Congenital left ventricular aneurysm

VIKING OLOV BJÖRK

From the Department of Thoracic Surgery, University Hospital, Uppsala, Sweden

A congenital malformation of the left ventricle consisting of an apical thin-walled aneurysm the size of an orange has been seen. The left ventricular chamber was completely separated from the remaining part of the left ventricle by a wall of fibrous tissue. As no similar case has been described in the surgical literature this malformation must be extremely rare.

CASE REPORT

A 22-year-old man had had symptoms of fatigue and dyspnoea since early childhood and could never run like other children. At the age of 7 years a heart malformation was diagnosed. An intensive systolic murmur was heard with its maximum over the apex. The heart was enlarged with an increased and heaving impulse. At the age of 10, both a systolic and a diastolic murmur were heard over the apex. An E.C.G. demonstrated a QRS of 0.12 second and a negative T wave in all leads. The heart size at the age of 12 years was 450 ml./m², and at 15 years 410 ml./m². During these years the blood pressure varied between 110/70 and 130/100 mm. Hg. A phonogram only verified the presence of a systolic murmur, and the E.C.G. always showed a broad QRS and negative T wave in all leads. A heart catheterization showed normal pressures in the right heart and no signs of a shunt.

At the age of 21 the patient suddenly experienced a right-sided headache and decreased strength in the left arm and leg. The electroencephalogram had a pathological appearance. The neurological symptoms had disappeared by the next day. Radiological investigation showed a dilatation the size of an orange at the apex of the left ventricle (Fig. 1). An embolism from a left ventricular aneurysm was suspected.

FIG. 1. Frontal radiograph of the heart showing a dilatation the size of an orange at the apex of the left ventricle.
Congenital left ventricular aneurysm

FIG. 2. Angiocardiography shows (a) a very small left ventricle. Between the inside and the outside of the apex of the left ventricle there was a 7-cm. area which could not be filled with contrast; (b) the right ventricle was displaced to the right and did not occupy the area to the left of the inside of the left ventricle.

and the patient was admitted for surgery. Right-sided angiocardiography showed a normal left atrium but a very small left ventricle (Fig. 2, a). Between the left ventricle and the apex of the heart an area of 7 cm. could not be filled with contrast. The right ventricle was displaced to the right and cranially (Fig. 2, b). Right ventricular pulmonary artery and pulmonary capillary pressures were normal; an E.C.G. showed a broad QRS and marked ST-T changes with negative T in V2 to V7. Either a clotted aneurysm or a tumour in the left ventricle was suspected, and cardiotomy was performed on 9 January 1962. An incision was made subcostally under the left fifth and right fourth ribs with a transverse section of the sternum. A pump disc oxygenator was connected for 65 minutes. An initial aortic occlusion of two and a half minutes was performed while the swelling at the apex of the left ventricle was opened (Fig. 3, a, b, c). No clot was found but there was red blood in a round chamber without communication with the left ventricle. When the blood was aspirated a dry field was obtained with a wall of whitish fibrous chordae and some heart muscle. This wall was opened; pulsating blood from the left ventricle flowed out and the cavity was found to be at the base of the papillary muscles. The peripheral wall of the cavity was excised as was the muscular wall of the aneurysm. Closure was performed with a row of heavy mattress silk-sutures tied over a dacron strip on either side. Another row of over-and-over

FIG. 3. (a) Artist's view of the aneurysm-like bulging at the apex of the left ventricle; (b) at operation where the aneurysm (A) was found to be separated from the left ventricle (LV) by a whitish fibromuscular wall without obvious communication between the two chambers; (c) the wall between the two chambers was excised, and a plastic repair was carried out after excision of the thin-walled aneurysm.
FIG. 4. Radiograph of the heart 1 year and 9 months after the operation shows a heart of normal size and with a normal left ventricular contour.

sutures through the dacron strips completed the closure. A primary closure was performed with primary tracheostomy and respirator treatment for six days, and the patient made an uneventful recovery. Microscopical examination showed heart muscle with scattered thick fibrous bundles.

FOllow-up The patient was investigated after 1 year and 9 months and found to be significantly improved. He was free of symptoms and could run up four stairs without distress. A soft systolic murmur was heard over the apex. A regression of the S-T changes was found, but there were still negative T waves over the left ventricle. He could perform a workload test of 1,000 kilopondmeter/min. as compared with 700 k.p.m./min. before the operation. The heart size and contour were normal, 450 ml./m.² body surface area (Fig. 4).

Discussion

This congenital malformation consisted of a partition of the left ventricle where the peripheral more thin-walled chamber was filled with blood, although it did not communicate with the main left ventricular chamber. Probably a slow circulation through the aneurysm from the coronary arteries provided arterialized blood and prevented the formation of clot. This circulation was, however, too slow to be detected in the beating heart when the aneurysm was opened during extracorporeal circulation. Thus the aneurysm was never emptied during the heart cycle but constituted a tense tumour diminishing the diastolic filling and stroke volume of the heart. The tense aneurysm probably also impaired the contraction of the left ventricle. Therefore resection of the aneurysm and a plastic repair of the left ventricle resulted in a significantly improved function. There was no fibrotic area in the wall of the aneurysm as is found in a post-infarction aneurysm. Closure was therefore a more difficult and delicate operation, and all the sutures were placed over dacron patches to prevent their cutting through.

SUMMARY

A case of congenital aneurysm of the left ventricle is described. No communication was found between this apical chamber and the main left ventricle. There was significant functional improvement after excision and a plastic repair.
Congenital Left Ventricular Aneurysm

Viking Olov Björk

Thorax 1965 20: 190-192
doi: 10.1136/thx.20.2.190

Updated information and services can be found at:
http://thorax.bmj.com/content/20/2/190.citation

These include:

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/