Aneurysmal Dilatation of the Aortic Sinuses in Coarctation of the Aorta

Ten-Year Follow-Up of a Case

By Israel Steinberg, M.D., and Harry L. Stein, M.D.

The purpose of this paper is to report a 10-year follow-up of a patient with aortic sinus aneurysm and coarctation of the aorta. Intravenous angiocardiography in 1954 revealed both lesions (fig. 1). The aortic sinus dilatation was, however, recognized retrospectively after the second admission. This is probably because aneurysmal dilatation of the aortic sinuses associated with coarctation of the aorta was not reported until 1956 and 1958. Although the coarctation of the aorta was satisfactorily repaired, the aortic sinus aneurysm increased in size and caused a moderate degree of aortic insufficiency. Selective aortography of the aortic root, 10 years after surgery for correction of the coarctation, better defined the bicuspid aortic valves and the aneurysmal dilatation of the two aortic sinuses (fig. 2). Edwards and Burchell and Sakakibara and Konno have very well described the pathologic lesions of the aortic sinuses leading to aneurysms. The case herein described suggests that inherent, apparently inherited, medial degeneration of...
the aortic sinuses\textsuperscript{6} progresses irrespective of repair of coarctation of the aorta.

An 11-year-old white boy was admitted on June 21, 1954, for angiocardiography. He had been well until 1 year prior to admission when hypertension was found on routine physical examination. Examination revealed a well-developed and well-nourished boy. A systolic thrill was felt over the left sternal border in the region of the second and third interspaces. A loud systolic (grade III) murmur was also heard over the anterior chest wall and para-vertebral region. The radial pulses were strong, but the femoral were weak. Blood pressures were as follows: right arm, 146/80; left arm, 140/80; right leg, 90/80; and left leg, 70/40 mm. Hg. The electrocardiogram showed intermediate position of the heart, clockwise rotation, and right ventricular predominance in the precordial leads.

The roentgenogram of the chest showed slight prominence of the ascending aorta and the left ventricle with deformity of the aortic arch (fig. 1A). Angiocardiography, in the left oblique position on June 19, 1954, revealed dilatation of the aortic sinuses, an adult type of coarctation, and poststenotic dilatation of the descending aorta just beyond a dilated left subclavian artery (fig. 1B). On June 29, 1954, the coarcted segment of the aorta was resected and the aortic ends were reanastomosed. The patient was well until the fourth postoperative day, when fever, lower abdominal pain, and leukocytosis developed. After treatment with penicillin, all the symptoms subsided and he was discharged on July 14, 1954.

He was readmitted to The New York Hospital on December 15, 1963, with complaints of attacks of headache and fainting spells of 4 months' duration. He had been well until the junior year at college, when onset of persistent pounding headaches, dizziness, and faintness began. Physical examination revealed a well-developed boy weighing 65.9 Kg. (145 pounds). A systolic thrill was felt over the suprasternal notch and an ejection-type, rough, and mid-systolic (grade II to VI) murmur was heard best at the suprasternal notch.

---

**Figure 2**

A, left. Frontal selective aortogram made on December 17, 1963, demonstrating aneurysmal dilatation of the two aortic sinuses, bicuspid aortic valves, moderate aortic regurgitation, and patency of aorta at the previous site of coarctation. B, center. Biplane lateral view of A. C, right. Left anterior oblique aortogram also showing the aortic root lesions and the patent aortic arch.
but also over the upper sternum and neck. A prolonged high-pitched decrescendo murmur radiated down the left sternal border and was best heard at both second interspaces. In the left interscapular area a systolic murmur, radiating over the posterior chest, was also heard. Blood pressures were as follows: right arm, 140/60-40; left arm, 130/60-40; and left leg, 160/50 mm. Hg. The phonocardiogram showed a diamond-shaped mid-diastolic murmur at the second right and left interspaces and apex, where an early ejection sound was present. S₂ was 0.6 second wide and varied little with respiration. A high-frequency diastolic murmur filled diastole. The electrocardiogram showed markedly increased amplitude of S₃ and RV₅ suggesting left ventricular hypertrophy.

The roentgenogram of the chest showed slight prominence of the left ventricle. Percutaneous right axillary aortography on December 17, 1963, disclosed aneurysmal dilatation of the two aortic sinuses, bicuspid aortic valves, and moderate aortic insufficiency. Although narrowed, the aorta below the left subclavian artery at the site of the previous coarctation was patent; pressure gradients were not found between the left ventricle and ascending aorta and between the aortic arch and descending aorta (fig. 2 A, B, and C). The patient was discharged on December 21, 1963, following these studies; further surgical treatment did not seem warranted at this time.

References

Principles of Medical Sciences

Experiment in man, or direct experiment, limited in possibilities of application as it necessarily must be, is the one wholly unexceptionable method available for the solution of problems of human health and disease. Though its history is still very short, it has already proved remarkably fruitful. There can be no doubt that one of the chief duties before medicine at present is the exploitation of the method of direct experiment. The natural history of sciences, however, seems to indicate that a diet of pure experimentation in a limited field is not enough for permanent scientific health. If experimental medicine is to progress healthily it must have a full supply of ideas, and must know how to deal with them. Such a purpose can best be served by a close contact with the realities of clinical medicine.—The Collected Papers of Wilfred Trotter, F.R.S. London, Oxford University Press, 1946, p. 126.
Aneurysmal Dilatation of the Aortic Sinuses in Coarctation of the Aorta: Ten-Year Follow-Up of a Case
ISRAEL STEINBERG and HARRY L. STEIN

Circulation. 1964;30:227-229
doi: 10.1161/01.CIR.30.2.227

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/30/2/227.citation