ABSTRACTS

BLOOD COAGULATION


The author reports two cases of chronic congestive failure in which dicumarol resulted in severe hemorrhage. One patient died. Slight icterus was present prior to hemorrhage in one case and after hemorrhage had begun in the other. It is believed that chronic passive congestion of the liver interfered with the function of prothrombin formation to such an extent that administration of what had previously been safe doses of dicumarol so severely disrupted the clotting mechanism as to cause hemorrhage. Diminished renal filtration due to congestive failure may also have caused retention of dicumarol to such an extent that toxic levels were reached following administration of doses which ordinarily would not be expected to result in excessive acceleration of prothrombin time. For this reason, it seems justifiable to use extreme caution in the future when administering or planning to administer dicumarol to patients in chronic congestive heart failure.

WENDKOS

CONGENITAL ANOMALIES


The authors report the case of an 18 year old Negro girl with congenital heart disease who suddenly became cyanotic, lost consciousness and had other signs of cardiorespiratory difficulty. Cardiac catheterization was performed and during the procedure the patient became very cyanotic and restless. It was found that the oxygen saturation of blood from the right auricle, the right ventricle and the femoral artery was the same (19%). The femoral arterial pressure was 80/40. The right ventricular pressure was high (100/0) while the pressure in the pulmonary artery was very low (5/0). The catheter could also be introduced into the aorta and carotid artery, indicating the presence of an interventricular septal defect. Oxygen consumption studies indicated that when the patient became cyanotic the oxygen consumption diminished markedly; this was associated with a fall in blood pressure from a normal of about 165/110 to levels as low as times 65/30. These data were felt to be compatible with the diagnosis of tetralogy of Fallot.

The authors believe that these bouts of cyanosis were due to the relative resistances in the pulmonary and systemic beds. With a marked degree of pulmonary stenosis, very little blood is forced into the pulmonary circuit, but with a marked decrease in peripheral arterial resistance in the presence of a patent interventricular septum, most of the blood is diverted into the low pressure aorta and little or none is then pushed into the pulmonary circuit. It is suggested that the squatting position that many children with cyanotic heart disease learn to assume improves the venous return and increases the systemic resistance by pressure on the great abdominal and leg arteries.

BUTTERWORTH


Twenty cases of the tetralogy of Fallot were studied to determine the mechanism of red blood cell and hemoglobin reduction following operation. The reticulocyte percentage, which was above normal prior to operation, decreased markedly after operation, indicating a decided diminution in erythrocyte formation. The marked drop in reticulocytes corresponded within a few days to the six-day period required for a reticulocyte to “mature” or to lose its reticular substance. Therefore, it is evident that decreased blood formation occurs practically immediately after operation. The duration of the diminution of hemopoiesis, however, was not determined.

Before operation the urobilin excretion was found to be 2 to 6 times greater than normal. This rate of destruction was greater than could be accounted for by the increase in hemoglobin mass. It is therefore believed that this abnormal increase in urobilin was caused by a shortening of the life span of the erythrocyte. Following operation the urobilin excretion was markedly increased, in many cases as high as one would expect in a severe hemolytic anemia, for approximately one week and then rapidly fell to normal. This was indicative of marked erythrocyte destruction.

The author concludes that the decrease in red blood cells and hemoglobin following operation is due to the destruction and lack of formation of
erythocytes. The author's calculation of the ratio between the total urobilin excretion and the fall in hemoglobin indicates that the major factor is blood destruction. The similarity between the red cell reduction in these cases and the reduction in hemoglobin and red cells in the newborn is pointed out. The author postulates that blood destruction in these cases is the result of a controlled physiologic process, having as its “purpose” the reduction in the number of red blood cells.

Margolies


This report deals with a patient who had the clinical manifestations of patent ductus arteriosus. After cardiac catheterization, however, the diagnosis of patent ductus arteriosus was no longer tenable, and thoracotomy for ligation of a patent ductus arteriosus was not advised. There are a number of congenital cardiac anomalies in which clinical findings characteristic of patent ductus arteriosus have been observed. In the patient herein described the presence of a ventricular septal defect was demonstrated by cardiac catheterization. If the patient had been considered to have aortic insufficiency also, it would have explained the diastolic murmur and the findings of low diastolic blood pressure.

Although rare, congenital defects in the aortic septum, either above or within the right aortic sinus, communicating with pulmonary artery or right ventricle, may produce clinical signs similar to those of patent ductus arteriosus. It is conceivable that the distinction of such defects from patent ductus arteriosus could be difficult, even with the aid of cardiac catheterization. An arteriovenous aneurysm on the pulmonary artery giving the typical clinical picture of a patent ductus arteriosus has been reported.

Simon


The author presents three cases of coarctation of the aorta with hypertension in the upper extremities and hypotension or absence of pressure readings in the popliteal spaces. Angiocardiography demonstrated not only the site of the coarctation and the individual dilated arteries central to this site, but also the collateral circulation. The descending aorta was visualized also.

There were no rib erosions in two of the patients, aged 13 and 14 years, respectively. Their intercostal arteries did not extend to the rib margins. The author believes that increased intercostal flow rather than increased pressure accounts for their tortuosity, along with the factor of time during which the arteries can approximate the inferior rib margins to erode them.

Schwedel

CONGESTIVE HEART FAILURE


The authors state that the mechanical removal of edema fluid from the soft tissues is a valuable and physiologically sound therapeutic procedure. The Leech modification of the Southey-Leech tube is superior to the original model. These tubes, although rapidly drawing off large amounts of fluid, remove salt in only physiologic concentration, thereby avoiding the serious depletion of sodium which may accompany other methods. The prophylactic use of penicillin has abolished the risk of serious infections which in the past sometimes followed the mechanical removal of edema fluid. The definite indication for the use of Southey-Leech tubes is the presence of massive, soft, pitting edema, whether in the nephrotic syndrome, congestive heart failure or other diseases, which has failed to respond to the usual therapeutic measures. A relative indication for the use of these tubes is the presence of edema from which rapid relief is desirable and in which mechanical methods may supplement and potentiate the therapy ordinarily used. Their use is contraindicated in infected, hard or brawny edema.

Bernstein


An attempt was made to study the mechanisms of the production of effusions by measuring the various forces involved. Venous pressures were obtained at the antecubital space and effusion pressures were determined by means of a simple manometer. Protein estimations of blood and effusion samples were made, and from such data the colloid osmotic pressures of plasma and fluid were calculated.

In patients with pleural effusion, the venous pressure always exceeded the pleural pressure, the difference between the two being approximately equal to the difference between the colloid osmotic pressures of plasma and fluid. In the patients with ascites due to causes other than cirrhosis, the same relationship held. However, in the patients with cirrhosis, the ascitic pressure exceeded the venous pressure, while the difference between the colloid osmotic pressures was large because of the low protein content of the ascitic fluid. Such differences, as compared with the results obtained in other patients, were considered to be due to the portal obstruction that existed in cirrhosis. The magnitude of the de-
viation appeared to provide a measure of the portal pressure.

Since the albumin content of effusion fluid was proportional to that of plasma, while the globulin content was not, except in tuberculous pleurisy, the author concludes that albumin enters effusion fluid largely by simple diffusion, but that globulin only does so where capillary permeability is increased by inflammation.

**ABRAMSON**

**CORONARY ARTERY DISEASE,**

**MYOCARDIAL INFARCTION**


Coronary arteriosclerosis occurs more frequently and earlier in diabetics than in nondiabetics, and its occurrence is related to the duration of diabetes rather than to the severity of the metabolic disorder, the adequacy of control, the type of diet, or the age of the patient. There is an increased incidence of angina pectoris and coronary thrombosis in diabetics, the increase being particularly marked in women. Diabetics also manifest an increased incidence of hypertension and congestive heart failure.

Peripheral circulatory collapse is a prime feature of diabetic acidosis, and the mortality rate increases with the degree of systolic and diastolic hypotension. In the circulatory shock of diabetic acidosis there is dehydration, hemoconcentration, loss of sodium and chloride, and a marked decrease in total peripheral resistance; the cardiac output remains normal. Hypopotassemia, which occurs after the institution of treatment for diabetic acidosis and is manifested by characteristic changes in the electrocardiographic pattern and by abnormalities, in some cases, in the cardiac rhythm, may be the factor responsible for the death of some patients with diabetic acidosis, which terminates fatally despite therapeutic achievement of normal blood sugar and carbon dioxide combining power values.

Hypoglycemic reactions from too enthusiastic insulin administration in older diabetics may precipitate cardiac complications such as angina, myocardial infarction, congestive failure, and arrhythmias. These changes are probably mediated by an increased secretion of epinephrine secondary to the hypoglycemia. For this reason, rigid control of elderly diabetics is hazardous.

**HANNO**


The authors state that the coronary blood flow may be rendered inadequate in dissecting aneurysm (1) rarely by an extension of dissection into the coronary arteries, (2) by occlusion of their ostia, and (3) by compression of the vessels by hemopericardium or by infiltration with blood of the pericardial tissue. The authors report a case of the last type occurring in a man age 73. The necropsy revealed a dissecting aneurysm with hemopericardium. There was diffusion of blood along the wall of the left coronary artery and its anterior descending branch for a distance of 4.5 cm. from its orifice.

The authors state that the electrocardiographic findings are not those typical of infarction. When changes are present, they consist of elevation of the RS-T segment with T wave inversion in either Lead I or Lead III without the presence of Q waves.

**SOLOFF**


In certain cases of myocardial infarction the usual precordial leads do not show the characteristic QRS changes and may even be of normal configuration. The use of additional thoracic leads at higher levels of the precordium are of great value in demonstrating the presence of high anterolateral and basal infarcts. It is suggested, therefore, that high precordial leads should be recorded in all cases in which a positive clinical history for coronary occlusion is obtained in the absence of diagnostic changes in the usual leads.

The authors report five cases which demonstrate the value of supplementary thoracic leads in the electrocardiographic diagnosis of high anterolateral and high anterosetal infarctions.

**SCHLESSINGER**

**ELECTROCARDIOGRAPHY**


To study the effect of malaria on the normal heart, the authors recorded three standard limb leads both in the supine position and at a tilt angle of 68 degrees on 12 normal young men both before and on two occasions after the termination of experimental blood-induced vivax malaria. The duration of P, QRS, P-R, and Q-T were measured as were the amplitudes in each lead of P, QRS, and T. The sums of the QRS, T and S-T segments as well as the QRS and T axes were also determined. Mechanical systole was estimated by the interval between the first and second tones in a simultaneously recorded stethogram.

Analysis of the results indicated that 12 of the 14 items measured were significantly changed after malaria, including a general tendency to depression of T and the S-T segment in Leads II and III, and, in the upright position, a large shift of the T-axis to the left. The tilt table was found useful in re-
revealing changes not present in the supine position. The authors note, however, that although most of the changes were statistically highly significant, they occurred within the so-called range of normal limits.

**Butterworth**


The author compares the Wilson electrode (central terminus “T”) with the Goldberger augmented leads. Because the latter do not use resistors in series with each extremity they are considered to be an unacceptable technique in unipolar electrocardiography. The “bipolar technique” of Cohen and Glicksman (Wu, Wl, Wp) gives a reasonable approximation of the extremity potential (Wilson) but of about twice the size. One electrode is placed on the extremity to be studied and the other on the body at a point as diametrically opposite as possible. Esophageal leads are useful in the study of the electrophysiologic behavior of the left atrium. The precordial patterns of electrical (and anatomic) rotation of the heart as well as of myocardial infarction are discussed.

Intracardiac leads indicate that the Q wave in the bipolar leads has its origin in the left side of the interventricular septum and the R wave in the apical portion of the left ventricle. The S wave in precordial leads, or at least a major part of it, is believed to arise in a mass of muscle at the base of the right ventricle.

Methods of the future include (a) plotting nullpotentials of the QRS complex on the chest, (b) vectorcardiography and (c) the radarscope which records potential differences as differences in brightness of the image.

**White**

**HYPERTENSION**


Hydergine (CCK 179), the combination of the three dihydrogenated ergot alkaloids of the dimethylpyruvic acid group, has been shown to be the most active and best tolerated of the drugs investigated in the treatment of various forms of high blood pressure, such as juvenile hypertension, high blood pressure with subjective symptoms in the absence of organic damage, hypertension with prominent cerebral, retinal, renal or myocardial (electrocardiographic changes, angina pectoris) damage, and hypertension with hormonal disturbances or with peripheral vascular disorders. Hydergine has proved clearly superior to bromides, barbiturates, purine derivatives, etc. Objectively its therapeutic action is manifested by a reduction of the systolic and the diastolic blood pressures, improvement of the alterations of the optic fundus caused by hypertension, and improvement of the electrocardiogram and of disturbed renal function. In addition, a favorable influence is obtained on the subjective symptoms of hypertension, including headache, vertigo, tinnitus, fatigue, sleeplessness, blurred vision, scotoma, hot flushes, ataxia, and tremor.

In patients with mental symptoms oral treatment with gradually increasing doses usually suffices. Generally improvement is seen after twelve days of treatment and a full therapeutic effect after twenty to thirty days; the combined oral and parenteral treatment with Hydergine, however, is considerably more effective with improvement being evident after only seven days and a full therapeutic action after sixteen days. The combined treatment is especially recommended for severe cases. Either method however, requires single or repeated courses of treatment of 2 to 3 months interrupted by intervals free of medication or permanent treatment. Medication should not be abruptly discontinued but gradually reduced, in oral therapy, by a daily reduction of one to two drops with each dose.

**Author**


The authors review the historical background and the modern development of attempts to affect hypertension in man by dietary means. The reported results are critically evaluated.

Increased salt intake may cause a rise in blood pressure in some cases of pre-eclampsia, and probably also in some cases of renal and essential hypertension. On the other hand, restriction of salt has not been conclusively shown to reduce the blood pressure of hypertensive patients independently of other factors. Certain diets such as those proposed by Allen, and particularly Kempner, cause a significant reduction in blood pressure in some patients. Adequate control studies indicate that such reduction cannot be explained by spontaneous fluctuations of pressure levels. However, the possibility that suggestion may play a part has not been ruled out.

There is no convincing evidence that fat and cholesterol play an important role in the cause of hypertension, or that their restriction favorably affects the course of hypertension. Protein intake reduction has not been shown to lower blood pressure in hypertension. Obesity is associated with increased incidence of hypertension, and weight reduction often results in a fall in pressure (chiefly systolic). Starvation tends to lower blood pressure in normotensive as well as hypertensive persons. The effect is quickly reversible. Other dietary factors such as carbohydrate, vitamins, caffeine, alcohol, watermelon seed, and garlic—whether fed in quantity or withheld—have not been shown to have
therapeutic value. "It is indeed unfortunate that fantastic and virtually unsupported claims, which have been irresponsibly introduced into the literature, can be disproved only by means of time-consuming and expensive techniques."

**Enselberg**


This is the sixth reported case of pheochromocytoma associated with pregnancy. A 26 year old primigravida at term complained of headache, mild generalized edema, and slight albuminuria. In the first stage of labor the blood pressure fluctuated around 150/100. A stillbirth was delivered by low-forceps. After delivery of the placenta ergotrate was administered. The blood pressure rose to 210/120 and the patient became cyanotic. In five minutes, following morphine, intravenous magnesium sulphate and hypertonic glucose, the pressure fell to 110/60. The pressure continued to fluctuate widely but was unobtainable ten hours post partum. Acute fatal left ventricular failure occurred six hours later. A pheochromocytoma, weighing 100 Gm. and containing about 1 mg. of epinephrine per cc. of tumor fluid, was found at autopsy. The similarity of the syndrome produced by such a tumor and that produced by toxemia of pregnancy is discussed.

**Waife**

**PATHOLOGIC PHYSIOLOGY**


A sudden complete occlusion of the portal vein is invariably fatal. The proximity of the portal vein to the pancreas and its occasional invasion by pancreatic carcinoma in man have led many to investigate methods for the production of adequate collateral channels, thereby enabling excision of this vessel.

The present study is a report of the use of irritative cellophane (Polythene) and tantalum to produce gradual portal vein occlusion. The portal vein in 28 dogs was wrapped with Polythene and partially occluded with tantalum. Four dogs died within twelve hours because of too sudden occlusion. The remaining 24 dogs showed no ill effects from the procedure. The portal vein was excised from 16 dogs without a fatality at intervals ranging from five to sixty days.

At the time of excision of the portal vein, extensive collateral venous channels were present in the gastrohepatic mesentery. No elevation of the venous pressure was found in the intestinal veins. Significant anastomoses with the esophageal veins were not demonstrated. This is of interest when compared with the usual collateral channels found in man following obstruction of the portal vein. The degree of fibroplasia of the portal vein was dependent upon the duration of Polythene application. The lumen of the portal vein was completely occluded after forty to sixty days.

The authors conclude that the gradual occlusion of the portal vein by irritative Polythene may be valuable in preparing for elective ligation of the portal vein and in the experimental study of decreased portal blood flow.

**Mintz**


The effect of cold and warmth in countering the changes produced by experimentally induced frostbite was studied in dogs. The alterations in circulation produced by immersing the dog's foot in a liquid mixture of ethyl alcohol and solid carbon dioxide consisted of a decrease in blood flow in proportion to the severity of injury and then an increase when thawing began. During the latter stage there was also an increase in lymph flow and protein concentration of the lymph comparable to that following a burn. Both cold (10° C.) and warmth (40° C.) had very little effect on the abnormal changes in blood flow produced by frostbite. However, cold appeared to retard the abnormal lymph flow, the lymph protein concentration, and the edema formation. Warmth appeared to have very little beneficial effect as therapy in frostbite.

**Abramson**


Because of the established role of choline as a lipotropic factor, the authors investigated the level of lipotropic substances in the serum to see if this level was a contributing factor in human liver disease. In 23 normals, 27 patients with diseases of the liver or biliary tract and 12 patients with other diseases, the lipid phosphorus and choline contents of the serum as well as the free and total cholesterol and fatty acid contents were determined. In the 23 normal subjects the lipid phosphorus varied from 2.16 to 3.78 millimoles per liter with an average of 2.83. The ratio of moles choline to moles phosphorus varied from 0.70 to 0.80 and seemed quite constant in one individual in whom multiple determinations were made. In the patients with liver disease, the ratio of choline-containing to total phospholipids was also found to be constant regardless of the concentrations of the total phospholipids or of the other lipid fractions.
The authors conclude that any abnormality in phospholipid metabolism will manifest itself as a change in the total lipid phosphorus rather than by changes within the phospholipid fractions.

**Butterworth**


The author presents a series of observations on dogs which show that acute peripheral blood loss will produce a marked degree of pulmonary edema and pulmonary hemorrhage. The pulmonary changes which follow bleeding were observed for as long as four or five days. It seems probable that following acute blood loss with a decrease in cardiac output, loss of blood volume, rapid fall in vascular pressure, and slowing of the circulation, there is a sudden state of circulatory anoxia. As a result of this anoxic state, capillary endothelium is damaged and becomes more permeable, and fluid from the vascular bed transudes into the tissue spaces and into the alveoli. A pulmonary block to normal circulation is produced as pulmonary congestion and edema become more severe and the pulmonary artery pressure and peripheral venous pressure rise.

The acute pulmonary edema of the first twenty minutes following blood loss may be due to two additional factors. These are the increased intra-alveolar negative pressure resulting from the deep breathing associated with blood loss and the increased intra-capillary lateral pressure secondary to vascular congestion in the lungs. These dynamic factors are transient and there is a temporary flow of fluid from the tissues back to the vascular system. However, in one to one and one-half hours after blood loss a secondary rise of pulmonary moisture reaches its peak due to the gradual but sustained retransudation of fluid through the damaged endothelial structure and the increasing pulmonary artery pressure.

Intravenous fluid administration following blood loss may produce further damage to the pulmonary vascular bed by elevation of venous pressure and dilution of the plasma proteins. Greater degrees of pulmonary edema are noted when infusions of physiological sodium chloride are given than when either plasma or blood is used. It is apparent that intravenous fluid administration should be given with caution to patients following acute blood loss.

**Schwartz**


The author reports the development of left ventricular hypertrophy in rats ingesting silver salts for prolonged periods. The animals imbibed solutions of silver salts in 1:1000 strength in place of drinking water. Each was bracketed with another, as control, using ordinary drinking water. The author comment on the difficulty of determining blood pressure in rats. After indecisive results while utilizing various procedures, the author relied on the weight of the left ventricle as an index of hypertension. Rats, silver treated, showed an increased weight of the left ventricle, which was not due to silver deposit in the heart muscle or to argyrosis anemia. The cause remains obscure. Heavy pigmentation of the basement membrane of the glomeruli was present and was possibly the cause of the hypertension and left ventricular hypertrophy.

**Gouley**


The author presents three patients with typical migraine, who subsequently developed intracranial aneurysm which was verified at operation or autopsy. A change in the type or location of headache occurred one to several months before the appearance of neurological signs which pointed to aneurysmal dilatation. There was a further change in the character of the headache at the time of massive dilatation and/or rupture of an aneurysm. These were associated with extraocular muscle palsy. It is conceivable that vascular factors present during a migraine headache (i.e., high intravascular pressure, stretching of relaxed cerebral vessels with systole) in a patient so predisposed may result in the formation of an aneurysm or dilatation of a minute aneurysm already present.

**Waipe**


An arteriovenous fistula of the right phrenic vessels developed following repeated thoracenteses for a right pleural effusion. Clinically, the presence of the fistula was manifested by a harsh continuous bruit, accentuated in systole, over the right lower posterior chest wall. The lesion, the first of its kind to be reported, was successfully excised.

**Hanno**


The authors describe a case of arteriovenous aneurysm of the uterine artery and vein (circoid aneurysm of the myometrium), the third such case to be reported. The disorder is characterized by softness of the uterus, which causes pregnancy to be suspected. Hysterectomy is indicated. In the case reported, dilatation of the cervix preparatory to diagnostic curettage precipitated a frank hemorrhage and an emergency hysterectomy was per-
formed. Intra-abdominal hemorrhage occurred postoperatively and necessitated a second celiotomy. A bleeding vessel in the broad ligament was ligated and the patient made a good recovery.

HANNO

Langohr, J. L., Rosenfeld, L., Owen, C. R., and Cope, O.: Effect of Therapeutic Cold on the Circulation of Blood and Lymph in Thermal Burns: An Experimental Study. Arch. Surg. 59: 1031 (Nov.), 1949. The effect of cold on the abnormal circulation of blood and lymph and on the rate of edema formation induced by a thermal burn was studied in the feet of dogs. Under anesthesia, the lymphatic vessels of the hind limbs were cannulated and then the feet were burned, following which they were placed in a cold bath maintained at 10°C. It was found that exposure to cold altered the pattern of lymph flow and protein concentration. The rate of edema formation and therefore the rate of loss of plasma volume were diminished but not eliminated by this procedure. It was concluded that although cold may retard the development of infection and diminish damage due to an impaired circulation, it also reduces the rate of the healing processes. Furthermore, an excessive use of cold may in itself result in tissue damage. On the basis of available evidence it would appear that cold should be limited to its use in producing temporary alleviation of the pain of burns of small extent.

ABRAMSON

Geiringer, E.: Venous Atheroma. Arch. Path. 48: 410 (Nov.), 1949. The author studied the lesion of venous atheroma, which, unlike phlebothrombosis and venous fibrosis, is to be found in only one location, namely, at the junction of the left common iliac vein and the inferior vena cava, extending with each of these confluent veins for 1 or 2 cm. The same sequelae noted in arteriosclerotic, namely, hyalinization and calcification, were present in many cases. The plaque-bearing area was in that part of the vein which is situated entirely behind the aorta and the right common iliac artery. However, in one case of sinistro-position of the inferior vena cava, the venous bifurcation showed a selerotic patch at the orifice of the right common iliac vein, i.e., where it was crossed by the left common iliac artery. The implication is clear that regardless of the pathogenesis of atheromatosis, there is a fundamental mechanical factor—a pressure factor—which determines the site of atheroma. This venous atheroma is found regardless of the presence of congestive circulatory failure; the severity of aortic atheroma does not govern the degree of venous atheroma.

Gouley

Schlichter, J., and Harris, R.: The Vascularization of the Aorta. II. A Comparative Study of the Aortic Vascularization of Several Species in Health and Disease. Am. J. M. Sc. 218: 610 (Dec.), 1949. By means of an injection technic, the vascularity of the ascending aorta in the dog, man, chicken, and rabbit was studied roentgenologically and microscopically. The vascularity was comparatively less for man, the chicken, and the rabbit, in that order. From these data and other studies a general working hypothesis has been presented by the authors, namely, that the development of degenerative arterial lesions appears to vary inversely with the blood supply to the arterial wall. This hypothesis does not preclude the probability that other factors, such as hormones, intrinsic cellular metabolic defects, or heredity, may play a role in the evolution of these lesions, but it does emphasize the importance of the blood supply factor. Of the materials carried by the blood, oxygen would appear to be the most essential, for oxygen storage in tissue or tissue fluid is practically nonexistent. Conditions expected to produce degenerative arterial changes generally fall into two categories. In the first group are included those conditions which physiologically increase the demand for blood, and especially oxygen, by the arterial wall without proportional increase in the supply. Such a state of affairs might be found in hypertension or even in normal physiologic growth of the aorta. In the second group are conditions actually reducing blood flow, and thereby the oxygen supply, to the arterial wall. This state might be found in syphilitic aortitis where the vasa vasorum are destroyed or in clinical states causing prolonged anoxemia.

DURANT

PHARMACOLOGY

Clark, L. C., Jr., Gollan, F., and Gupta, V. B.: The Oxygenation of Blood by Gas Dispersion. Science 111: 85 (Jan.), 1950. A technic for the extrapulmonary administration of oxygen is described. Oxygen is dispersed in the blood in the form of tiny bubbles produced by passing the gas through a fritted disk or a porcelain bacteriological filter. The excess gas is released by passing blood over a surface coated with a methylpolysiloxane resin. Blood is removed from the hep-arinized dog through a catheter in the inferior vena cava and pumped through the mechanical device described. An oximeter, a glass cloth filter and a bubble trap are used in the apparatus. The oxygenated blood is returned through an external jugular vein. Dogs breathing 100 per cent nitrogen showed none of the signs or symptoms of acute anoxie anoxia; oximetric readings were always over 95 per
cent saturation; and the blood pH remained constant during this oxygenation procedure.


In 12 subjects the authors compared the ability of Khellin and of glyceryl trinitrate to prevent angina pain and the electrocardiographic changes that sometimes accompanied it. Khellin prevented pain in 7, diminished it in 3 and had no effect in 2. Glyceryl trinitrate prevented pain in 10, increased it in one, and had no effect in one. Of nine electrocardiographic studies, glyceryl trinitrate prevented changes in two and decreased them in five. Khellin prevented change in one and decreased changes in three. Khellin appears less effective but its effects last longer than glyceryl trinitrate. The drug appears to warrant further study.


There is a widely held belief that aminophylline, in addition to its effect on bronchioles, kidneys and heart, also exerts a stimulating effect on central nervous function and improves the cerebral circulation. The authors investigated this theory by measuring the cerebral blood flow in 10 patients chosen at random without any obvious cerebral depression. The cerebral blood flow was measured by the nitrous oxide method, following which 0.5 Gm. of aminophylline in 250 cc. of physiologic saline solution was administered intravenously over a period of twenty minutes. As the last 50 cc. ran in, the cerebral blood flow was again measured. The cerebral oxygen consumption and the cerebrovascular resistance were also calculated.

It was found that aminophylline caused a significant decrease in cerebral blood flow; this appeared to be due to a highly significant increase in cerebrovascular resistance. The mechanism for the changes was not immediately apparent but it seemed probable that aminophylline constricted the cerebral vessels and thus caused the decrease in cerebral blood flow. It was noted that some patients reacted to the aminophylline with pronounced anxiety associated with disturbing symptoms and an increase in cerebral oxygen consumption.


The choice of an anesthetic agent depends in part on the physiologic state of the cardiovascular system. Morphine may cause marked central depression, hypotension and respiratory depression resulting in cerebral anoxia. Demerol is preferred. It is better to supplement insufficient premedication than to anesthetize an over-premedicated patient. In elderly patients, cyclopropane is usually contraindicated because of impaired cardiac conduction. For light anesthesia, ether is a cardiovascular stimulant and tends to maintain blood pressure. Nitrous oxide and ethylene-oxygen mixtures might lead to suboxygenation and myocardial anoxia. Sodium pentothal should be given slowly in small repeated amounts to avoid respiratory depression. The prevention of anoxia is the basis of management in geriavtie patients. Sudden hypotension due to spinal anesthesia predisposes to coronary insufficiency so the use of vasopressor drugs is encouraged. Regional anesthesia has a wide application in elderly patients.


By the use of sodium chloride containing radio-sodium (Na$^{14}$) it was shown that in the normally hydrated subject the rate of absorption of the sodium ion from small volumes of subcutaneously injected fluid is enhanced by the addition of hyaluronidase.


The author found that the hamster (Golden Syrian) recently recommended is unsuitable for the study of experimental cholesterol atheromatosis. Blood cholesterol was elevated by appropriate diet up to 342 mg. per cent over a period of sixty days without appreciable atheromatosis. Steatosis of the liver and testicular atrophy were noted in these animals.

**White, S. M.:** The Vasodilator—Roniacol. Minnesota Med. 33: 133 (Feb.), 1950.

Roniacol, a 3-pyridine methanol, is an oral vasodilator which is converted to nicotinic acid in the body. With dosages of 100 mg. a marked flush is produced, particularly over the face and upper extremities, within six to twelve minutes. The effect is lessened if the stomach is not empty. The substance produces no significant change in pulse rate, respiratory rate or blood pressure. The author feels that the drug was of clinical value in 6 of 9 patients with angina pectoris, and in all of 3 patients with peripheral vascular disease, 2 with arteriosclerotic decubitus ulcers and 1 patient with Raynaud's disease.
PHYSICAL SIGNS


Dysphagia caused by both congenital and acquired cardiovascular lesions is discussed and cases illustrating most of these conditions are presented. These cardiovascular causes of dysphagia (as well as intrinsic lesions of the esophagus, upper gastrointestinal tract and mediastinum) must be considered in the differential diagnosis of this syndrome. Such differential diagnosis is particularly important in the infant since some of these lesions are amenable to surgery. In the adult, it is important to consider cardiovascular disease, since dangerous endoscopic procedures may then be avoided. The importance of the barium swallow as part of routine cardiac fluoroscopy is therefore pointed out by these cases.

BERNSTEIN

PHYSIOLOGY


After introducing a cardiac catheter deep enough into the pulmonary artery to obstruct one of its small branches, the authors recorded pressure tracings of the obstructed capillary area. The pulse tracing so obtained is called the pulmonary capillary venous (pcv) pressure pulse. Tracings were obtained from 50 subjects including normal persons, pregnant women, and patients with hypertension, mitral valve disease and pulmonary emphysema.

The mean pcv pressure was found to be approximately equal to the mean pulmonary venous pressure; it represents a somewhat distorted and slightly delayed pressure pulse of the small pulmonary veins. It was found to be about 2 mm. of mercury higher than the left auricular pressure in a compensated patient with atrial defect. The pcv mean pressure, and hence capillary pressure, in left ventricular failure was at times elevated above the osmotic pressure of the plasma. It could be decreased by the intravenous injection of aminophylline or Cedilanid. The authors discuss in detail the significance of the shape and amplitude of the pcv pressure pulse in the evaluation of mitral valvular function, in ventricular extrasystoles, in auricular fibrillation, in A-V block, and in gallop rhythm.

By superimposing the pcv and pulmonary artery pressures during the same period of respiration with due regard to the time lag, it was possible to get an approximate idea of the pressure difference between the pressures in the small pulmonary arteries and veins. The findings indicated that this pressure difference is greatest during systole and that the systolic flow through the pulmonary capillaries is greater than in diastole.

SCHWARTZ


A group of subjects consisting of 238 compensated and 178 uncompensated cardiatics, 28 hyperthyroids and 23 normal controls formed the material for this study. Circulation times were measured with Decholin and magnesium sulfate. The venous pressure was determined in the usual manner with the fourth intercostal space in the anterior axillary line taken as the zero point. Heart volume was measured by roentgenologic means. The circulation times were prolonged in left-sided heart failure, highest in right- and left-sided failure and normal in compensated and pure right-sided failure. The venous pressure was raised only in combined right- and left-sided failure. Heart volume was only slightly increased in left-sided failure, and was especially increased in combined heart failure.

The author's calculations failed to confirm Nylin's claim that the circulation time depends mainly on the size of the heart. It appears that congestion in the lungs is responsible for prolonged circulation times.

WAIFE


A sizable rotameter capable of measuring total venous return to the heart may be used to measure cardiac input. Repeated determinations in 8 dogs revealed an agreement between rotameter input and Fick principle output within plus or minus 10 per cent. Maximum differences were +25.8% and -26.6%.

HECHT


By means of a small plastic catheter inserted intravenously and a capacitance manometer, the authors studied the blood pressure alterations produced by changes in posture in patients during a surgical procedure. They found that elevation of the leg may be more effective than pressor drugs in raising the blood pressure when hypotension results from a decreased peripheral resistance.

ABRAMSON
ABSTRACTS


In fourteen trained and unanesthetized dogs the coronary sinus was catheterized, and a detailed study of cardiac work performance was made in 27 experiments by means of simultaneous measurements of cardiac output by the Fick principle. Ventricular blood flow was calculated by the nitrous oxide method of Kety and Schmidt. Since coronary sinus blood consists of blood which drains from the left ventricle, data concerning left ventricular functions only may be obtained by this method. Oxygen consumption of the left ventricle was estimated by the work equivalent of oxygen at a respiratory quotient of 0.82 (ml. oxygen/2.059 Kg. meters).

The oxygen content of coronary sinus blood ranged from 2.2 to 7.3 vol. per cent with an average coronary arteriovenous difference of 12 vol. per cent. The average left ventricular oxygen consumption per 100 Gm. measured 15.75 ml./min. and left ventricular blood flow per 100 Gm. ranged from 79 to 220 ml./min. with an average of 133. The figures are dependent on left ventricular weight. Total ventricular flow was calculated to vary from 52 to 103 ml. per minute. Cardiac index varied from 2.8 to 6.7 liters, left ventricular work from 2.89 to 6.40 Kg./meters/min. Left ventricular efficiency was estimated at 30 per cent.

HECHT

ROENTGENOLOGY


The authors demonstrate an acceleration in the rate of flow when ether and sodium cyanide are dissolved in 50 cc. of saline rather than in the usual 5 cc. or less. This acceleration is attributed to increased rate of passage not only from the arm veins to the heart but apparently to the left ventricle also. Such determinations facilitate the accurate timing of exposures to be made in order to obtain satisfactory visualization of the left-sided heart chambers, a decrease in the number of serial exposures and lessened radiation effects. A table is presented in which the relationship of the circulation times is checked against the time of the visualization of the left chambers filled with the opaque dye. In 8 out of 10 normal patients the left ventricle and aorta were visualized within two seconds of the circulation time; in the other two patients visualization of the dye preceded the circulation time by 4.7 and 11.5 seconds.

SCHWEDEL

SURGERY IN HEART AND VASCULAR SYSTEM


Preoperative preparation, anesthetic management, and postoperative care for 60 intrathoracic operations on the heart and great vessels are discussed. The group was about equally divided between good and poor risks; there were 6 deaths during the operative and post-operative period, none of which were attributed to anesthetic management. Ether, chosen as the chief anesthetic component for the majority of cases, was administered with positive pressure during inspiration and expiration while the chest was open. Positive pressure accompanying spontaneous respiration was credited with the maintenance of adequate ventilation without overactivity of respiratory movements.

A résumé of the anesthetic management of 16 diagnostic catheterizations of the heart is also presented. Since this procedure involves little sensory stimulation, it was performed with local skin anesthesia. In children under 14, additional basal narcosis with either rectal tribromethanol or Thiopental was employed.

KING

THROMBOEMBOLIC PHENOMENA


The authors report on a series of 99 cases of mesenteric venous occlusion which were not a result of hernia strangulation, volvulus or intussusception. Occlusion was of the superior mesenteric system in 93 cases and of the inferior mesenteric system in 6. Interference with venous return of blood, whatever the cause of the interference, seemed to be the factor which most often gave rise to the occlusion. Intra-abdominal infection, neoplasm and abdominal surgical procedures seemed to be the leading three causes of interference, in the order given. Infarction was limited to the portion of bowel from which there was interference with the return of venous blood through the vasa recti and arcades. It seems that when thrombosis in a vein of large caliber occurs slowly, the collateral circulation which develops is sufficiently extensive to prevent infarction, providing these small veins (vasa recti and arcades) are not themselves thrombosed.

SIMON


If prophylactic anticoagulant therapy is to be
selectively employed, there must be some method by which the prethrombotic state may be recognized. Clinical statistics have shown that patients with a past history of thromboembolism or with cardiac disease, especially with hepatic congestion, and patients in the older age group are prone to a high incidence of thromboembolism when exposed to precipitating factors such as bed rest, operative procedures, or major trauma. Additional predisposing factors are obesity, anemia, debility, low total protein, polycythemia, and carcinoma. On the other hand, a substantial number of thromboembolic episodes occur among patients with no known predisposition, and careful dissection of the deep venous system of the legs in unselected autopsy material has revealed the presence of venous thrombi in from 27 to 59 per cent of the cases.

A number of laboratory tests have been employed in an attempt to determine a predisposition to clotting. These tests include platelet count and platelet adhesiveness, antithrombin titer, heparin tolerance, prothrombin time, whole blood coagulation, clot retraction, and fibrinogen B determination. Although some of these tests are promising, no test of sufficient specificity, reliability, and reproducibility has been found. Moreover the importance of local factors and of the vein wall itself has not as yet been defined.

VASCULAR DISEASE


Chylomicrons are macromolecular bodies containing largely neutral fat and some cholesterol. Using a dark field technic for the estimation of chylomicronemia, the authors studied fat absorption in 30 young and 30 old subjects, with average ages of 18 and 76 years, respectively. In persons over 50 years of age, ingestion of a small amount of oleomargarine was followed by an almost twenty-four-hour increase in the chylomicron count in the serum. In younger persons the curve returned to fasting levels within five hours. If it is true that particulate fat circulating in the blood leads to atherosclerosis, it is significant that increased numbers of fat particles circulate in the blood of older persons almost continuously. Administration of lipase or of a detergent (Tween 80) with the fat meal reduced the chylomicron counts and the duration of increased counts of old subjects to levels of young subjects.

WAIFE


The authors studied the changes in the collateral circulation following excision of experimentally produced arteriovenous fistulas in dogs. The ramifications and extent of the collateral circulation were visualized with the use of Diodrast. It was found that as early as four days after fistulectomy a marked contraction of the collateral bed occurred. The rapidity with which this took place suggested that the responsible agent was mechanical factors associated with altered blood pressure and blood flow rather than the biologic factor of disuse or lack of need.

ABRAMSON


The authors present a historical review of the subject of vascular transplants, from which review certain concepts arise. There is general agreement that fresh arterial autografts survive as living structures with either no change or only intimal thickening, while fresh venous autografts, although also surviving, undergo more marked histologic changes consisting chiefly of fibrous reinforcement. These alterations are probably due to the effect of the arterial pressure on the graft. Fresh arterial and venous homografts generally show signs of destruction and of reinforcement by connective tissue proliferation from the host. The same type of reaction is noted in fresh arterial heterografts. In spite of marked differences in the histologic alterations, all types of vascular transplants are capable of functionally bridging arterial defects.

ABRAMSON


By a special ultracentrifugation technic, the authors found a new series of cholesterol-bearing giant molecules in the sera of rabbits fed a high cholesterol diet. The presence of these molecules was associated with mild to severe atherosclerosis. The period (thirty–forty days) of the development of the macromolecules coincided with the development of the vascular lesions. These giant low density molecules have less protein per molecule than the majority of cholesterol-bearing lipoproteins.

Analyses of over 600 human sera are presented. The incidence of measurable concentrations of the giant molecules was significantly higher in normal men than in women in the 20 to 40 year age group. Assuming these molecules reflect the metabolic disturbance resulting in atherosclerosis, the data is in accord with the fact that women of this age group
are less likely to show significant atherosclerosis than men. With an increase in age, significantly larger concentrations of these molecules are found, and the sex difference decreases. Diabetics as a group seemed to show a higher incidence of the molecules than nondiabetics. One hundred and one of 104 patients with proved myocardial infarction (almost all due to coronary artery atherosclerosis) showed high concentrations of this component. A preliminary study of 20 patients on a cholesterol and fat restricted diet revealed a definite reduction in concentration of the abnormal lipid molecules in 17 cases studied within 2 weeks to 1 month. Total serum cholesterol concentrations were not related to the qualitatively different molecules.

Waise


According to the author, incompetence of the deep veins of the leg does not permit the effective propulsion of venous blood by muscular contraction and thereby favors permanent venous stasis. This stasis is responsible for the lower leg syndrome which manifests itself by chronic edema, induration, ulceration, and pain. Popliteal vein ligation, it is claimed, re-channels blood through numerous fine-calibered vessels into the muscle veins of the thigh, eliminates back flow, and relieves the lower leg syndrome.

One hundred ninety-four popliteal vein ligations were performed by the author in patients with the lower leg syndrome. Immediate results showed marked improvement in all patients. There were no postoperative deaths and no complications of any kind except for hematoma in 4 cases. The author cautions that the follow-up period has been too short for final evaluation of the procedure. However, among 78 patients who have been followed for one year, 64 have shown steady progress toward complete healing, 9 have shown relapse, and 5 have had serious recurrence. These latter 14 cases are discussed in some detail.

Wessler


In vascular lesions one is concerned particularly with overactivity of the sympathetic system on both the arterial and venous side. The development of sympatholytic drugs has not replaced surgical sympathectomy. The author has found surgical sympathectomy of value in Raynaud's disease, causalgia, Sudeck's atrophy, hyperhidrosis, injury, embolism and aneurysm involving arteries, the post thrombotic syndrome, and occlusive arterial disease. Sympathectomy has not been found to precipitate gangrene in this last group. Patients with postthrombotic syndrome and occlusive arterial disease must be properly selected if acceptable results from sympathectomy are to be anticipated. Proper selection requires knowledge of the stage of the patient's disease, the accomplishment of an adequate operative procedure, and the realization that sympathectomy will not cure the basic disease process. Operative technics for sympathectomy are discussed.

Wessler


The authors present their observations on 150 cases of lymphedema. The cases were classified as follows: congenital 28, traumatic 11, inflammatory 58, degenerative (malignant) 22, and idiopathic 31.

Acute lymphedema, if treated early and intensively, responds well and leaves relatively little irreversible edema and fibrosis. The measures employed in all cases included elevation of the involved extremity, frequent active movement (except in acute spreading lymphangitis), and elastic compression. Mercurial diuretics were restricted to patients in whom other methods of rapid release of edema were not indicated or were impossible. Heparin was employed in all lymphatic obstructions which accompanied iliofemoral thrombophlebitis. Dicumarol was considered an unsatisfactory anticoagulant. Sympathetic block was used in the vasospastic group. X-ray was utilized in patients with lymphatic streaks, hyperplasia of lymph glands, and lymphorrhoea following operations on lymphedematous extremities.

In the treatment of chronic lymphedema, elevation, support, low-salt diet, water restriction and occasionally x-ray therapy were used. Surgery was undertaken only when extremities were painfully heavy, wearing of shoes was difficult, or when ulceration or draining cutaneous lymph cysts appeared. A modified Kondoleon operation was employed in 28 cases; results were satisfactory in 17, doubtful in 5, and poor in 6. The congenital group appeared to do better than the inflammatory group. Cosmetic results were not, however, striking.

Wessler


The authors report their experience with Diodrast arteriography of the lower extremities based on more than 300 injections. Complications noted were peri-vascular infiltration of Diodrast, arterial spasm, hematoma, and pain at the injection site. None of these complications, if properly treated, were considered deterrents to the procedure. Contraindications were limited to a non-pulsatile vessel at the injection site, Diodrast sensitivity, and body de-
formity severe enough to interfere with adequate roentgenographic visualization. The authors do not believe that disease of the vessels to be injected constitutes a contraindication.

The value of the procedure is based on the fact that it provides direct visualization of arterial obstruction and collateral circulation. This, according to the authors, is of assistance in the teaching of vascular diseases, in etiologic diagnosis, estimation of prognosis, determination of amputation level, surgical removal of segmental major vessel occlusion, and possibly selection of candidates for sympathectomy. The authors emphasize, however, that arteriography is only a supplementary test, that its use should be restricted to well-organized clinics, and that it is of limited value to the clinician experienced in peripheral vascular disease.

WESSLER


The author attributes lack of serious sequela in over 1000 injections of radiopaque dye into the cerebral vessels largely to the fact that injections were made while the patient was under Pentothal anesthesia. He prefers to use 35 per cent Diodrast, injected into one of the carotid arteries in the neck. He advocates visualization of cerebral arteries when aneurysms are suspected. Since more than one aneurysm may be present, demonstration of size and site may be extremely helpful in determining if carotid artery ligation or the intracranial approach is the method of choice. Cerebral arteriography aids also in differentiating brain tumor from cerebral vascular disease. Visualization of the cerebral blood supply should be helpful to the neurologic surgeon in preserving adequate circulation after removal of some of the contents of the skull, thus aiding not only in the diagnosis and localization but also in the prognosis.

OTHER SUBJECTS


Tetraethylammonium chloride (TEAC) blocks sympathetic and parasympathetic impulses at the autonomic ganglia. When 500 mg. were given intravenously it significantly increased the blood flow to the feet in normal subjects and produced vasodilatation in the hand in seven of eight instances. Circulation in the forearm and calf was increased only slightly. Digital skin temperatures were increased.

The compound did not produce vasodilatation after an extremity had been sympathectomized. Therefore, its vasodilator action is the result of the inhibition of sympathetic vasoconstrictor tone, and not the result of any direct action on the blood vessels.

Since lumbar paravertebral block was about twice as effective as TEAC in increasing blood flow to the foot, the dosage usually used may not cause complete sympathetic blockade.

The increase in blood flow to the foot of normal subjects as a result of TEAC administration is much greater than after aminophyllin, Papaverine, nico- 
tinic acid, and nitroglycerin and slightly greater than the vasodilatation resulting from prolonged body heating.

WAIFE


The authors report a study of the tissue response to heat-killed streptococci by determining the skin reaction of normal subjects, and of persons with rheumatic fever, rheumatoid arthritis, subacute bacterial endocarditis and erythema nodosum. The strains of streptococci used were all derived originally from human sources and were selected so as to represent Lancefield groups A, B, D, and three different Griffith types. A strain of Streptococcus viridans was also included. In a few instances patients were tested with strains of non-hemolytic and a-hemolytic streptococci derived from blood cultures of cases of subacute bacterial endocarditis. In one instance a patient with rheumatic fever was tested with a strain of β-hemolytic streptococcus derived from his own throat cultures.

In normal subjects the Group A strains gave rise to moderate reactions. In the rheumatic fever group they were greatly increased. The patients with rheumatoid arthritis reacted rather less intensely than the normal group and those with subacute bacterial endocarditis gave very small reactions even with their endogenous strains. Apart from the fact that the Group A strains gave the most intense reactions there was no obvious correlation between the severity of the reactions and any of the known antigenic components of the streptococci.

BELLET


The authors present three simplified techniques for ballistocardiography which obviate the disadvantages of the bulky, expensive, and fixed ballistocardiographic installation. With a portable electrocardiograph, satisfactory records may be obtained.
directly from the body by use of a sphygmograph applied to the head, a photocell partly shaded by a ruler across the shins, or by a coil in a magnetic field.

Hanno


It would appear that the primary application of the electrokymograph at the present time, is as a physiological research tool. In its present state of development it is for the clinical investigator rather than for the clinician.

Electrokymographic tracings show a considerable range of variation in normal subjects. As a consequence of the paucity of data with regard to what is normal and what is not, interpretation is uncertain. Lack of wave amplitude standardization is another hindrance to interpretation. The disadvantages of the device are the expensive equipment and trained personnel required for operation; the small area recorded at one time, making multiple views necessary; and the lack of standardization. An attempt was made to discover if etiologic types or patterns of heart disease could be found by this means. The results have been disappointing to date. Mechanical alternans is well demonstrated, and has been discovered occasionally where clinically unsuspected. Insofar as mechanism disturbances are concerned, it would appear that the electrokymogram is seldom diagnostic, as the electrocardiogram nearly always is. Although it is in the study of myocardial infarction that the electrokymogram might seem to give the most concrete immediate results, here also results are often equivocal. Valvular defects may be present, and yet apparently produce no recognizable change from the normal in the electrokymogram.

Wendkos


The authors studied the problem of mercurial clearance by tracing Mercuhydrin labeled with Hg 203 and 205 was injected into a vein of an extremity over an interval of fifteen to forty seconds. Simultaneous samples of blood were then collected at frequent intervals from the right renal vein or hepatic vein, the femoral artery and an unused peripheral vein. Almost simultaneous urine samples were collected either from uretal or vesical catheters. Reabsorption of mercury from the bladder was ruled out.

The percentage extraction of mercury by the kidney, extremity and liver were then calculated. While the studies were subject to certain limitations, it was found that renal extraction of radioactive mercury varied from 5 to 25 per cent between ten and ninety minutes after injection. In a control subject the hepatic extraction was 5 to 10 per cent during this time interval, but in a subject in congestive heart failure no hepatic extraction was detected. A temporary decrease in urinary rate of volume flow was found to precede the usual mercurial diuresis and this decreased rate of flow coincided with the appearance of mercury in extremely high concentrations in the urine.

Butterworth


The right side of the heart of 16 dogs was catheterized in a manner simulating the procedure performed on human beings. Nine of the 16 dogs exhibited thrombotic lesions. Two of these showed mural thrombosis in the right atrium and superior vena cava. In 3 dogs lesions coexisted in the right ventricle and atrium. In the remaining 4 dogs the lesions were mural thrombi restricted to the right atrium. The right atrial thrombi were associated with necrosis of the underlying myocardium. No emboli were found in the lungs.

The authors believe it is doubtful that lesions occur as commonly in human patients after catheterization. No deaths attributable to lesions similar to those encountered in the present study have been reported. The incidence of the lesions themselves seems low but several cases are reported in which mural thrombi were discovered at autopsy following a catheterization procedure.

Simon
ABSTRACTS

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