Successful Repair of Sinus of Valsalva-Left Atrial Fistula

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DISSECTING sinus of Valsalva-left atrial fistula is a rare lesion. An extensive search of the literature from 1935 to 1958 has failed to reveal a similar case. There are many reports of rupture of a sinus of Valsalva into the right side of the heart. Three of these reports have been made by Chipts, Fowler and Bevil, and Hirschboeck. Lillehei, Stanley, and Varco, and Morrow, Baker, Hanson, and Mattingly have reported the repair of these right-sided lesions. Various reports mention the possibility of rupture of the sinus of Valsalva to the left atrium, but no reference has been found of a specific case of this type. It is believed that this is the first case of sinus of Valsalva-left atrial fistula reported and successfully repaired.

CASE REPORT

A 39-year-old housewife had been well until April 1958, when she began to notice gradually increasing weakness, dizziness, and exertional dyspnea. She became faint and dizzy on bending. She had 2 rather severe episodes of faintness but there was no complete loss of consciousness. She continued to do her housework but rested frequently because of fatigue and mild dyspnea. She had no complaints of chest pain, chest tightness, cough, or hemoptysis. There had been no weight loss or any complaints referable to other symptoms. Past illnesses included measles, mumps, chickenpox, and whooping cough in childhood. She had a mild episode of rheumatic fever at the age of 14. An automobile accident in her youth caused only minor injuries. She denied the use of alcohol, tobacco, or any drugs. Physical examination revealed an alert young woman in no acute discomfort. The blood pressure was 120/70, and the pulse was 74. Her heart had normal rhythm. The second pulmonic sound was split and slightly accentuated, and no murmurs or thrills were present. The apex beat was at the fifth intercostal space in the midclavicular line, and no abnormal precordial thrust was present. The liver was not enlarged, there was no pedal edema, and the dorsalis pedis pulses were strong. X-ray taken July 3, 1958 (fig. 1A), showed a 6 by 6 cm. mass at the posterolateral aspect of the left cardiac border. Comparison with the films taken 2 years previously at another hospital revealed marked increase in the size of the mass during that time.

Right heart catheterization with angiocardiography failed to determine whether the mass was intracardiac or extracardiac. Satisfactory pressure and blood samples from the pulmonary artery, right heart, and venae cavae revealed no evidence of a right-to-left or left-to-right shunt. Electocardiograms showed nonspecific T-wave changes, the T wave being inverted in leads I and aVL, and flattened in V4 to V6.

On July 18, 1958, exploration through a left posterolateral thoracotomy was done in anticipation of finding an extracardiac tumor. The left atrium was found to be markedly distended and tense from the presence of a hard, nonpulsating mass, which seemed to underly the entire anterior wall of the left atrium. The mass pressed on and distorted the left circumflex coronary artery.

The chest was closed, and removal of the intracardiac mass was postponed until such time as it could be done with the aid of a cardiopulmonary bypass. The mass was thought to be a myxoma of the left atrium.

On September 9, 1958, the chest was entered by a median sternotomy with an extension into the left third intercostal space. The Kay-Anderson heart-lung was used to maintain cardiopulmonary bypass for 1 hour. During this time an incision was made into the left atrial wall overlying the mass. A cavity 7 cm. in diameter was entered, and several large clots were evacuated (fig. 2). A jet of bright red blood was found to be spurting from the base of this cavity. This jet originated from an opening 7 mm. in diameter at the base of the aorta and...
was synchronous with the arterial pump. Upon occlusion of the jet, blood was seen to ooze into the cavity through several small pinpoint openings, which were found to connect with the lumen of the left atrium. The intramural mass had nearly compromised the left atrial cavity and had partially occluded the mitral opening. The left atrium was entered through a second atrial incision superior and posterior to the first. The mitral valve was found to be normal, as was the entire lining of the left atrial chamber. The primary fistula opening at the base of the sinus of Valsalva of the aorta was closed with 2 figure-8 sutures of no. 2-0 silk. The secondary atrial openings were also closed. The sides of the dissected atrial wall were then re-appropriated with consecutive rows of interrupted no. 2-0 silk to obliterate the aneurysmal cavity. After the repair the left atrium appeared to be normal in size and configuration.

The postoperative course was uneventful. Two months later, the patient had none of her preoperative dyspnea, fatigue, and dizziness, and her electrocardiogram was normal. The T-waves were now upright in lead I and aV<sub>1</sub>, and of normal contour in V<sub>5</sub> to V<sub>6</sub>. The chest x-ray showed a normal cardiac configuration (fig. 1B).

**DISCUSSION**

In this patient there was an absence of the usual signs found in a fistula of the sinus of Valsalva. The absence of a large pulse pressure, murmur, and thrill was due to the small blood flow through the fistula. This small flow was due to the tiny secondary openings into the left atrium. Distortion of the left atrial wall with blockage of the mitral orifice and distortion of the coronary arteries probably accounted for the patient’s symptoms. Venning<sup>6</sup> reported on myocardial infarction associated with electrocardiographic changes in cases of fistula of the sinus of Valsalva. The return to normal of the electrocardiogram is of interest in this case.

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**Fig. 1.** A. X-ray taken July 3, 1958. B. X-ray 2 months after operation.

**Fig. 2.** Drawing depicting rupture of coronary sinus into the left atrial wall with further dissection into the left atrium. The aneurysmal dilatation of the left atrial wall caused partial obstruction of the mitral valve orifice.
Summary

An unusual dissecting sinus of Valsalva-left atrial fistula with successful repair is reported. This lesion was repaired by open heart surgery with the utilization of a heart-lung machine.

Summario in Interlingua

Es reportate un caso inusual de fistula inter dissecante sino de Valsalva e atrio sinistre. Le lesion esseva reparate, a bon successo, in chirurgia a corde aperte con le utilisation de un machina cardio-pulmonar.

References

Such is indeed the intimate relation of the affective faculties with the movements of the heart that most philosophers regard that organ as the seat of the passions and that in all languages the word heart is frequently employed as synonymous with sentiment, affection, soul or passion. Whether this be true or not, it is incontestable that all the active passions powerfully modify the movements of the heart. Some of them excite, others augment and some convert into violent palpitations, others distend or momentarily release them, and sometimes permanently.

In this respect, we might say, that of all our modes of expression, the heart is the most faithful and is the interpreter of all our most sincere emotions.—R. J. BERTIN. Treatise on the Diseases of the Heart and Great Vessels. Edited by J. Bruillard. Translated from the French by Charles W. Chauncey, M.D. Philadelphia, Carey, Lea and Blanchard, 1833, Introduction XLV.
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