WORLDWIDE CHEST MEDICINE
Modern State of Cardiovascular Surgery in the USSR

At present, the problem of treatment of cardiovascular diseases occupies a very important place in Soviet medicine. The biggest cardiology centers are working on the solution of this problem. There is a chain of scientific and research institutes, departments at medical institutes and advanced-training institutes for doctors in Moscow, Leningrad, Kiev, Baku, Minsk, Gorky, Novosibirsk and others. These institutes are equipped with all necessary diagnostic and surgical apparatus.

Questions of cardiac surgery are investigated by the leading surgeons of the country, such as N. M. Amosov, V. I. Burakovsky, A. A. Vishnevsky, A. P. Kolesov, S. A. Kolesnikov, B. A. Korolev, E. N. Meshalkin, B. V. Petrovsky, G. M. Soloviev, F. G. Uglov and others. By their devoted work they have made a valuable contribution to science and progress of cardiology.

In the successful treatment of cardiovascular diseases a very important role belongs not only to the precise diagnosis of the lesion of the heart itself, but also to an exact evaluation of the state of other organs. With this purpose all the clinics use modern diagnostic methods: electrocardiography, phonocardiography, x-ray, electrokymography, ballisto- and vectorcardiography, rheography, catheterization of the heart with contrast infusions, aortography and many others.

All the known operations for the acquired and congenital diseases of the heart and major vessels are performed in the USSR. Many of them are original, and our country was the first to introduce them. A great variety of operations is performed on the open heart, as well as by the closed method. Operations are undertaken for injuries, tumors of the heart and pericardium, valvular lesions, coartations and aneurysms of the aorta, etc. Mitral commissurotomies, ligations of the patent arterial duct, and pericardiectomy have acquired the widest popularity among the medical profession. These operations are done not only in the cardiology centers, but also in big regional and city medical establishments. Besides the above mentioned closed method of operations, there is a wide use of arterial anastomoses for cyanotic forms of tetralogy of Fallot. A. A. Vishnevsky and N. K. Galankin use a liophilized homograft for aorto-pulmonary anastomosis. G. M. Soloviev proposed intrapericardial anastomoses between the subclavian and pulmonary arteries. This method has some advantages in comparison with the typical method of Blalock.

But surgeons gain maximum opportunities for the correction of the heart and main vessels with the introduction of open-heart surgery into clinical practice, under mild hypothermia, coronary-carotid perfusion, cerebral hypothermia and extracorporeal circulation.

Mild hypothermia played a definite role in the initiation of cardiovascular surgery; at the present time it is used only for valvular stenosis of the aortic isthmus and pulmonary artery, and for the closure of secondary septal atrial defect. Shortage of time for intracardiac manipulations limits the usage of hypothermia.

Cerebral hypothermia and coronary-carotid perfusion are used for the treatment of the simple forms of heart pathology as well. The best conditions for the radical correction of congenital and acquired heart lesions are provided by the heart-lung machine. Extracorporeal circulation permits not only operating on the open heart, but also at the same time prevents any severe disturbances of the organism. With the purpose of diminishing some deleterious effects of the extracorporeal circulation on the organism, and to prolong the time of perfusion, the latter is combined with hypothermia and artificial vasopLEGIA which is produced by the ganglioblocking agents.
and some other means. Foreign, as well as Soviet (ANK-63, NCJLI-I) heart-lung machines are used in open-heart operations.

It became possible, by open-heart surgery, to perform reconstructive operations for septal defects, atrioventricular communication, anomalous drainage of pulmonary veins, aneurysms of the ascending aorta and its arch, the transposition of major vessels, valve replacements, radical correction of tetralogy of Fallot, and many others.

A great experience accumulated in the treatment of atrioventricular septal defects proved it highly effective. Mortality in this group of patients does not exceed 3-10 per cent. Although, in the presence of high pulmonary pressure, the results are not so favorable. Further investigations are necessary to solve them. Sparing methods for the correction of heart diseases have primary importance. With this aim in view, we have developed a new approach, since 1962, to the ventricular septum through the right atrium with a temporary severance of the medical cusp of the tricuspid valve. This approach is less traumatic for the right ventricle. The same approach is used in the correction of the tetralogy of Fallot. Up to this time we have an experience of over 100 such operations. The results of these operations permit us to believe this method progressive in the treatment of severe cases of ventricular septal defects. Plastic material for the patch is felt Teflon, but if the defect is small, it is closed by suturing. Greatest difficulties arise in the surgical treatment of tetralogy of Fallot. In cyanotic forms of this disease best results are obtained when the anastomosis is created between the arteries on the first operation, and the radical correction on the second operation. The approach might be the same as for the ventricular septal defect, through the right atrium, with a temporary severance of the medial cusp. This approach may be combined with a small transversal incision on the out-flow part of the right ventricle. In a case of valvular stenosis and pulmonary artery hypoplasia into the interior wall of the artery a pericardial patch or plastic material is sutured in, and the valve is replaced by a ball-valve prosthesis (G. M. Soloviev).

Now we have a ball-valve prosthesis of Soviet design. They are widely used in surgery of cardiac lesions. A ball-valve prosthesis is a metallic frame with a Silastic ball inside. This ball, depending on its position, either opens or closes the apperture. The prosthesis is fixed in the orifice of the heart or vessel by stitches passed through the Teflon cuff. Apart from this kind of prosthesis, a sutureless valve has been made (V. I. Shumakov).

Ball-valve prostheses are used for the treatment of insufficiency of the aortic, mitral and tricuspid valves. Operations for bi-valvular replacement are also undertaken for rheumatic heart diseases. Sufficient firmness, satisfactory hemodynamic properties provide the effectiveness of operation. With the introduction of ball-valves into practice it became possible to replace the tricuspid valve in the Ebstein anomaly. The prosthesis is fixed in the right venous apperture which is narrowed by a semi-purse-string suture placed on the fibrous ring (G. M. Soloviev).

Apart from patches, plastic materials are widely used for coarctations and aneurysms of the aorta. For plastic repair of the resected aorta crimped prostheses of Lavsan, Teflon and other plastics are used.

Because of a high rate of early mortality in children suffering from congenital heart diseases the surgeons are now successfully solving the problems of surgical treatment of this malformation in the newborn.

The recent achievements of cardiovascular surgery allowed mastering of different kinds of operations for aneurysms of the heart. If the aneurysm is large and extensively thrombosed too, it is reasonable to perform the operation under hypothermia or extracorporeal circulation. Among a variety of operations for postinfarction aneurysms, most popular is the method devised by B. V. Petrovsky who proposed
three types of diaphragmatic plastic repair of the infarcted area. In case of a diffuse aneurysm a diaphragmatic flap is sutured to the aneurysm to overcover it; if the pouch aneurysm is not large, before diaphragmatic flap replacement sutures are placed on its base. In a case of large pouch aneurysms they are resected and the line of suture is reinforced by the diaphragmatic pedicle flap. This flap not only reinforces the wall of the heart, but it greatly improves its vascularization. Late results of this kind of operation are quite satisfactory. Mortality is 11-20 per cent.

PROBLEMS IN AORTIC VALVE HOMOGRAPHS

Aortic valvular homografts were inserted on the tricuspid ring. Although hemodynamically good immediate results were observed, these transplants were progressively altered: progressive insufficiency and/or stenosis developed, due to a retractile fibrosis invading the aortic cusps and hindering their function. This sclerosis seemed to originate from the suture stitches around the cusps along their implantation. Possibly, this kind of transplant could keep its integrity if the suture line between the host and the graft is made away from the cusp implantation.


TRICUSPID REPLACEMENT FOR ACQUIRED VALVE DISEASE

Thirty-one patients have tricuspid replacement for acquired valve disease in a group of 338 patients undergoing valve replacement from September, 1960 to September, 1965. In ten patients, tricuspid disease was not suspected prior to operation.

Essential features of operative technique include a midline approach to allow easy access to all the cardiac valves, digital exploration of the tricuspid valve in all patients with rheumatic heart disease, and replacement of the cardiac valves in the sequence of mitral first, aortic second, and tricuspid third.

There were two operative deaths in the triple replacement group and two late deaths from thromboembolism. There was one operative death in the mitral and tricuspid group. The over-all operative mortality rate of 10 per cent is compared to 8 per cent in a series of aortic and mitral replacements performed during the same period without tricuspid replacement. All patients have shown clinical and hemodynamic improvement, but to a varying and unpredictable extent. In the majority of patients, the results have been spectacular. Success in the treatment of advanced multiple valve disease is more closely related to correction of all the abnormalities than to the magnitude of the operative procedure.


GRANULOMATOSIS OF LUNG

This is a report of a woman with a long history of arthritis and various drug hypersensitivities who presented with symptoms and signs of a respiratory infection. A solitary mass was found in the right upper lobe of the lung. A lobectomy was performed for suspected malignancy. The specimen showed noninfectious, necrotizing granulomatosis and polyarteritis identical to the lesions seen in Wegener's granulomatosis. No other sites of involvement were found. She has remained entirely well for one year without additional therapy. The occurrence of apparently isolated Wegener's granuloma adds a new consideration in the differential diagnosis of solitary lesions of the lung.