoA ≤50% of that of descending aorta at the level of diaphragm).

The procedure of SI for CoA has been described previously in detail (1–4). In brief, Palmaz stents P4014 and P308 (Johnson & Johnson International Systems, Warren, New Jersey) dilatable to an adult aortic diameter were implanted. In 15 patients with severe stenosis and difficult CoA anatomy (long and anomalous CoA area, CoA close to the origin of left subclavian artery, large collateral circulation), the procedure was guided using the antegrade monitoring technique (4). Patients were discharged 1 to 2 days after the procedure and administered aspirin 3 to 5 mg/kg/day for 6 months. They were re-evaluated clinically at 1 and at 3 months after the procedure and then serially every 6 months. Follow-up included arm-to-leg pressure measurements, echocardiographic Doppler studies, chest radiography, and ambulatory 24-h blood pressure monitoring. All patients underwent a treadmill exercise test according to the Bruce protocol, and MRI evaluation including a brain 3-dimensional (3D) magnetic resonance angiography (MRA) at 1, 3, and 5 years after SI. In addition, all patients underwent multislice computed tomography (MSCT) at the end of the 5-year follow-up. A satisfactory late result was defined as the absence of restenosis (aortic diameter across the stents equal to the diameter of proximal isthmus) on
The diameter of the CoA increased from 5.2 mm to 6.5 mm (range 14 to 19 mm) (p < 0.05). At the 5-year follow-up, 31 (67%) of 46 patients were normotensive with blood pressure (BP) differences between arms and legs of 125 ± 12 mm Hg and 76 ± 10 mm Hg, respectively.

The findings of this study suggest that in adult patients with CoA, treatment with endovascular stents is a safe and effective alternative to surgical repair. Indeed, complete relief of CoA was achieved in all patients with no cases of re-coarctation and a very low complication rate during the procedure or at follow-up. However, it should be noted that these results were obtained in properly selected patients with favorable anatomy and staged dilation of the stents in patients with severe CoA, with bicuspid aortic valve, or older than 60 years of age.

Typical berry-like aneurysms of the circle of Willis were not found in our patient population. However, 3 of 46 patients had aneurismal protrusions of the circle of Willis. The clinical significance of these lesions is incompletely understood because of the lack of relevant clinical studies (1–3). However, it is our policy to treat them with chronic administration of beta-blockers as in Marfan syndrome and to recommend avoidance of strenuous activities.

Significant CoA during pregnancy may be associated with an increased risk for both mother and fetus. It should be noted that pregnancy was not associated with any maternal or fetal complication in all of our 7 women who became pregnant after stent implantation.

This study has several limitations. The most important is that it is not randomized. In addition, longer follow-up is necessary to assess the impact of longstanding hypertension and comorbidities such as bicuspid aortic valve and aneurysms of circle of Willis in the late outcome.

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REFERENCES