### ABSTRACTS

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## Atherosclerosis


A comparison was made of the cholesterol depressive effects of linoleic and linolenic acids and of cod liver oil in rats made hypercholesteremic by the authors' technic of feeding 10 per cent coconut oil and 1 per cent cholesterol. Cod liver oil and a furfurol fatty acid fraction of this oil markedly depressed the serum cholesterol. Considerable reductions in serum cholesterol were also obtained with the unsaturated fatty acids. The number of double bonds may be a decisive factor. Linolenic acid had a stronger action than linoleic.

**Rinzler**


The authors describe a method for the simultaneous production of essential fatty acid deficiency and hypercholesteremia in young rats. Pregnant mothers and the litters born were given a diet containing 10 per cent hydrogenated coconut oil and 1 per cent cholesterol. The young rats grew approximately at a normal rate the first 4 weeks of life. In the next 50 days weight increase slowed down and very high liver and plasma cholesterol values resulted, together with various symptoms of essential fatty acid deficiency. At this stage the rats were divided into groups receiving daily for 2 weeks 20 to 100 mg. of polyenoi acids or fats rich in these acids. The total serum cholesterol was determined in each rat at the start of the experimental diet, and again after 14 days. Control studies were run contemporaneously. This resulted in falls of the serum cholesterol level of up to 50 per cent or more. With the aid of partial hepatectomy at zero day, a substantial reduction of liver cholesterol was also seen to follow the administration of polyenoic acid.

**Rinzler**


Six patients with essential hyperlipemia were studied to correlate the changing serum lipid with the subjective and objective evidence of cardiac and peripheral ischemia. Five of the 6...
patients had evidence of coronary artery disease and 1 had intermittent claudication. Large changes in the serum triglyceride levels could be induced by fat free, full, or high fat diets. In a given patient, subjective and objective findings of arterial insufficiency occurred with the change in plasma lactescence and serum triglyceride levels. No critical serum lipid level was found at which all patients developed clinical signs. Two patients with coronary disease had arterial oxygen saturations of 92.1 and 92.5 per cent in lipemia which rose to 95.3 and 96.1 per cent after clearing of lipemia. A positive electrocardiographic exercise test was performed in 5 patients while triglycerides were high. After clearing, subjective improvement in angina and an improved electrocardiographic response to exercise were noted. Response to standard or “claudication time” test was similarly improved on reduction of lipids. Improvement of the ballistocardiogram was also noted in 1 treated patient. Heparin was ineffective in clearing the plasma and did not produce significant improvement of the ballistocardiogram, electrocardiographic exercise response, or claudication time.

KURLAND


Changes in the phospholipid content of the serum beta lipoproteins in normal subjects and in those with atherosclerosis were studied in groups divided as follows: young men and women with no family history of diabetes or hypercholesteremia; an older group normal by the usual examinations; a group comparable to the older aged group but who had had recent episodes of myocardial infarction and were in their recent recovery phase at the time of testing; and patients with uncomplicated diabetes mellitus, nephrosis, essential hypercholesteremia, and myxedema. Determinations of serum cholesterol, phospholipids, tryglycerides, total lipids in the serum, and total lipid and phospholipid in each of the 2 lipoprotein fractions were made. The sera of young women contained more alpha lipid and less alpha phospholipid than was found in the sera of young men, while the young men’s sera had greater amounts of beta lipids but less beta phospholipids than the young women. In the group of normal older persons, increased beta lipid and phospholipid were found, with the former being disproportionately increased; less alpha lipid and phospholipid was present in this group than in the sera of young women. No sex difference in the distribution of these lipids was detected in this group of older people. In persons with known coronary atherosclerosis there was greater proportion of total lipid in the beta fraction than was true in the normal subjects, while both the alpha lipids and alpha phospholipids were decreased. There was an increase in both the lipids and phospholipids of the beta lipoprotein fraction in coronary atherosclerosis with a disproportionate increase in the amount of lipids when compared with phospholipids. Similar findings were noted in the small groups of diabetic, nephrotic, essential hypercholesteremic, and myxedematous patients.

MAXWELL

BLOOD COAGULATION AND THROMBOEMBOLISM


Studies with a number of plasma expanders have shown that some of these compounds may interfere with coagulation of blood as measured by in vitro tests. Glutamyl peptide polymer is another plasma expander and its effect on blood coagulation was measured by a number of tests. In all experiments the branched chain glutamyl peptide polymer was added to human plasma or freshly drawn human blood. A calcium-binding effect by this polymer was demonstrated by equilbrium dialysis experiments as well as by interference with various steps in the sequence of blood coagulation. These effects were overcome by the addition of 10 mg. of calcium per gram of polymer. Studies on blood containing 50 per cent expander solution and the added calcium showed no interference with those agents of coagulation requiring calcium.

KAYDEN

CONGENITAL ANOMALIES


Isolated partial transposition of the pulmonary veins with termination in the inferior vena cava was found in 3 patients; this anomaly could be recognized roentgenologically, and was also characterized by bronchial anomalies and smaller size of the right hemithorax. Partial pulmonary
vein transposition combined with other anomalies was found in 39 patients; of these, atrial septal defect was present in 29, corresponding to 21 per cent of all patients subjected to surgery for septal defect. A direct diagnosis can be made if the cardiac catheter enters 1 of the transposed veins, but transposition becomes probable if blood oxygen analysis shows a considerable left-to-right shunt with only a minor pressure gradient between the 2 atria. The blood flow in the veins can be determined directly by injecting dye into them and determining the dye concentration in arterial blood.

LEPESCHKIN


A 36-year-old woman with lenticular ectopia, arachnodactyly, flat feet, and kyphoscoliosis, who had previously had spontaneous pneumothorax, suddenly felt severe pain radiating into the teeth. A diastolic aortic murmur was heard soon afterward. A pericardial friction rub appeared on the next day, and the electrocardiogram showed elevated T wave in \( V_2 - V_6 \) and an elevated S-T segment in \( V_2 \). Angiocardiography showed marked dilatation of the sinus of Valsalva and moderate aortic coarctation. After 1 month marked left ventricular dilatation and an electrocardiographic pattern of left ventricular strain appeared. This condition was stable after 10 months. Among 16 members of the patient's family, 7 died suddenly when still young.

LEPESCHKIN


Chest pain is a common symptom and naturally always raises the suspicion of a cardiac diagnosis. Many causes for chest pain other than a cardiac origin are known and dyspepsia is a particularly common source. For proper interpretation a careful history, physical examination, and properly interpreted electrocardiogram are essential. In this respect the author pays particular attention to a triple heart rhythm and also cites electrocardiographic signs that might be forerunners of subsequent myocardial infarction. The invalidism from cardiac-like pain erroneously diagnosed can be considerable. Once cardiac infarction has occurred and recovery has taken place, rehabilitation is in order. In order to accomplish this properly it is important for the physician to guide his patient. This can be accomplished by frank discussions with the patient and his spouse. When possible, the patient should be returned to his previous occupation after a suitable period of time. In the event of recurrent pain proper instruction in the use of glyceryl trinitrate is necessary. Reassurance and encouragement by the physician can help cardiac patients adjust to their life after myocardial infarction.

KRAUSE


In the first patient, in whom tricuspid displacement was proved by cardiac catheterization, the only abnormality was intermittent pre-excitation (Wolff-Parkinson-White syndrome) in the electrocardiogram; the normal QRS complexes showed marked left axis deviation and deep Q waves in \( V_{4-6} \). This patient had frequent attacks of paroxysmal tachycardia with a pattern of right bundle-branch block. The second patient showed a prolonged P-R interval and right bundle-branch block, a holosystolic murmur and an extra sound 0.12 second after the second sound; at autopsy a combination of marked tricuspid displacement with a high ventricular septal defect and pulmonary stenosis with regurgitation was found. The third patient showed at autopsy a combination of slight tricuspid displacement, reduplication of the mitral ostium, and aortic coarctation with a persistent ductus originating distal to the point of stenosis.

LEPESCHKIN


The electrocardiograms of 100 children with proved isolated ventricular septal defects were analyzed by using a system of ratio values in order to allow comparison of mixed-age data; in addition, the tracings were analyzed by conventional methods and by the system of overloading patterns. The authors found only slight correlations between electrocardiographic values and physiologic (pulmonary artery pressures, pulmonary flow) or histologic (pulmonary vascular changes) data. No typical electrocardiographic pattern was recognized but right ventricular hypertrophy was present in the majority of cases, was commoner among older patients, and tended
to occur with low pulmonary blood flow and high pulmonary artery pressures. The presence of deep Q waves and upright T waves in V6 appeared to indicate a good prognosis for surgery, and a higher than normal T wave in V6 with a lower than normal T wave in V6, a poor prognosis.

**Karpman**


A case is reported of a 5-year-old girl with congenital interruption of the cardiac conduction system diagnosed during life and unassociated with other cardiac defects. The authors point out that congenital heart block may be present both in patients with gross anatomic defects of the heart and in patients with only microscopic lesions in the conduction system. They emphasized that the distinction is extremely important, since the prognosis and management are so vastly different. When the conduction defects are complicated by gross anatomic abnormalities, the prognosis is quite variable, depending upon the associated anomaly, and surgical intervention may be indicated; patients with the isolated conduction defect require no treatment and the prognosis is probably very good. The authors propose a reclassification of the nomenclature by offering the term "congenital malformation of the cardiac conduction system, with or without associated gross cardiac defects."

**Karpman**


The pertinent literature concerned with pulmonary hypertension and pulmonary vascular changes in patients with congenital heart disease is reviewed. The consensus is that increasing pulmonary vascular resistance serves a protective function at first but progression of the anatomic vascular changes may eventually be very detrimental to the patient.

**Karpman**


An analysis of 2,000 families with a case of congenital heart disease revealed 40 families (2 per cent) in which there were 2 or more examples of a congenital heart lesion. The malformations were the same or similar (concordant) in most of the 22 acyanotic pairs and only 2 pairs had different (discordant) lesions. There were 8 pairs where both members were cyanotic and 10 where 1 was cyanotic and 1 acyanotic. Discordant lesions were more common in this cyanotic and mixed pair group. The defects were concordant more often when siblings were involved than when a parent and child were involved. The author suggested that the frequency with which 2 congenital heart lesions in a family were of the same nature favored a genetic rather than an environmental factor, and the data appeared to be compatible with recessive inheritance. Although it was not very common for 2 children with congenital heart disease to be born in 1 family (2 per cent incidence), when there was 1 child in the family with a congenital heart lesion subsequent children showed such a malformation more often than would be expected by chance.

**Paul**

**CONGESTIVE HEART FAILURE**


Ninety-three ambulant patients without atrial fibrillation were chosen from a total of 204 patients with the diagnosis of congestive heart failure because their main problem was exertional dyspnea. They lacked physical signs of congestion and they had no manifest complicating factors that might cause dyspnea. About three fourths of these individuals were in older age groups with arteriosclerotic or hypertensive heart disease. They were studied for control of exertional dyspnea with digitalization and diuretics. They were treated with various courses, each for a period of several months: digitalization alone, placebo tablets, a diuretic alone (meralluride sodium by intramuscular injection), and combined therapy with the diuretic and digitalization. It was evident that there was a variant of exertional dyspnea most clearly seen in patients with chronic heart disease with few or no physical signs of congestion, uninfluenced by digitalis but frequently brought under some degree of control by diuretic therapy. The suggestion was made for a therapeutic test to detect those in whom prolonged treatment with diuretics should be pursued and a similar test to detect patients now commonly subjected to long treatment with digitalis in whom there was little prospect of beneficial results.

**Kitchell**

Hydrochlorothiazide in oral doses of 50 to 150 mg. daily was added to a standard treatment program for congestive heart failure in 20 patients, in 12 of whom failure had been refractory to therapy. Sixteen patients responded well within a few days, 2 responded partially, 1 did not improve, and 1 had to discontinue the drug because of nausea. In each patient, the serum chloride level decreased slightly; but no change was noted in other serum electrolyte levels, in blood urea nitrogen values, in peripheral blood cell counts, or in routine urinalyses. It was concluded that hydrochlorothiazide appeared to be a very potent diuretic agent with minimal side effects.

ROGERS

CORONARY ARTERY DISEASE


Based on the premise that repeated small doses of radiation will produce dilatation of existing capillaries and precapillary arterioles, the hearts of dogs were irradiated. Four to 6 days following the last treatment ligation of the anterior descending branch of the left coronary was accomplished. There were 2 groups of controls; 1 in which after ligation defibrillation was not attempted and the other in which defibrillation was used. There were also 2 groups that were radiated: 1 with 1,300 r and the other with 2,000 r. Based on the data presented the mortality rate in the radiated group was considerably lower. The ability to defibrillate radiated dogs successfully was also strikingly evident. Presumably these results were accomplished by creating increased myocardial vascularity.

KRAUSE


Experimental myocardial infarction induced by coronary ligation in the dog was followed by increased serum activity of glutamic oxaloacetic transaminase, glutamic pyruvic transaminase, and lactic dehydrogenase. No alterations in these enzyme activities were noted following reversible, transient electrocardiographic changes of injury and ischemia. Infarcts as small as 1 Gm. in size resulted in significantly increased serum activity, and the peak elevations in serum activities are crudely proportional to the size of the infarct. Measurement of the enzyme activity in infarcted and normal myocardial tissue as well as in coronary sinus blood suggested that the increases in serum enzyme activity were the result of leakage from the damaged myocardium.

PAUL


A series is reported of 369 patients (286 men) with a new, major myocardial infarction treated in the period 1947 to 1957. In men, the incidence of myocardial infarction was greatest in the sixth decade: in women, it kept increasing with age. No infarctions were noted in women under 40. Mortality within the first 3 months of the attack was 23.8 per cent; anterior wall infarction resulted in a slightly higher mortality than those of the posterior wall. Mortality increased with age. The most frequent cause of death was myocardial insufficiency. Next in frequency were ventricular fibrillation, acute circulatory collapse, thromboembolic complications, and reinfarction. Cardiac rupture did not play a significant role. Of 84 necropsied cases, 65 showed coronary sclerosis with thrombosis, 18 coronary sclerosis without thrombosis. Only 1 patient showed no severe sclerosis. The symptoms after the onset of infarction had a certain prognostic significance. Ominous signs were ventricular tachycardia, myocardial insufficiency immediately after occurrence of infarction and severe collapse. The supervision of failure at a later period has lesser significance on life prognosis. The influence of other diseases (hypertension, diabetes), occupation, body weight, family history, and seasons were discussed.

BRACHFELD


It is generally conceded that the incidence of coronary artery disease is low when the intake of animal and unsaturated fats is low. After the Polya operation for gastrectomy, L\textsuperscript{131} labeled fats are excreted more rapidly and there is also
diminished absorption of a fatty meal. This impaired fat absorption could be reflected in a lower incidence of coronary artery disease in gastrectomized patients. Forty patients who had undergone Polya type gastrectomies were compared with 40 "normal" male subjects and 40 additional patients with duodenal ulcers. In order to evaluate the presence of coronary artery disease the Master double 2-step test and blood lipoproteins were studied with particular reference to their beta:alpha ratio. Evidence was presented that demonstrated a significantly lower incidence of coronary ischemia in long-term gastrectomized patients when compared with "normal" and "ulcer" controls. This fact could not be related to lowering of the beta:alpha lipoprotein ratio nor to changes in the pre-beta lipoprotein. Furthermore, this study confirmed the fact that (by the method of evaluation used) there was no increase in the incidence of coronary artery disease in "ulcer" patients compared with the "normal" individuals. Although the gastrectomized patients were much lighter as a group, there was no direct relationship between weight and ischemia as demonstrated by the Master test.

Krause


Three cases of embolism to the left coronary artery with death resulting from myocardial infarction are reported. In 1 patient the embolus arose from a vegetation of bacterial endocarditis, in the second, from a thrombus in the atrium; and in the third, from atheromatous deposits in the proximal aorta. Since these 3 patients were observed over a period of about 4 months, the authors believe that coronary embolism occurs more commonly than has been found in the past and will be found more often with careful gross and microscopic autopsy study.

Sagall

PHARMACOLOGY


Fundamental actions of a number of nonmercurial diuretic agents and their therapeutic application are described. Urea and mannitol are examples of compounds that act as osmotic diuretic agents by withholding from reabsorption an approximate osmolar equivalent of water. The xanthine diuretics act primarily by inhibiting the renal tubular reabsorption of sodium and chloride. The diuretic effect probably is secondary to the saluretic action. Theophylline, the most frequently used of the xanthine group, is considered a rather weak diuretic. Mictine and Rolitrelon are representatives of the pyrimidinediones and amiloracil derivatives. Their mode of action is like xanthines. The renal tubules contain substantial amounts of carbonic anhydrase. Acetazolamide (Diamox) acts as a carbonic anhydrase inhibitor. It induces a natriuresis which is generally associated with a marked increase in potassium and bicarbonate excretion, and an increase in urinary pH. It is noteworthy that acetazolamide does not cause an increase in chloride excretion of any consequence. The role of aldosterone in the pathogenesis of fluid retention associated with cirrhosis, nephrosis, and perhaps hypertensive cardiovascular disease has recently been emphasized. Therefore, there has been recent interest and experiment in the development of aldosterone antagonists. Spirinlactones are now under investigation as an approach to the regulation of electrolyte and fluid excretion by antagonizing aldosterone. The exact mode of action of chlorothiazide (Diuril) as a diuretic is not clear. In general, it appears to be intermediate in its pharmacodynamic characteristics between acetazolamide and the organomercurial diuretic agents. This drug at present seems suitable for the therapy of numerous classes of edema. It is a potent saluretic and the physician must be aware that hypokalemia may occur under the combined conditions of enthusiastic salt restriction and high, maintained dosage of chlorothiazide.

Krause

PHYSICAL SIGNS


Four patients are presented in whom a left-sided intracardiac thrombus could be suspected by auscultation over the right carotid artery using a stethoscope with a small bell and carefully avoiding any pressure. In 2 patients a rough and constant systolic murmur was heard and autopsy showed polypoid or racemose thrombotic masses arising from a cusp of the aortic valve. In 1 patient with myocardial infarction a peculiar drumming staccato noise was detected over the base of the heart and the carotid arteries, particularly over the right. The unusual character of the noise led to the suspicion of an intracardiac flapping thrombus in the area of infarction and this was confirmed at postmortem examination. In a fourth patient, also shown at autopsy to have a mural thrombus, a similar noise was detected over the carotid arteries and the base of the heart.

Sagall
PHYSIOLOGY


In 8 normal persons the mean velocity of blood flow in the pulmonary artery was measured by means of a catheter bearing a heated thermistor on its tip. Epinephrine increased this velocity, whereas norepinephrine and hypertension decreased it. As these drugs had the same effect on the intensity of physiologic systolic murmurs in the pulmonic region, these murmurs were considered to be caused by turbulence in the pulmonary artery and the outflow tract of the right ventricle.

LEPESCHKIN


Anesthetized dogs were divided into 3 groups and bled as follows: the first group was bled a mean of 16 per cent of the original blood volume; the second group was bled to 50 mm Hg arterial pressure (mean bleeding volume 26 per cent, range 9 to 34 per cent); the third group was bled to 35 mm Hg arterial pressure (mean bleeding volume 49 per cent, range 29 to 70 per cent). Pressures were maintained for 30 minutes in the last 2 groups before measurements of red cell and plasma volumes were made. Red cell volume was measured using radioactive Cr51 and plasma volume with radioactive I131. In the first group in which there was no change in arterial blood pressure, the measured and the expected cell and plasma volumes were in acceptable agreement. In the second group, there was also reasonable agreement between the measured and the expected cell and plasma volumes but the standard errors were large, indicating the variability in the physiologic response to hemorrhage by individual dogs. The measured and expected cell and plasma volumes of dogs bled 49 per cent of their initial blood volume (held at 35 mm Hg pressure) was not in agreement after either the hemorrhage or reinfusion. The standard errors in this group were small, indicating a relatively uniform response to this degree of hemorrhage and blood pressure. An arterial blood pressure of 50 mm Hg appears to be a critical pressure in the dog for the operation of the compensatory mechanisms involved in the release of fluid into the circulation and for the trapping of red cells.

KAYDEN


The results of this study demonstrate that a temperature-oxygen uptake relationship exists for the magnitude of the oxygen debt developed during arterial occlusion and subsequently repaid during reactive hyperemia. Repayment of oxygen debt involved primarily an increase in local circulation, with oxygen removal from the blood playing a secondary role.

WAIFE


In dogs the flow through the descending branch of the left coronary artery was measured with a rotameter after partial occlusion of this branch. Intravenous injection of papaverine, euphyllyn (aminophylline), sodium nitrite, or chlorpromazine caused no appreciable change in coronary flow or a slight transient increase followed by a marked decrease as a result of arterial hypotension. When the drugs were injected into the coronary artery, the initial increase was slightly greater, but ventricular extrasystoles and sometimes ventricular fibrillation appeared in the case of papaverine, euphyllyn, and chlorpromazine. The electrocardiographic changes caused by coronary occlusion were not altered. Intravenous or intracoronary injection of strophanthin did not affect coronary flow but intensified the electrocardiographic changes and caused ventricular extrasystoles or fibrillation. Norepinephrine always caused elevation of blood pressure and a secondary increase in coronary flow, but had no effect on the electrocardiogram.

LEPESCHKIN


The authors reported the effects of complete ischemia on the spontaneous ventricular action and resting potentials recorded from the ventricular cells of the isolated dog or rabbit heart in a modified Langendorff preparation. Spontaneous membrane action potentials persisted for 20
ABSTRACTS

minutes following the cessation of coronary perfusion. The earliest change in the configuration of the action potential was a decrease in its duration due to a shortening of the depolarization phase. These changes were followed by a progressive fall in the amplitude of the action potential spike and the resting membrane potential fell to an average of 65 per cent of the control value. The findings in the anoxic cell were believed to be related to damage in the membrane ionic transport of sodium and oxidative phosphorylation mechanisms.

PAUL


In 30 persons with normal hearts under basal conditions Evans blue dye was injected into the cubital vein and blood samples were taken from the brachial artery of the other side. The stroke volume calculated from the dye-dilution curve was on the average 70 ml. at a calculated central blood volume (minute volume times circulation time) of 1,500 ml. and 110 ml. at a volume of 3,000 ml.; the correlation coefficient between these 2 values was +0.64. The 50 per cent and 90 per cent limits for this relationship were calculated statistically. The correlation to the stroke volume was more significant than to the minute volume. It is concluded that abnormal variations of the heart output and stroke volume can be recognized better if they are correlated to the central blood volume.

LEFESCHKIN


The number of myofibrils per fiber at 7 different cross-sectional levels of the right sartorius muscles of exercised rats was compared with the number of myofibrils per fiber of the right sartorius muscles of unexercised control animals. Exercise was performed daily for 7 weeks by the experimental group. No statistically significant differences were observed in the number of fibers, weight of muscles, or weight of the animals. A greater variation in the number of myofibrils per fiber was noted in the exercised animals than in the control animals, and there appeared to be an increased number of myofibrils per fiber at both ends but not in the center of the muscles of the exercised group.

KAYDEN


The antidiuretic activity in peripheral blood during inhibition of water diuresis was measured after stimulation of the neurohypophysis by smoking cigarettes and amyl nitrite. Thirty-five, 57, and 259 milli-units of antidiuretic substance (ADS) were excreted in the urine after smoking, whereas none could be found during the recovery period. In all 3 subjects studied, ADS was present in the blood after, but not before, smoking. Smoking did not inhibit diuresis in 2 experiments and produced only a moderate inhibition in a third, indicating the unreliability of nicotine in smoking as a test of neurohypophysis function. Inhalation of amyl nitrite in 1 subject caused inhibition of diuresis but antidiuretic activity could not be detected in either the blood or urine.

KURLAND


Local heating and cooling affected oxygen uptake in the resting forearm. These changes were dependent upon alterations in local blood flow, with the mechanism of oxygen removal from the blood playing a secondary and dependent role. Raising the local temperature of tissues in vivo increased the resting oxygen uptake; cooling did the reverse. These results fit in with in vitro and other experimental observations.

WAIFE


These studies focus upon the mechanism of increased renal resistance that is associated with increments in arterial pressure. Changing renal blood flow rate in anesthetized laparotomized dogs showed that resistance decreased and then increased as a function of renal flow rate. The onset of the increase in resistance was more dependent upon flow rate than arterial pressure. These relationships were unaltered by section of renal nerves, infusion of phentolamine, infusion of phentolamine and eserine, and ventilation with 20 per cent carbon dioxide. Elevation of arterial pressure failed to elevate greatly the flow rate of renal lymph. It was suggested that the increase
in renal resistance resulted from arterial vaso-
constriction initiated by some local mechanism
which was independent of nerves, circulating ad-
renalin, carbon dioxide tension and hydrogen ion
concentration. The mechanism could be activated
by a change in flow rate.

KAYDEN

Dermkian, G., and Lanb, L. E.: Cardiac Arrhyth-
Since significant cardiac arrhythmias, some of
which were associated with syncope, have been
found to occur during various experimental res-
piratory maneuvers, studies were performed on
50 healthy young male aviation cadets, all of
whom initially denied previous syncopal episodes.
Observations of blood pressure and pulse were
made both at rest and during 15-minute ortho-
static tolerance tests on the tilt-table while
various breathing maneuvers were performed. The
latter included breath-holding at maximum in-
spiration, prolonged breath-holding, hyperventila-
tion, and breath-holding after hyperventilation.
Carotid sinuses were massaged during the study
for 15 seconds. When the subjects were assured
of anonymity, 30 per cent admitted to previous
syncopal episodes; and during the experimental
procedures 42 per cent had one or more syncopal
or near syncopal episodes associated with sig-
nificant cardiac arrhythmias in approximately
three quarters of the instances. Twenty-four of
the subjects developed syncope associated with
the breathing maneuvers. Of the 15 cadets who
admitted to previous syncope approximately one
half developed experimental syncope; and 14 of
the remaining 35 who denied previous syncope
lost consciousness during the study. Seventy-four of
the subjects developed some form of cardiac arrhythmia during the experimental procedures.
Carotid sinus massage induced this in 16 per
cent, respiratory maneuvers in 56 per cent, and
orthostatic stress in 10 per cent. Thirty cases in
which respiratory maneuvers induced arrhythmias
received 1.2 mg. of atropine and 6 minutes after
injection in no instance could any arrhythmia be
induced by the breathing maneuvers. It is con-
cluded that many pilots at the beginning of their
flight training have experienced syncope, but this
does not necessarily represent an underlying
disease state and these cases could not be def-
initely identified by the experimental procedures.
It is believed that the same efferent reflexes are
stimulated by stretch reflexes in the lung and
by carotid sinus pressure so that atropine pro-
tects against the development of arrhythmias pro-
duced by respiratory maneuvers, perhaps by
abolishing vagal reflexes.

FREEDBERG

Carlsten, A., Folkow, B., Grimby, G., Hamberger,
C. A., and Thulesius, O.: Cardiovascular Effects
of Direct Stimulation of the Carotid Sinus Nerve in Man. Acta Physiol. Scandinav. 44:
Direct stimulation was made of the carotid
sinus nerve of 5 men whose nerve was exposed
during operations for cancer of the neck. Pulse
rate, blood pressure, and pulse amplitude were
continuously recorded from an indwelling catheter
introduced into the left brachial artery and
connected to a strain-gage manometer. Definite re-
flex responses were obtained at low stimulation
rates, with maximal effects around 40 to 60 im-
pulses per second. A reflex bradycardia and a
blood pressure fall with a decreased pulse ampi-
tude were obtained. Concomitantly, a marked fall
in resistance within the forearm vascular bed was
obtained as measured by a water-filled venous
occlusion plethysmograph. The fall in blood pres-
sure was interpreted by the authors as due to a
decreased stroke volume dependent on a reduced
venous return and to an elimination of the posi-
tive inotropic effect on the heart due to the gen-
eralized reflex inhibition of sympathetic tone.

Rinzler

of the Catechol Amines of the Adrenal Medul-
lar Granules. Acta physiol. Scandinav. 44:
163, 1958.
The granules of the adrenal medulla of the
cow which contain the catechol amines were iso-
lated and the amines were resuspended in solu-
tions of varying ionic composition. The catechol
amines were found to occur in the granules in an
osmotically inactive form; this was shown by
analyzing the intragranular fluid. On such analy-
sis, it was found that the granular membrane was
permeable to sodium, potassium, and sucrose as
well as to the catechol amines.

Rinzler

Maaske, C. A., and Bromberger-Barnea, B.: Ex-
citability of the Normally Beating Heart. Am.
The electrical and mechanical responses to
spontaneously beating hearts in situ were studied.
Adult dogs were anesthetized and stimulating
electrodes were carefully placed upon the right
ventricle with a minimum of trauma to the heart.
Electrical stimuli were delivered through a time
delay circuit triggered by the voltage of the R
wave of the electrocardiogram. The stimuli were
separated by 20 to 30 heart beats. Threshold
values for excitability using square-wave stimuli
of 2-millisecond duration were determined at
random over the entire cardiac cycle. The plotted
excitability curve (strength-interval) was found
to be smooth without any indications of transient variations in threshold. Single square wave shocks of various durations applied directly to the uninjured ventricle were ineffective for the production of ventricular fibrillation. The use of closely adjacent electrodes (3 mm.) limited stimulation to a small and presumably discrete myocardial area. Excitability recovery for this area was synchronous and smooth. In the presence of myocardial injury, cardiac excitability was altered by some mechanism and a single shock could cause irreversible muscular incoordination or fibrillation.

Kayden


Anesthetized open-chest dogs were prepared for total coronary flow measurement. Arterial oxygen content was gradually decreased while cardiac work and myocardial oxygen consumption were measured over a wide range. The percentage of myocardial oxygen content and coronary arteriovenous oxygen difference decreased in proportion to the decline in arterial oxygen. Coronary blood flow increased both when the arteriovenous oxygen decreased and when oxygen consumption increased. Arteriovenous oxygen difference and percentage of oxygen extraction remained fairly constant at each level of arterial oxygen over a wide range of cardiac performance and oxygen consumption. The oxygen cost of cardiac external useful work was not changed during hypoxia. Cardiac effort, the product of blood pressure and heart rate, was only slightly altered by hypoxia. It appears, therefore, that hypoxia is associated with an increase in coronary flow that is adequate to maintain oxygen availability, so that cardiac oxygen consumption occurs at normal oxygen extraction.

Kayden


The cardiac effects of insulin hypoglycemia have been usually attributed to induced discharges of the adrenal medulla. In order to test whether insulin per se has vagotropic properties the authors administered to 10 normal subjects 50 per cent glucose intravenously followed by insulin at various doses and intervals. Recordings of phonocardiogram and carotid pulse wave were used to determine the length of the various phases of systole. A slight but definite slowing of the heart rate and prolongation of isometric contraction were associated with the injection of hypertonic glucose; this may possibly be explained by the vagotropic action of insulin, whose secretion was believed to be increased during hyperglycemia. Opposite and more intense effects were observed during the insulin-induced hypoglycemia. The potential benefits of the antidiuretic effects of a glucose infusion during acute left ventricular failure are pointed out.

Brachfeld


Several parameters of cardiovascular function were measured before and after the administration of mecamylamine in order to compare the mechanism of action of this agent with other ganglionic blocking agents such as hexamethonium and pentolinium. Experimental subjects were anesthetized supine mongrel dogs. The results were as follows: a significant increase was found in cardiac rate, arterial coronary sinus oxygen difference, and arterial venous oxygen difference, whereas significant decreases occurred in mean arterial blood pressure, mean pulmonary arterial blood pressure, right atrial mean pressure, coronary sinus blood oxygen content, cardiac output, coronary blood flow, and cardiac oxygen consumption. No significant difference was found in total peripheral resistance, but it was noted that the trend was toward an increase. It was concluded that, insofar as the data available were concerned, the actions of mecamylamine were similar to those found with hexamethonium and pentolinium.

Maxwell


In dogs with portocaval shunts and in normal dogs determinations were made of the ammonia in the alveolar air and in arterial plasma. The partial pressure of ammonia in the alveolar air was found to be the same (within the limits of experimental error) as the calculated partial pressure of ammonia in arterial plasma. These measurements establish that ammonia is present in alveolar air in the order of magnitude expected if the ammonia in the blood were to equilibrate with the alveolar air during its passage through the pulmonary capillaries.

Ligation of the left coronary artery in anesthetized dogs produced ventricular fibrillation in less than 150 seconds. Anesthetization of the atrioventricular (A-V) node with procaine to produce complete atrioventricular dissociation markedly reduced the incidence of ventricular fibrillation. In 14 dogs with idioventricular rhythm after anesthetization, ligation of the left coronary artery caused fibrillation in 3, and the remaining 11 developed bradyarrhythmia and standby after periods up to 45 minutes, without fibrillation or other arrhythmia. In 2 dogs with atrioventricular nodal rhythm after procainization, coronary ligation produced ventricular fibrillation at 9 minutes in 1 and the other developed asystole in 11 minutes. Anesthetization of the A-V node may decrease the adrenergic effect of sympathetic fibers that pass through the A-V node.

Kayden

PULMONARY DISEASES


Clinical features and laboratory studies in 6 women with primary pulmonary hypertension are presented. Dyspnea and fatigue on exertion were presenting symptoms in all patients. None of the patients had chest pain and 4 of the patients were in right ventricular failure. A loud, split second pulmonic sound was the most striking auscultatory finding. Electrocardiograms showed right axis deviation and varying degrees of right ventricular hypertrophy in all but 1 patient. Fluoroscopy and roentgenograms of the chest showed enlargement of the right ventricle and dilatation of the main pulmonary artery with increased hilar markings and clear peripheral pulmonary vascular shadows. Pulmonary function studies were carried out in 3 patients and revealed a moderate increase in residual volume in 2 patients and a decreased maximal breathing capacity in 1 patient. Hemodynamic data obtained by cardiac catheterization revealed elevation of pulmonary artery pressure in all 6 patients with a mean pressure of 48 to 77 mm. Hg. Pulmonary capillary pressure was recorded in 4 patients and was normal. In the 4 patients with clinical signs of right ventricular failure, there was elevation in the right ventricular end-diastolic and right atrial mean pressures. Five of the 6 patients died within a year of the onset of right ventricular failure. Postmortem examination in 3 patients revealed marked hypertrophy and dilatation of the right ventricle and enlargement of the right atrium. The small pulmonary arteries had marked reduction in their lumina due either to extensive subendothelial proliferation or to slight to moderate hypertrophy of the media. No perivascular inflammatory changes were noted and only 1 patient showed organized thrombi in the small pulmonary arteries. The remainder of this article reviews 55 cases of primary pulmonary hypertension collected from the literature between 1950 and 1957.

Kayden


"Ventilatory insufficiency" is a brief expression used to indicate a complex situation that exists when an abnormality in the mechanical aspects of breathing is accompanied by dyspnea at moderate levels of physical activity. There are mechanical devices available to maintain ventilation both in the form of controlled positive and negative pressures. The ventilatory tests, which the authors believe are most widely used, are the measurement of the conventional vital capacity, the rapid or timed vital capacity, and the maximal breathing capacity. An impairment in these tests may be apparent in the early stages of diffuse obstructive emphysema. However, the correlation between these tests and the degrees of dyspnea may be poor. At times the determinations of these tests before and after the use of bronchodilating drugs may offer objective evidence of improvement. However, here too, there is lack of good correlation between subjective and objective results.

Krause


The presence or absence of pulmonary capillary proliferation was determined microscopically in 1 group of 10 necropsied patients who had received oxygen therapy during their hospital stay and in a second group of 22 randomly selected necropsy cases. The results indicated that pulmonary capillary congestion and proliferation could be observed even after only 2 days of oxygen therapy in some individuals. Diffuse fibrosis was found to occur in some patients after 1 to 2 weeks of continuous exposure to oxygen. These
pulmonary capillary changes (i.e., congestion, proliferation, fibrosis) were thought to be responsible for the development of oxygen dependence which occurred during and after inhalation of high concentrations of oxygen. The author emphasizes that several obscure pulmonary diseases (i.e., Hamman-Rich syndrome, plasma-cell pneumonia of premature infants, etc.) may be manifestations of oxygen toxicity.

Karpman


Timed forced expiratory volumes were studied in 500 patients with obstructive airway disease, heart disease or both and in 34 patients with pulmonary fibrosis in order to evaluate the usefulness of this test in assessing the contribution of obstructive airway disease to effort intolerance when heart disease was present. Both the forced vital capacity (FVC) and the 1-second forced expiratory volume (FEV) fell with loss of effort tolerance in each disease. Forced expiratory ratio 

\[
(FER = \frac{FEV}{FVC})
\]

did little in patients with heart disease but fell notably in patients with obstructive airway disease due to a large fall in FEV. The FER may thus distinguish the 2 conditions and point to the major cause of disability. Heart disease and pulmonary fibrosis could not be distinguished by this method.

Kurland


Twenty-eight extremely obese persons (weighing more than 100 pounds above ideal weight) were studied. Those with normal arterial oxygen saturation had reduced expiratory reserve volumes, reduced maximal breathing capacities, and reduced maximal flow rates. When such patients lost weight, their pulmonary function returned toward normal. Alveolar hypoventilation was found in 10 of 28 patients. Five others had hypoxemia not associated with alveolar hypoventilation. In the author's experience, obese persons with normal lungs, respiratory musculature, and normal respiratory center did not have alveolar hypoventilation. One patient who clinically was a "Pickwickian" patient had normal pulmonary function studies. His somnolence had some cause other than hypoxemia or hypercapnia.

Waife


The major function of the lungs is to arterialize the venous blood. This requires the addition of sufficient oxygen to maintain 97 to 98 per cent saturation of hemoglobin in the arterial blood, the removal of enough carbon dioxide to maintain the arterial carbon dioxide tension at 40 mm. Hg and the arterial pH between 7.39 and 7.41. Arterial anoxemia of cardiopulmonary origin can occur because of inadequate volume of alveolar ventilation, uneven alveolar ventilation in relation to pulmonary capillary blood flow, impairment of alveolar capillary diffusion, the shunting of mixed venous blood around ventilated alveoli, and combinations of these types. The author suggests a plan for the diagnosis of arterial anoxemia of cardiopulmonary origin. First, measure minute ventilation and then calculate the volume of useful, or alveolar ventilation. The rate of respiration times (the depth minus the anatomic dead-space volume) equals the alveolar ventilation. If there is no significant hypoventilation, then perform the oxygen test. If arterial blood oxygen values rise to a maximum, there is no venous arterial shunt and the diagnosis must be either uneven distribution or impaired diffusion or both. Clinical judgment, X-ray studies, and additional pulmonary function tests (carbon dioxide-diffusing capacity, single-breath nitrogen meter test and studies of the mechanical properties of the lungs) can then be used to identify precisely the cause of the anoxemia and suggest proper therapy.

Krause


Pulmonary biopsies were obtained from 222 patients during commissurotomy for mitral stenosis. These lesions concerned primarily the arteries, and the intensity and extent of their involvement were parallel to the clinical and radiologic signs. Both the intima and the media usually showed hypertrophy. These changes showed a strict dependence on the pulmonary arteriolar resistance and the arteriolo-capillary pressure gradient, as determined by cardiac catheterization. From the histologic studies alone it was impossible to decide whether muscular spasm or hypertrophy was present. Similarly, only injection technics could show how much of the pulmonary hypertension in mitral stenosis was caused by increased anastomoses between the pulmonary and bronchial arteries.

Lefeschkin
RENSAL AND ELECTROLYTE EFFECTS ON THE CIRCULATION


Twenty-four percutaneous renal biopsies were performed in 20 patients with the nephrotic syndrome. Eight patients had the histologic picture of type 2 nephritis (Ellis) the most constant feature of which was thickening of the basement membrane in the capillary tufts of the glomeruli without prominent tubular changes. Two patients were clinical examples of renal vein thrombosis with diffuse thickening of the basement membrane in all glomeruli and pronounced tubular atrophy. One patient had apparent systemic lupus erythematosus. In none of these patients was there evidence of remission. Three patients showed an appearance similar to benign nephrosclerosis, with scattered hyalinized glomeruli surrounded by collagen. Three were classified as a focal type of glomerulonephritis with endothelial and epithelial cellular proliferation in the tufts, collections of peripheral hyaline in individual lobules and organized crescents. The remaining 3 showed remarkably few changes. Of the latter 9 patients, 4 have had complete remissions; 1 only a trace of urinary protein persists; in none of the other 4 was there evidence of progression of the renal lesion. It was suggested that a histologic picture other than that usually associated with the nephrotic syndrome is quite common. It was not possible to predict the histologic picture on clinical grounds. Renal biopsy seemed of value for diagnosis, prognosis, and assessment of therapeutic procedures.

KURLAND


Mercurial diuretics act on the renal tubules. Evidence as to the exact site of action in the tubules favors the proximal tubule. In general, when mercurial diuretics are used, the urine contains more chloride than sodium. This is due to the fact that action of the mercurial is in the proximal tubule where there is inhibition of reabsorption, and sodium and chloride escape into the "uninhibited" distal tubule. Here, removal of sodium through exchange for hydrogen, potassium, and ammonium results in the excess of chloride. In this manner the mercurial diuretic may be primarily natriuretic and yet the urine will contain more chloride than sodium. It has been shown that ammonium chloride administration may potentiate the diuretic effect of mercurials. This effect is due to the increased acidity of body fluids, increased acidity of the urine, and to the increased concentration of chloride in the plasma, so that a greater load of chloride is filtered. Aminophylline given intravenously is said to enhance the diuretic response to mercurials, presumably by increasing the rate of filtration. The outstanding clinical application of the mercurial diuretics is in congestive heart failure, but other forms of edema also respond to this therapy. It is important to be mindful that serious depletion of electrolytes and water may follow their use.

KRAUSE


Experience with 65 patients subjected to open-heart surgery with the aid of extracorporeal circulation, and oxygenation indicated that only minor changes occurred in the serum electrolytes. No significant changes were found in the serum potassium, chloride, or sodium. A slight acidosis and lowering of the carbon dioxide content were encountered, but only rarely was it necessary to correct them. Some postperfusion increase in the blood lactic acid was found, but much of this increase could be accounted for by the accumulation of lactic acid in the blood used to run the pump oxygenator.

SAGALL


The incidence of acute nephritis following streptococcal infection varies considerably. In cases of acute nephritis, streptococcal types 4, 12, and 25 have been inerminated whereas other types were only sporadically noted. Four cases of acute glomerulonephritis were reported in 1 family following an upper respiratory infection with B-hemolytic streptococcus, Group A, type 1. The organism was recovered from 10 of the 11 members of the family; no other hemolytic streptococcus was found; antibody to type 1 was demonstrated. Of the 10 infected members of family, 3 contracted clinical acute nephritis and a fourth had urinary changes without symptoms. Two of the infected people contracted rheumatic arthritis.

KURLAND

Measurements of renal function in 1 kidney of dogs during surgery were supplemented by additional measurements in perfused live kidneys with intact nerves, with surgically sectioned hilar nerves, with clinically blocked sympathetic nerves, and with chemically potentiated parasympathetic nerves. Intrarenal resistance as a function of flow rate was increased by elevation of venous pressure. When blood flow rate was held constant, resistance increased as a function of venous pressure only in innervated kidneys and decreased slightly in denervated kidneys. Lymph flow rate increased as a function of venous pressure. Urine flow rate decreased as a function of venous pressure with blood flow rate uncontrolled but did not change when flow rate was constant. Therefore, high renal vein pressures increased resistance by reflex active vasoconstriction as well as by passive vasoconstriction. The reduction in urine flow rate was in part related to these resistance-controlling mechanisms.

Kayden


Plasma and urine concentrations of glucose, phosphorus, amino acid nitrogen, protein, and creatinine were measured in 5 dogs during artificial cooling to 20 C. and during rewarming to 37 C. Changes in urine flow were also studied during the 8 periods of study. A decrease in serum amino acid nitrogen occurred with cooling and was reversed during rewarming. Serum creatinine and protein levels were essentially unchanged. Urine flow increased with cooling and the U/P ratios of phosphorus, amino acid nitrogen, and creatinine decreased. There was minimal increase in protein excretion, but all of the filtered glucose appeared in the urine. It was suggested that 2 transport mechanisms were involved in the reabsorption of amino acids and phosphorus from glomerular filtrate, only 1 of which was affected by cooling. The mechanism responsible for glucose reabsorption was paralyzed by cold.

Kayden


It has been known that diuresis produced by organic mercurial compounds is potentiated during metabolic acidosis and suppressed during metabolic alkalosis. The authors studied the role of acid-base balance in this reaction. The effects of varying doses of mercuryl and mercuric-cysteine were compared in normal, acidotic, and alkalotic dogs. It was found that mercuric-cysteine is a more potent chlorturate and was influenced to a smaller extent by changes in acid-base balance than was mercuryl. Dogs receiving hypertonic infusions (which kept chloride concentration and glomerular filtration rate elevated) also received other anions, such as further, the concentration of the sodium in plasma reflects the effective osmotic pressure of the body fluids and the state of the body water balance. The kidney is the principal effector of water balance. In this organ reabsorption of water is divided into 3 phases: the proximal tubule, the remainder of the nephron, but the distal convoluted tubule in particular and the collecting tubule and duct. The proximal tubule is freely permeable to water, but this is not true of the distal convoluted tubule in the absence of the antidiuretic hormone. It is chiefly because of this property that the antidiuretic hormone prevents the excretion of a dilute urine and it is only a secondary function of the antidiuretic hormone to promote the excretion of a concentrated urine. The release of antidiuretic hormone is normally determined by the effective osmotic pressure of the body fluids. Dilution causes inhibition and concentration naturally causes stimulation of production of the antidiuretic hormone. Water balance is usually precisely controlled, but under stress and in disease states there is a tendency to prevent the rapid excretion of water, which may lead to dilution and hyponatremia. In general, the disorders of water excretion are due to inappropriate secretion of antidiuretic hormone and failure of delivery of adequate amounts of sodium to the diluting segment of the nephron. Pain, nausea, apprehension, certain drugs, trauma, and surgery can act as stimuli for the release of antidiuretic hormone. Diuretics can profoundly alter body electrolytes and fluid balance. The author advises more careful attention to water intake as a method to prevent dilution in severely decompensated cardiæ and cirrhotic patients, who are subject to rigid salt restriction.

Krause


Sodium and the anions that balance it constitute 90 per cent of the solute of plasma. Further, the concentration of the sodium in plasma reflects the effective osmotic pressure of the body fluids and the state of the body water balance. The kidney is the principal effector of water balance. In this organ reabsorption of water is divided into 3 phases: the proximal tubule, the remainder of the nephron, but the distal convoluted tubule in particular and the collecting tubule and duct. The proximal tubule is freely permeable to water but this is not true of the distal convoluted tubule in the absence of the antidiuretic hormone. It is chiefly because of this property that the antidiuretic hormone prevents the excretion of a dilute urine and it is only a secondary function of the antidiuretic hormone to promote the excretion of a concentrated urine. The release of antidiuretic hormone is normally determined by the effective osmotic pressure of the body fluids. Dilution causes inhibition and concentration naturally causes stimulation of production of the antidiuretic hormone. Water balance is usually precisely controlled, but under stress and in disease states there is a tendency to prevent the rapid excretion of water, which may lead to dilution and hyponatremia. In general, the disorders of water excretion are due to inappropriate secretion of antidiuretic hormone and failure of delivery of adequate amounts of sodium to the diluting segment of the nephron. Pain, nausea, apprehension, certain drugs, trauma, and surgery can act as stimuli for the release of antidiuretic hormone. Diuretics can profoundly alter body electrolytes and fluid balance. The author advises more careful attention to water intake as a method to prevent dilution in severely decompensated cardiæ and cirrhotic patients, who are subject to rigid salt restriction.

Krause
nitrate, sulfate, and bicarbonate. Under these circumstances, bicarbonate inhibited the mercurial effect, while nitrate and sulfate did not. This finding was interpreted as emphasizing the role of pH in determining mercurial effectiveness. Since there was an almost identical chloride load, it is suggested that diuretic activity results from the rupture of a carbon-to-mercury bond with the liberation of mercuric ions.

Waife

ROENTGENOLOGY


A 31-year-old woman showing the Morgagni-Turner-Albright syndrome (agenesis of ovaries, pterygium colli, kyphoscoliosis) and having a masculine nuclear chromatin pattern was submitted to aortography for the purpose of localization of an isthmic aortic stenosis. A few hours after aortography was performed through the right brachial artery, pulmonary hemorrhage set in, and the patient died in pulmonary edema after 2½ days. At autopsy the hemorrhage was found to originate in numerous venous ectasies and varices in the left lower lobe; the wall of the venules showed mucoid-hyaline swelling. These changes, together with the extreme necrosis of the aortic media accompanied by destruction of elastic fibers, were attributed to a congenital metabolic defect of the connective tissues. The rupture of pulmonary veins leading to hemorrhage was attributed to an increase in the already elevated pulmonary venous pressure in connection with the aortography.

Lepeschkin


The experience obtained in the performance of translumbar aortography in 500 patients with arteriosclerotic obstructive lesions involving the abdominal aorta and its distal branches to the level of the popliteal artery was reviewed. It was found that aortography added important surgically significant information to that determined solely by clinical examination. The practical value of this information was manifested in the final determination of operability and in the selection of the site and method of operation.

Sagall


The circumstances that surrounded the occurrence of 109 complications in 86 of 546 patients subjected to angiography were analyzed. All patients had been tested with Diodrast prior to the injection of 10 to 12 ml. of a 35-per cent solution, but 6 allergic reactions occurred. Forty-four complications were innocuous and transient; 51 were serious but transient; 14 were permanent. Eight deaths occurred, only 1 of which appeared to be directly related to arteriography. The rate of complications in patients with depressed consciousness was 56 per cent, about 3 times that in the fully conscious group. Eighty-seven per cent of the deaths and 67 per cent of the serious complications occurred in patients whose neurologic state showed rapidly progressive deterioration. No relation was noted to the number of injections of contrast medium, vascular status, or age of the patient. The incidence of complications was almost 3 times greater in patients receiving intravenous amobarbital or pentobarbital than in those receiving only local anesthesia following premedication with intravenous atropine and phenobarbital. Neither fresh blood in the spinal fluid, intracranial aneurysm, nor intracranial hematomas were regarded as contraindications to arteriography, although one fourth of the patients with aneurysm suffered a serious complication. The hazards of arteriography must be weighed against the diagnostically useful information obtained in 80 per cent of these cases.

Kurland


This report describes a systematic evaluation of the many variables in coronary angiography on dogs. Control and repeat angiograms were obtained following production of myocardial infarction by ligation of the left anterior descending coronary artery. Consistent adequate visualization of the coronary tree was obtained by the injection of 30 ml. of 50 per cent Hypaque with an automatic injector through an intra-arterial catheter with the tip located at the junction of the brachiocephalic artery and the ascending aorta. Temporary cardiac arrest of 5 to 15 seconds with intravenous administration of 4 to 8 mg. of acetylcholine markedly improved and simplified the technic without detrimental effects.
No additional hazard with coronary arteriography (with or without the use of acetylcholine) was found in the dogs with myocardial infarcts.

*Sagall*


A device for timed rapid injection of radiopaque media has been found to be effective and safe in producing coronary arteriograms in man and animals. It consisted of an electronic control system, triggered by the R wave of the electrocardiogram, and a compressed nitrogen-driven syringe. The latter was connected to a large bore polyethylene catheter inserted through the brachial artery to a point 1 cm. above the aortic valve. Usually, 30 to 50 ml. of 90 per cent diatrizoic acid (Hypaque) was delivered under 150 pounds per square inch pressure in 0.6 to 1.0 second. Coronary arteriograms of excellent quality showing secondary and tertiary branches have been regularly obtained both in healthy and diseased coronary circulation.

*Rogers*

**SURGERY AND CARDIOVASCULAR DISEASE**


Blood was collected from human donors into different containers with varying amounts of heparin. Platelet counts were performed at various times after collection. Platelet survival in blood collected into plastic bags containing a small quantity of acidified citrate-dextrose solution and 2,000 units of heparin was excellent for four hours. Clumping of platelets occurred after 24 hours in this solution, and at 11 days there was a definite reduction in the number of platelets. Platelet survival in blood drawn directly into empty plastic bags was somewhat reduced after 4 hours. Blood drawn into siliconed glass bottles containing 1,800 units of heparin in a glucose-saline menstruum had almost the same platelet count at the end of 4 hours as control specimens. Observations of platelet survival in small counting vials indicated that the greatest fall in the number of platelets occurred in the first few minutes of incubation at room temperature and that the fall in platelet count was greater when the concentration of heparin was less. There was little difference in platelet survival in blood drawn into uncoated glass containers, into siliconed glass bottles or polyethylene bags in these studies. The least loss in platelet counts occurred when the volume of blood was large enough almost entirely to fill the container.

*Kayden*


The machine consists of a rotating cylinder covered with a thin plastic fabric-supported film, and filled on the inside with a constantly renewed aerosol of oxygen in buffered saline solution. The cylinder is partly immersed in the blood reservoir. Condensation of the saline on the plastic film provides complete separation between oxygen and blood and prevents formation of microscopic bubbles. Only plastic surfaces are in contact with the blood. A double multi-cusp plastic diaphragm pump provides an output up to 5 L./min. and does not cause hemolysis of more than 6 mg. of hemoglobin per hour. The apparatus is provided with an electric output meter and with a thermostatically controlled heater. Seven patients with atrial septal defects were operated upon successfully with this apparatus; in 5 of these Ivalon plastic prostheses were inserted. In 1 patient excessive hemolysis was caused by too intense infra-red radiation, while another patient, who had previously shown pulmonary edema and in whom the operation lasted exceptionally long, died 3 days later with symptoms of cerebroembolism and hemolytic anemia.

*Lebeschkin*

**VASCULAR DISEASE**


Phenylbutazone was utilized to treat 8 patients with temporal arteritis whose diagnosis was verified by biopsy or postmortem examination in 5 instances. In the other cases, diagnosis was made on clinical grounds. Pain and fever were invariably controlled as rapidly as when steroids were used. General condition improved. Neither side effects nor relapses were seen but sedimentation rate was not influenced. The relief was thought to be due, at least in part, to regression of concomitant thrombophlebitis of the temporal vein.

*Kurland*
ABSTRACTS

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