Late in its course, a well-documented case of chronic progressive systemic sclerosis (PSS) developed clinical and pathologic features indistinguishable from those of periarteritis nodosa. At necropsy, diffuse vasculitis was found which involved arterioles and small- and medium-sized arteries. The predominant vascular lesion consisted of acute and healing stages of a necrotizing angiitis, resulting in acute renal failure and intestinal infarction. In addition, typical vascular changes of PSS as well as vascular lesions intermediate in appearance between PSS and periarteritis nodosa were observed. In occasional acutely involved arterioles, immune complexes were demonstrated by immunofluorescence technique. These findings were interpreted as an unusually severe manifestation of necrotizing angiitis, an occasionally observed form of the vasculitis of PSS.

Six patients with generalized Wegener’s granulomatosis are reported. All patients were treated with adrenocorticoids and a cytotoxic drug, either an alkylating agent or purine antagonist. Five patients are alive after a minimum of 15 months and a maximum of 96 months of observation. Disease activity was suppressed and renal function was maintained at a satisfactory level or improved during therapy in the survivors. In one patient a remission occurred after 84 months of therapy, with no recurrence of disease 12 months after the withdrawal of medications. One patient died when bone marrow depression developed after nitrogen mustard administration, with evidence of severe disseminated disease found at necropsy. The addition of cytotoxic drugs early in the course of even severe generalized Wegener's granulomatosis may help control the disease, reduce the requirement for adrenocorticoids, and significantly improve the prognosis of the illness.

Dietary influence on the synthesis of three main categories of lipid—cholesterol, phospholipid and neutral lipids—by rat arterial tissue has been investigated by in vitro incubation of aortas of rats fed experimental diets containing 10% of various fats (butterfat, groundnut oil, safflower oil and mustard oil) and fat-free diet, in the presence of radioactive acetate, mevalonate and phosphate. The radioactive incorporation of acetate into total arterial lipids was the lowest when a fat-free diet was fed, the major fraction of the label appearing in the neutral lipids and the lowest incorporation in the cholesterol. Compared to the various groups fed fat (but not mustard oil), the animals fed a fat-free diet had much lower rates for triglyceride synthesis; mustard oil depressed this synthesis even more. The synthesis of cholesterol was much less than that of other lipids and the source of dietary fat seemed to influence it. Butterfat and antithyroid diets (15% fat plus bile salts, choline and methyl thiouracil), however, slightly increased arterial cholesterol synthesis while augmenting overall radioactive incorporation into total aortic lipids. Arterial phospholipid synthesis was enhanced by the atherogenic diet containing 15% butterfat (antithyroid diet plus cholesterol) and the antithyroid butterfat diet. Replacement of butterfat by groundnut oil in antithyroid or the simple diet was found to increase phospholipid synthesis.

Lipid extracts from plaques of grossly diseased human aortas were fractionated by silicic acid column chromatography. Examination of selected fractions by thin-layer chromatography revealed the presence of a number of esters with polarity intermediate between that of the triglycerides and cholesterol. Acetylation of this group of compounds decreased their polarity, thus suggesting the presence of free hydroxyl groups. Alkaline
hydrolysis established that the main neutral component was cholesterol, accompanied by smaller amounts of 26-hydroxycholesterol, 7β- and 7α-hydroxycholesterol and a 24-hydroxycholesterol. The polarity of the cholesterol esters was due to their acyl moieties: three of the constituent acids have been identified as two isomeric 9-hydroxyoctadeca-10, 12-dieneoic acids and a 13-hydroxyoctadeca-9, 11-dieneoic acid. The polar sterol esters constitute a new group of lipids associated with human atheroma. The possible role of peroxidised linoleates in the formation of these compounds is discussed.

AB-64-71

Multiparous rats develop a spontaneous arteriosclerosis. The effect of clofibrate on the incidence and severity of the disease was studied in breeding female rats each of which had had six litters. Clofibrate was administered in the diet at a level of 0.25%. Groups of treated rats were killed after three, six and 12 months' treatment with a similar number of controls at each time. The aortas were dissected out from heart to diaphragm, radio-graphed and examined histologically. The kidneys, adrenals, heart, liver, and ovaries of each animal were also examined histologically.

The results of the experiments demonstrated that clofibrate decreases the severity and incidence of the disease. Its chief effect appears to be to reduce the calcification and mucopolysaccharide content of the aorta. There is no correlation between arteriosclerosis and kidney disease but clofibrate also reduces the incidence of nephropathy. Histological changes in the adrenal glands were less severe in the clofibrate-treated rats.

AB-69-71

Arterial stenosis is commonly accompanied by an increase in blood pressure proximal to the stenosis and by turbulent blood flow distal to the stenosis. The many conflicting results from experiments designed to study the atherogenic influence of arterial stenosis might therefore partly be explained by the inability of the experimental model to distinguish between the effects of hypertension and turbulence.

In the present experiments, a nylon ring constricted the middle part of ascending aorta in eight rabbits. Four of these rabbits, and three without aortic stenosis, received 0.5% cholesterol in addition to the control diet. The stenosis produced turbulence and dilatation of the aortic arch, but no proximal hypertension. All animals on the atherogenic diet developed gross atherosclerotic lesions in the aorta, but the stenosis did not influence the localization and extent of the lesions. No lipid deposits were seen in the animals with stenosis on a normal diet. It is concluded that turbulence of flow does not have a dominating influence on atherogenesis.

AB-75-71
LEMOLE GM, SOULEN RL, SWARTZ BE: Technique of Rapid Pulmonary Angiography by Percutaneous Subclavian Vein Catheterisation. Radiology 100:179-180 (July) 1971*

Although the management of massive pulmonary emboli has changed through the years, the need for rapid diagnosis remains the underlying factor for successful treatment. Percutaneous catheterization of the subclavian vein and advancement of the catheter into the right atrium allows rapid pulmonary angiography of adequate detail to determine the need for pulmonary embolectomy.

AB-124-71
STEWART C: The Laboratory Control of Heparin Therapy. Med J Aust 1:1160-1164 (May 29) 1971*

The thrombin clotting time was standardized and evaluated for reliability and sensitivity. It was then used to monitor both the continuous and the intermittent methods of heparin therapy, to determine which form of treatment was the more efficient. The results indicate that the thrombin clotting time method is an efficient method of controlling heparin therapy, and that continuous heparin therapy is more efficient than intermittent heparin therapy.

AB-125-71
ANDERSON EK: Sensory Impairments in Hemiplegia. Arch Phys Med Rehab 52:293-297 (July) 1971*

Parietal lobe syndromes play an important role in the disability of the hemiplegic patient. Of 271 cases studied from 1967 through 1969, 80 (30%) showed sensory defects and remained in more dependent categories of achievement levels in rehabilitation. Of these, 50 occurred with left hemiplegia and 35 (70%) of these showed gross unilateral neglect and spatial disorientation, which conditions were demonstrated to exist independently of homonymous hemianopia. Thirty-two cases of sensory loss occurred in patients with right hemiplegia, and bilateral ideomotor apraxia was present in 11 (34%) of these, while two or more elements of Gerstmann's syndrome were
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The presence of the syndromes of disordered body-image of bilateral ideomotor apraxia and Gerstmann's syndrome have been shown to be closely associated with sensory losses. Since these syndromes have strong prognostic and therapeutic implications in rehabilitation of the stroke patient, their recognition is important in considering realistic training programs, in improving accuracy of prognosis, and in orienting the family and staff to difficulties to be anticipated, thus augmenting the treatment program and reducing frustration on the part of all concerned.

AB-126-71


The local effects of hypoxia induced by inhalation of 60% oxygen-nitrogen gas mixture on cortical blood flow of dogs, measured by heat clearance, are variable, whereas the ratio of cerebral venous pressure to mean arterial pressure as an indication of cerebral vascular conductance uniformly increased. Local cortical flow decreased in one-third of animals during hypoxia, but all showed an increased local flow in all areas studied to hypercapnia. The mechanism for a vasoconstrictive response to hypoxia in local cortical regions is not understood.

AB-127-71

HARMSEN P, KJAERULFF J, SKINHQJ E: Acute Controlled Hypotension and EEG in Patients With Hypertension and Cerebrovascular Disease. J Neurosurg Psychiat 34:300-307 (June) 1971*

Forty-seven patients with hypertension and/or cerebrovascular disease were examined by an acute controlled hypotension test. This was performed by intravenous administration of the ganglionic blocking agent pentholonium and head-up tilting on a pivoted table with observation of the clinical neurological state and simultaneous EEG recording. Blood pressure was reduced by approximately 55% and brought to the point where signs of general cerebral ischaemia developed. By tilting back to horizontal the blood pressure returned to near the normal level. No change in focal neurological symptoms or changes in the EEG were observed, and it is concluded that the majority of hypertensive patients with or without previous stroke do tolerate normalization of their blood pressure. Controlled hypotension with tilting seems a simple and valuable test for excluding those few subjects who might not tolerate a blood pressure reduction. Whether EEG monitoring during the test increases the value of the test has not been answered.

AB-128-71


Through questionnaires sent to the various neurosurgical clinics in Japan, 3,548 patients with aneurysms were reviewed. Of these patients, 54% were males, and 78% of the patients were between the fourth and sixth decades. Eighty-seven percent of the aneurysms occurred in the anterior circulation without significant difference between right and left sides. The internal carotid artery was the most common site for aneurysms to occur, followed by anterior communicating arteries and middle cerebral arteries.

AB-129-71

ROBINSON RG: Ruptured Aneurysms of the Middle Cerebral Artery. J Neurosurg 35:25-33 (July) 1971

Between 1947 and 1969, 84 patients with ruptured aneurysms of the middle cerebral artery were treated surgically. Women were found to have aneurysms more often. Poor clinical condition, hypertension, retinal hemorrhage, age over 50 years, intracerebral hematoma, and very early operation adversely affected the surgical mortality. The percentage of those who died was 36.6%, but with better selection this mortality was reduced to 7.8%. Investment of the aneurysm with muscle and gauze was less effective therapy than clipping of the aneurysm. Two-thirds of the patients were able to return to work.

AB-130-71


A very low permeability of the human blood-brain barrier was demonstrated by intra-arterial injections of small hydrophilic tracers. The double-indicator method was employed using T-1824 bound to albumin as the intravascular tracer and Na, EDTA-Na,Cr, or inulin as test molecules. Ninety-nine percent of the T-1824 was recovered following injection indicating the low permeability of the blood-brain barrier. It was felt that laminar flow was responsible for intravascular separation of the molecules in their passage through the cerebral circulation.
Right middle cerebral artery occlusion in 26 cats resulted in histopathological changes in all but one animal. In 22 animals the neurological deficits were consistent with infarction of the right internal capsule. Decrease in cerebral blood flow was maximum in gray matter two days following middle cerebral artery occlusion with similar results for white matter. In 10 of 18 animals, studied 15 days after MCA occlusion, regions of hyperemia were noted. Hyperemia correlated with areas of infarction in seven of ten animals but was found in noninfarcted tissue in three animals studied at a later time. Although cerebral blood flow generally was decreased in regions of pathological change, the changes and the CBF did not always correlate.

Subarachnoid hemorrhage in 178 patients in good condition and with single intracranial arterial aneurysms were treated either conservatively or surgically with stalk ligature. The decision for treatment was made on an average of 51 days after the initial hemorrhage. No statistical difference in results was noted between these two groups when followed for an average of three and one-half years. Of the nine fatalities among the 92 patients in the nonoperated group, the majority occurred in the first months post-hemorrhage. Aneurysm patients in good condition have such a good natural prognosis that the value of late surgery seems limited.

Potassium released from blood clots surrounding cerebral arteries in patients with subarachnoid hemorrhage is possibly responsible for the intracranial arterial spasm often seen in this clinical condition. In dogs it was possible to induce arterial spasm by injecting potassium into the chiasmatic cistern but at concentrations higher than would be expected from lysis of subarachnoid clots. In patients with subarachnoid hemorrhage, the potassium concentrations were not elevated in the cerebral spinal fluid. It was concluded that potassium concentrations could not be correlated with presence or degree of arterial spasm in SAH.

Pulse-synchronous ultrasonic echoes from an artery registered on an oscilloscope screen can constitute the basis for an evaluation of arterial conditions comparable to palpation of the pulse. This method has the advantage of being applicable to arteries that cannot be palpated. There were 325 patients evaluated using the ultrasonic echo method; 123 of these patients had angiograms for comparison. In 40 of the 42 patients with occlusive or severe stenosis of the common or internal carotid arteries pathological pulse conditions were noted. When used as a method of selection of patients for angiography, 5% of operable lesions would be missed while 30% with nonoperable lesions would be referred for angiography. This method was found to be valuable as an additional parameter for evaluation of the patient with carotid artery stenosis.

Microemboli are generated by bubble oxygenators during cardiopulmonary bypass. These can be detected by a sonar particle counter. Cerebral blood flow and cerebral metabolic rates for O₂, glucose, CO₂, and lactate were measured in five dogs undergoing partial bypass. Particle counts (sonar) averaged 8000 echoes per minute with a fall in cerebral blood flow (25%), O₂ (45%), and glucose (60%) relative to baseline. Imposing a wire mesh filter of 25μm pore size in the arterial line in four additional dogs resulted in particle counts of 240 echoes per minute with no fall in cerebral blood flow and only 4% fall in O₂, and 16% fall in glucose. This depression in cerebral blood flow and cerebral metabolic parameters appears to be microembolic in origin and is largely avoided by effective filtration.

There were 111 patients with anterior communicating artery aneurysms treated with occlusion by clipping or ligature of the anterior cerebral artery, which was mainly or wholly responsible for filling of the sac. Of these, 43 cases were evaluated. On
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postoperative angiography 23.2% of the cases failed to reveal an aneurysm, reduction in size of the aneurysm was noted in 32.6%, and no further enlargement was noted in 37.2%. In 7% of the cases the sac had increased in size. Anterior cerebral artery clipping does influence the circulation through the anterior communicating artery and through the aneurysmal sac. Of the original 111 patients, 82 survived for an average of 8.9 years with only two deaths due to recurrent hemorrhage.

AB-137-71

Eighteen patients with a left hemiparesis were studied along with 21 control subjects to determine the extent and character of bilateral disturbance of function. Although in both groups a significant decrease in activity level was noted during attempts to engage in bilaterally synchronous movements, all but two of the left hemiparetic patients had additional bilateral incoordination. One affected subgroup displayed alternating inhibition of action, which was felt related to reciprocating excitation and inhibition operating across hemispheres. The other subgroup showed discordant bipedal activity which was felt to be due to cross-hemispheric sensorimotor dissociation or increased imbalance between the hemispheres with respect to latency in processing information.

AB-138-71

One hundred ninety-one patients with presumed cerebrovascular insufficiency were studied both clinically and angiographically. In the 22 instances of carotid occlusion, absence of a bruit was the most frequent finding; however, there were several cases where prominent ipsilateral bruits were detected. Bruits contralateral to the occluded vessel were noted frequently and although this was assumed due to stenosis of the carotid on that side, four patients were observed to have a contralateral bruit in the absence of any demonstrated arterial pathology in the vessel opposite the occlusion. Seventy-three percent of patients with a demonstrable carotid stenosis did not have an audible bruit, while 10% of patients with what was clinically felt to be a significant bruit no stenosis was found. The evaluation of audible bruits over the carotid artery is felt to be a highly fallible indication of underlying carotid disease.

AB-139-71

Arterial murmurs heard over the carotid, supraclavicular, epigastric and femoral vessels were recorded during a medical investigation of an adult rural African (Gambian) population presumed to be relatively atheroma-free. Vascular murmurs were noted in 17% of subjects of all age groups. This was felt to represent an unexpectedly high proportion of subjects and suggests that some arterial murmurs may be due to causes other than atherosclerosis. Of interest, only two of the 272 patients studied were noted to have carotid bruits.

AB-140-71

Forty patients showing mild to moderate degrees of mental deterioration presumed to be exclusively due to either cerebral arteriosclerosis or simple senile cerebral degeneration were studied. Patients were assigned either to a control or treated group and were given placebo or sublingual Hydergine for a 12-week period. By testing what the authors considered "characteristic manifestations of cerebrovascular insufficiency" (including: intellectual functions, somatic symptoms, daily living activities, attitude and mood, motor activity, etc.), comparisons were made in the pretreatment and post-treatment periods. The reported data indicate that the placebo group showed significant improvements in 18 of the 30 items tested, whereas the Hydergine group showed improvement in 22 individual items. In comparing treated and untreated groups for symptoms of memory defect and confusion no significant differences were observed. Group comparison using the global ratings of patients' response rather than individual items showed that both groups exhibited clinically observable, but not marked, overall improvements. No untoward side effects were noted.

AB-141-71

Microangiographical studies of the human spinal cord were conducted and the regional differences in spinal microvasculature were outlined. Varying numbers of central arteries arise from the anterior spinal artery. In the cervical area five to eight arteries per centimeter were
noted as compared to: two to five in the thoracic area, and five to 12 in the lumbosacral region. The central arteries in the cervical and lumbar regions were noted to be of larger caliber than similar vessels in the thoracic area. Branches of the pial arterial system supply the outer part of the spinal cord, while the terminal branches of the central arteries supply the inner area. There exists an intermediate zone supplied by both arterial systems. Extrinsic supply upon the spinal cord causes it to become flattened and widened; this alters little the supply from the pial arterial plexus, but elongates and narrows the diameter of the central arterial branches; this appears to affect maximally the arteries in the lateral columns and those reaching into the central gray area. These changes are correlated with various compressive cervical myelopathies.

AB-142-71

Widespread fatal bone marrow embolism with particular involvement of the brain is described in a 71-year-old woman who has generalized osteoporosis and multiple pathologic fractures associated with long-standing rheumatoid arthritis and steroid therapy. The fragments of bone marrow in this case entered the systemic circulation through a patent foramen ovale in the presence of cor pulmonale. The clinical and pathologic features indicated recurrent episodes of cerebral bone marrow embolism. The simultaneous occurrence in this brain of a spectrum of emboli consisting of bone marrow, adipose tissue, and extracellular fat globules provided an additional clue to indicate that the adipose tissue may indeed be a source of the fat globules characteristically seen in posttraumatic systemic fat embolism.

AB-143-71

Simple examinations utilizing short-lived radio-isotopes and gamma scintillation cameras can provide important information about lesions of the aorta and major arteries. The examinations do not alter the existing structure or dynamics and they involve virtually no risk or discomfort. The information obtained is supplementary to contrast angiography. Cases are described which illustrate the application of these technics.

*Authors’ abstract.

AB-144-71

The formation of human fibrin from fibrinogen has been examined by polyacrylamide gel electrophoresis in sodium dodecyl sulfate, a method which separates a mixture of proteins on the basis of differences in molecular weight. It has been found that the plasma from a patient with a congenital deficiency of fibrin-stabilizing factor forms clots lacking the cross links among the α- and γ-chains found in normal, cross-linked human fibrin. The addition of purified fibrin-stabilizing factor or normal plasma to the deficient plasma results in extensive cross-linking of the chains. Thus, the fibrinogen in the fibrin-stabilizing factor deficient plasma appears to be normal and forms fibrin which contains dimeric, cross-linked γ-chains and polymeric, high molecular weight forms of α-chains. By the use of these electrophoretic methods, it has also been possible to develop a highly sensitive method for measuring the content of fibrin-stabilizing factor in plasma. This method depends upon the use of urea-treated fibrinogen, which is completely devoid of fibrin-stabilizing factor, but which forms the usual cross-linked subunits after conversion to fibrin by thrombin in the presence of fibrin-stabilizing factor.

AB-145-71
WEXLER BC: Chemical and Morphologic Responses of Arteriosclerotic and Nonarteriosclerotic Rats to Magnesium-Aluminum Wire Implants. Lab Invest 25:60-67 (July) 1971*

Magnesium-aluminum wires which usually induce thrombosis were implanted into the carotid and renal artery and abdominal aorta of nonarteriosclerotic virgin male and female rats and arteriosclerotic breeder male and female rats. The animals were fed a regular diet or a high fat diet to induce hyperlipemia and were sacrificed at several time intervals postimplantation.

At autopsy, there was no evidence of thrombosis about the implant at any time. Animals with renal artery implants had extensive atherosclerotic lesions which extended into the renal parenchyma causing hypertension and severe renal infarction. Serum creatine phosphokinase and transaminase levels were elevated while the lactate dehydrogenase levels were depressed. Blood glucose appeared to be unaffected, as was cholesterol, but triglycerides and free fatty acids were definitely elevated. Serum corticosterone levels indicated little or no stimulation of the adrenal cortices.

Microscopically, the reaction to the wire implants consisted of proliferating mesenchymal
or smooth muscle cells believed to be of medial origin. These pulsatice, fibrocellular proliferations were rich in ground substance, e.g., mucopolysaccharide and collagen, and contained no lipid. Animals with preexisting arterial disease reacted differently than nonarteriosclerotic subjects by manifesting proliferation of large, cartilaginous cells. The renal and carotid arteries differed from the abdominal aorta in their morphologic reactivity to the wire implant.

AB-146-71


Atherosclerotic lesions and regressive nonatherosclerotic lesions were induced in aorta of normo-lipidaemic rabbits by specific types of injury. After four weeks the permeability of the lesions was studied with Evans blue and the morphology of the endothelium investigated with light microscopic techniques after in situ perfusion with silver salts for staining of "cement" lines.

Both types of lesions had increased permeability for the silver salt solution. The atherosclerotic lesions had a marked increased permeability as judged from staining with Evans blue in contrast to the regressive, non-atherosclerotic lesions. The non-atherosclerotic, regressive lesions were completely re-endothelialized after four weeks. The atherosclerotic lesions were partially covered with monocytes and endothelium-like cells and partially devoid of lining cells.

It is concluded that the slow regeneration of rabbit endothelium observed earlier was more likely due to methodological factors than to species characteristics. The results constitute support for defective endothelium with increased endothelial permeability as one of the central atherogenic factors.

AB-147-71

YAMAMOTO M, YAMAMURA Y: Changes of Cholesterol Metabolism in the Aging Rat. Atherosclerosis 13:365-374 (May-June) 1971*

Changes in the various steps of cholesterol metabolism were examined among rats of different ages using the radioisotope tracer method. No change with ageing was observed in the serum cholesterol level of the rat. By contrast all the following decreased with increase of age from two to 18 months: hepatic cholesterolgenesis in vitro from [1-14C]acetate; in vivo incorporation of [1-14C]-acetate into hepatic and serum cholesterol; biliary and fecal excretion of [14C]-cholesterol and its metabolites after [4-14C]cholesterol injection; and gastrointestinal absorption of [4-14C]cholesterol.

AB-148-71


Plasma lipids and phospholipids were investigated in patients with peripheral occlusive sclerotheromotic arterial disease, which was considered to qualify best for an examination of plasmatic factors involved in the development of sclerotheromotic complications.

The percentage of the thromboplastic phospholipid phosphatidylethanolamine was found to be significantly elevated in the plasma of untreated patients with peripheral occlusive arterial disease compared with normal and hypercholesterolaemic healthy persons. Compared with the normal group phosphatidylserine and lecithin were found to be augmented, whereas the percentage of lysolecithin was diminished in patients with peripheral occlusive arterial disease.

Apart from triglycerides, cholesterol and total phospholipids, free fatty acids were also augmented in the sclerotheromotic patients compared to normal, but not to hypercholesterolaemic, persons.

The significance of the data obtained is discussed with particular regard to the thromboplastic and herewith platelet aggregating properties of phosphatidylethanolamine, phosphatidylserine and free fatty acids. Elevated proportions of phosphatidylethanolamine were found to be more closely connected with the occurrence of peripheral occlusive arterial disease than any other of the plasma lipid and phospholipid parameters investigated.

AB-149-71


Six assay systems for serum fibrin degradation products (tanned red cell hemagglutination inhibition immunoassay [TRCHII], staphylococcal clumping test, FI test, flocculation, immunodiffusion and anticoagulant assay) were compared for reactivity with plasmin digests of fibrinogen and fibrin, with purified degradation products and with serum obtained from patients suspected of having circulating degradation products. The TRCHII reacts best with undigested fibrinogen and with the intermediate degradation fragments.
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**AB-150-71**


Eight patients with subclavian artery stenosis or occlusion and transient cerebral ischemia or brachial claudication were treated with a carotid-subclavian bypass. Intraoperative measurement of graft flow and carotid and subclavian pressure indicated restoration of subclavian pressure in all but one patient with a small vein graft. Graft flow increased from 149 ± 28 to 408 ± 55 ml/min with injection of 15 mg of papaverine hydrochloride into the graft. Carotid pressure did not fall when the graft was opened and fell an average of 2 mm Hg after papaverine. These hemodynamic observations support the use of carotid-subclavian bypass and indicate that the common carotid artery is adequate to supply the distal carotid and subclavian arteries unless there is proximal stenosis of the common carotid.

**AB-151-71**


A 60-year-old woman with angina pectoris, discrete planar and tuberous xanthomas, and diffuse yellow orange pigmentation of the palms had both hypercholesterolemia and hypertriglyceridemia. On paper electrophoresis her plasma lipoprotein pattern was indistinguishable from that of hyperbeta lipoproteinemia (type II). Carbohydrate feeding elicited a type IV pattern. Ultracentrifugal analysis of the plasma showed an abnormal beta lipoprotein floating at density 1.006. This anomaly persisted after normalization of plasma lipids by the administration of ethyl 2-(p-chlorophenoxo)-2-methylpropionate. Investigation of the kindred and the absence of secondary causes to account for the hyperlipidemia were also consistent with the diagnosis of primary type III hyperlipoproteinemia. The criteria for diagnosis of type III hyperlipoproteinemia are reviewed and the danger of relying on the paper electrophoretic pattern alone is emphasized. The diagnosis of type III disease should not be made until the presence of "floating" beta lipoprotein is demonstrated by ultracentrifugation.

**AB-152-71**


The effect of two intra-arterially injected vasodilating agents on the oxygen uptake of tissue and on blood flow through a critical stenosis has been investigated in the dog. Blood flow increase always occurred through the stenotic segment, but this change was small. Concomitant with this small flow increase the oxygen consumption of the tissue distal to the stenosis was found to be significantly decreased by the vasodilator infusion. This decreased oxygen consumption was manifested by marked narrowing of the arteriovenous oxymoglobin difference, suggesting that the agents infused opened arteriovenous shunts.

**AB-153-71**


The aortas of male albino rabbits were dilated with a Fogarty arterial embolectomy catheter. Two weeks after a single short-lasting dilatation, the animals developed severe gross arteriosclerosis of a type similar to that induced by catecholamines and exposure to systemic hypoxia. The microscopic alterations of the media were also identical to those induced by catecholamines and systemic hypoxia, whereas intimal thickening was more severe and frequent in the arteriosclerotic lesions induced by the mechanical dilatation. The aortic content of hexosamine, chondroitin-4, 6-sulphates and hydroxyproline was increased. The uptake of [35S]sulphate into the sulphated glycosaminoglycans was also increased, reflecting a stimulated synthesis of these substances. Finally there was an increased permeability to [125I]-labelled human serum albumin in the dilated aortas. The biochemical alterations were interpreted as two-week-old repair processes of the vascular connective tissue. The similarities in the location and

*Authors' abstract.
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Gross appearances of the arteriosclerotic lesions may indicate that dilatation of the aorta also plays a role in the development of arteriosclerosis induced by catecholamines and systemic hypoxia.

AB-154-71

This offers an instructive review of the types of lesions encountered in stroke victims and the prognosis to be anticipated.

AB-155-71

Elastin preparations from intimal layers and the media of normal and atherosclerotic human aortae were analyzed for protein and lipid content. In atherosclerotic aortae, elastin from plaques was compared with elastin from adjacent normal-appearing areas of the same aorta.

Arterial elastin purified by alkaline extraction appeared to be a protein-lipid complex containing free and ester cholesterol, phospholipids, and triglycerides. The lipid component of normal arterial elastin was small (1-2%). With increasing severity of atherosclerosis, there was a progressive accumulation of lipid in intimal elastin from plaques, reaching a mean lipid content of 37% in severe plaques. The increase in the lipid content of plaque elastin preparations was mainly due to large increases in cholesterol, over 80% of which was cholesteryl ester. This deposition of cholesterol in plaque elastin accounted for 20-34% of the total cholesterol content of the plaque. The increased lipid deposition in plaque elastin was associated with alterations in the amino acid composition of plaque elastin. In elastin from plaque intima, the following polar amino acids were increased significantly: aspartic acid, threonine, serine, glutamic acid, lysine, histidine, and arginine; whereas, cross-linking amino acids: desmosine, isodesmosine, and lysinonorleucine were decreased significantly. The amino acid and lipid composition of elastin from normal-appearing aortic areas was comparable to that of normal arterial elastin except for intimal elastin directly adjacent to and medial elastin directly below the most severe plaques.

AB-156-71
STILL WJS: The Effect of Triton WR 1339 on the Arterial Intima of the Rat. Lab Invest 24:373-382 (May) 1971*

The effect of the hyperlipemia induced by Triton WR 1339 on the arterial intima of the rat was investigated by electron microscopy. The results showed that Triton produced a hyperlipemia which, from an ultrastructural point of view, consisted of particles measuring from 100 to 1200 Å. These particles were visibly taken up by the arterial endothelium and some were transported intact to the subendothelial space. This reaction was compared to and seen to differ from the endothelial reaction to dietary-induced hyperlipemia, in which no such direct transport of lipid is seen. It is postulated that Triton induces distinctive surface changes in the lipid particles which, in turn, induce the arterial endothelium to ingest them readily.

AB-157-71

Two hundred seven healthy individuals (173 male, 34 female) had their lipid patterns studied. Patients were divided into the age groups: 20 to 29; 30 to 39; 40 to 49; 50 to 59; 60 to 64. For each group the mean serum cholesterol and triglycerides were: 202 and 61; 243 and 100; 256 and 93; 266 and 121; 273 and 109 mg/100 ml. Approximately 20% of normal patients had an abnormal lipoprotein pattern with type II being the most common when the upper normal cholesterol level was set at 275 mg/100 ml. It is emphasized that the definition of normal cholesterol ranges influences the results of lipoprotein typing, and when the upper limit is set at 325 mg/100 ml the prevalence of types II and IV is quite similar.

AB-158-71

Two hundred seven normals, 559 patients with coronary heart disease and 101 patients with atherosclerosis obliterans of the lower limbs were studied as to their blood lipids and lipoprotein profile in terms of the Fredrickson classification. Types I, III, and V were not diagnosed. It was noted that the distinction between normal and Type II depends entirely on the setting of cholesterol levels and were as follows: normal: 43.2%, 54.8%, and 66.8%; Type II: 43.9%, 52.3%, and 20.3% (with upper values of normal cholesterol set at 275, 300 and 325 mg/100 ml respectively). The diagnosis of Type IV is

*Authors' abstract.

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independent of the definition of a normal cholesterol range, being based on an elevated triglyceride level and on the presence of an electrophoreti
cally distinct pre-β-lipoprotein band. Of these patients, 9.2% had a Type IV pattern and 3.7% could not be classified.


Because of the variables involved it is difficult to make comparisons between the results of operations (carotid endarterectomy) done at several institutions. The authors report their results and state that carotid endarterectomy can be done safely in patients with ischemic amaurosis and transient cerebral ischemia and in those with minor neurological residuals. Their mortality in this group over a 12-year period was 1.4%. The results were less favorable in patients having a progressing stroke (14% mortality) and in those patients with a completed stroke and severe neurological deficit (25% mortality).


Neuropathological studies were performed on the spinal cords of six young children who died 21 hours to six weeks following a transient cardiac arrest. In general, the lesions of the spinal cord were more pronounced caudally than rostrally. No damage was noted in the white matter, but neuronal necrosis and loss was most marked in the gray matter—more prominent in the anterior than posterior horns. Large motor neurons were noted to be more susceptible than smaller neurons. Symmetrical necrosis of neurons of the anterior horns is felt to be related to decrease in systemic perfusion pressure such as might be found during cardiac arrest.


Using the Xenon 133 intra-arterial injection method, the regional cerebral blood flow (rCBF) was studied in 24 patients with dementia. Patients presumed to have senile or pre-senile dementia were noted to have an average reduction in rCBF of 23%, with a corresponding decrease in cerebral oxidative metabolism. The regional reductions in blood flow predominated in the fronto-temporal regions. Fifteen cases were studied with tests to alter the reactivity of the blood vessels (i.e., hypotension, hypertension, hyperventilation, intracarotid papaverine) and these patients all displayed normal reactivity. The authors suggest that the finding of normal vasomotor function in this group of patients supports the concept that senile dementia is not due to a chronic reduction in cerebral blood flow due to cerebral atherosclerosis.


Twenty-three hemiplegic patients were studied radiographically to detect the presence of osteoporosis. Osteoporosis was never found in the presence of active motion of the involved extremity and was found to develop early in the course of the hemiplegia, being detectable in one patient as early as two weeks after the onset of his illness. The inference is drawn that the disuse associated with the hemiplegia is responsible for the osteoporosis, and the theory that it can result only from long-standing hemiplegia needs to be re-examined.


Improved blood flow studies can be obtained during cerebral scintiangiophotography using the antecubital venous injection of 99m Tc-pertechnetate and the gamma scintillation camera. It is suggested that the patient be placed supine with bolsters under his shoulders and the head extended as far as possible. The detector is then centered on the thyroid cartilage. This view gives
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better definition of the cervical portion of the carotid vessels, and allows easier visualization and assessment of the symmetry of blood flow.

AB-165-71

Platelet adhesiveness was studied in 100 patients (50 with a history of a myocardial infarction and 50 matched controls). No evidence of increased platelet adhesiveness was noted in the patients with heart disease, nor was there any significant correlation between platelet adhesiveness and the serum cholesterol and triglyceride levels or the results of glucose tolerance tests.

AB-166-71
KISHORE PRS, CHASE NE, KRICHEFF II: Carotid Stenosis and Intracranial Emboli. Radiology 100:351-356 (Aug) 1971*

Middle cerebral branch occlusions were evaluated relative to lesions in the extracranial carotid arteries, showing increased incidence in patients with irregular and ulcerated plaques compared to those with normal or smoothly stenosed arteries. Limitations in the diagnosis of ulcerative plaques and embolic middle cerebral branch occlusion by angiography are pointed out.

AB-167-71

Segments of peripheral arteries of dogs injured either chemically or by endarterectomy were examined for the presence of thrombosis. In untreated animals 29% of the chemically injured and 43% of the endarterectomized segments were noted to be totally occluded with thrombi. Treatment with dipyridamole had no effect but treatment with aspirin (600 mg/day) reduced the incidence to 2% and 11% respectively.

AB-168-71
CARTER AB: Strokes and Hypertension. Amer Heart J 82:131-132 (July) 1971

In an effort to assess the effect of the treatment of hypertension on patients surviving a stroke the author randomly divided 99 patients into a treated and untreated group. The crude mortality rate in the untreated group was 46% in the follow-up period of two to six years, compared to 26% in the treated group. The latter figure improved to 17% if only well-controlled patients were considered. It is concluded that adequate hypertensive therapy significantly improves the prognosis of hypertensive patients below the age of 65 years who survive a stroke.

AB-169-71

Whole blood histamine was estimated before, during, and after 22 attacks of cluster headaches, and plasma serotonin was studied in 30 such headaches. The results were compared with changes in blood levels of both amines during headache in ten migrainous subjects and ten matched controls. In cluster headache, whole blood histamine levels showed a statistically significant rise during the attack, whereas plasma serotonin levels showed a slight nonsignificant elevation. During migraine, plasma levels of serotonin fell, this fall being statistically highly significant. Whole blood histamine levels showed a statistically significant elevation only during postheadache period. In normal subjects, no significant fluctuation in blood levels of both amines was observed over a period of six hours. It is suggested that the characteristic clinical and biochemical profile of cluster headache clearly differentiates it from migraine.

AB-170-71

Male and female nonarteriosclerotic virgin rats and male and female arteriosclerotic breeder rats were unilaterally nephrectomized, given 1% saline to drink, and treated with subcutaneous injections of methylandrostenedioli (MAD). All of the animals promptly developed hypertension. The nonarteriosclerotic virgin rats manifested the usual anabolic changes induced by MAD, whereas the arteriosclerotic animals lost weight. Although MAD caused adrenal hypertrophy and thymus gland involution, serum corticosterone and urinary 17-ketosteroid levels were greatly depressed. Hearts and kidneys manifested expected hypertrophy and there was a high incidence of myocardial hemorrhage and necrosis as well as greatly elevated blood urea nitrogen levels and sclerosis of the hilar renal arteries. Islet B-cells were degranulated and the animals were definitely hyperglycemic and hyperlipidemic, i.e., they had elevated triglyceride and free fatty acid levels but reduced cholesterol levels. Both the serum creatine phosphokinase and the glutamic oxaloacetic transaminase levels were elevated, indicative

*Authors' abstract.
ABSTRACTS

of myocardial and hepatic damage. All animals manifested marked gonadal involution due to the potent androgenicity of MAD. Treatment with MAD also induced de novo hyaline lesions in the arteries of virgin rats and exacerbation of the preexisting, spontaneous arterial lesions which appear in repeatedly bred rats, e.g., sparse lipid, considerable mucopolysaccharide deposits, elastolytic changes, fibrosis, and calcification. Breeder rats produce abnormal amounts of desoxycorticosterone as do MAD-treated rats. It is suggested that the hypertension and related cardiovascular degenerative changes found in breeder rats and similar pathophysiological alterations found in MAD-treated rats have a common etiology related to overproduction of mineralocorticoids by the adrenal glands.

AB-171-71

A procedure utilizing protamine sulfate to demonstrate the presence of fibrin monomers is described. The procedure is unaffected by heparin and by fibrinolytic split products. Interference by high levels of plasmin, however, was suggested. The possibility of precipitating protein fractions other than fibrin monomers has been lessened by utilizing a low concentration of protamine sulfate (0.9%) and a temperature of 37 C. This method was more sensitive and less subject to interference than two other procedures used to demonstrate fibrin monomers. Its application in differentiating disseminated intravascular coagulation from primary fibrinolysis is discussed.

AB-172-71

Occlusion of a branch of the middle cerebral artery in the dog brain produced an area of focal cerebral ischemia defined by fluorescein angiography. Microregional cerebral blood flow was measured by xenon injected into the carotid artery and monitored by lithium silicon detectors. Breathing 5% CO2 and 95% O2 reduced the size of the ischemic zone by increasing collateral blood flow. The ischemic zone could be increased by hyperventilating the dogs, thereby reducing the

PCO2. Hypercapnia failed to decrease perfusion flow to the ischemic area and retrograde collateral flow in the surface arteries appeared effective in terms of microcirculatory perfusion.

AB-173-71

The circulation through an arteriovenous malformation was studied at craniotomy by fluorescein angiography and microregional blood flow was studied using xenon and Neohydrin-Hg39. The cerebral steal could be obliterated by occluding the arterial supply to the angioma, which in turn reduced the shunt and improved the flow through the microcirculation.

AB-174-71

Dynamic arterial pressures were measured in 42 arteries and arterioles of the pial vascular network on the surface of the parietal cortex in eight anesthetized cats. The pressure in the branches of the middle cerebral artery as large as 455 micra was 61% of aortic pressure while the pressure of the pial penetrating arterioles (25 micra) was farther reduced to only 10% of aortic pressure. Micropipets of 0.5 to 1 micra diameter were used to measure pressures in the pial vessels.

AB-175-71

Cortical blood flow was measured in six cats 15 to 25 days following unilateral extirpation of the superior cerebral ganglion. Observations of the superficial microvasculature were made at different PaO2 and mean arterial blood pressures. Cortical blood flow (CBF) was not consistently different ipsilateral and contralateral to the sympathectomy. Autoregulatory responses to changes in mean arterial blood pressure were not altered on the side of the sympathectomy. Autoregulation was not impaired following beta adrenergic blockade. Normal regulation of the blood circulation in the cat brain is not dependent on autonomic innervation.
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AB-176-71

Cerebral hemispheric blood flow was increased in patients with ischemic cerebrovascular disease when given hexobendine, a newly available cerebral vasodilator. Hemispheric blood flow increased significantly in both diseased and healthy hemispheres in patients with unilateral cerebral infarction. Decrease in mean arterial blood pressure was not significant in light of the increased hemispheric blood flow indicating selective cerebral vasodilating effect. Increased blood flow in areas of cerebral ischemia as well as normal areas could be obtained by administration of hexobendine.

AB-177-71

Temporary or permanent middle cerebral artery (MCA) occlusions were produced in monkey brains and studied by cerebral angiography and postmortem microangiography. Total occlusion could be accomplished by applying a Scoville clip to the MCA take-off; this was demonstrated angiographically. In three animals early filling veins or abnormal blush suggested "luxury perfusion." Leptomeningeal anastomoses between MCA and anterior and posterior cerebral arteries could be demonstrated microangiographically. Poor filling of microvascular channels in deep subcortical structures may have been related to the "no reflow" phenomenon. Evidence of vascular damage in areas of infarction could be seen on microangiograms with extravasation of contrast material.

AB-178-71

In patients with cerebrovascular accidents respiratory pattern and arterial blood gas tensions were studied. A poor prognosis was associated with hyperventilation, low $P_{CO_2}$, and high arterial pH. More patients survived with normal respiratory pattern and blood gas tensions. An intermediate prognosis was associated with periodic and Cheyne-Stokes breathing.

AB-179-71

K-shell fluorescence is a new method for determining regional blood flow. This method avoids radioactive exposure to the patient. Regional flow is easily seen since there is little interference from scalp and skull. Inhalation or intra-arterial injection are the methods of administration.

AB-180-71

A case is reported of anterior uveitis in the right eye with transient episodes of left hemiparesis. Angiography revealed bilateral carotid artery occlusion and stenosis at the base of the left vertebral artery. The left carotid bifurcation was explored with removal of a cone of atheromata. Preoperative and postoperative fluorescein revealed improved circulation in the left eye postoperatively.

AB-181-71

In 19 patients with an acute cerebrovascular accident the lumbar cerebrospinal fluid and arterial blood acid-base state were assessed. $P_{CO_2}$ was similar in patients with or without hemorrhage but in patients with hemorrhage CSF pH was lower and lactate was higher. This suggests that CSF acidity is not responsible for hyperventilation. An inverse relationship was noted between the CSF pH and arterial lactate in the non-hemorrhagic patients suggesting a nonchemical ventilatory drive being responsible for acid-base changes.

AB-182-71

Electroocorticograms were obtained in 33 cats which had various preparations of autogenous whole blood injected into their subarachnoid spaces. Hemolyzed red blood cells produced severe (>50% reduction in amplitude) and prolonged (greater than ten minutes) suppression of activity in 11 of 15 cats, with spike activity in six cats. In conclusion, blood undergoing hemolysis may explain EEG changes previously observed in patients following subarachnoid hemorrhage.
ABSTRACTS

AB-183-71

The mechanism of epilepsy may be explained by an area of focal ischemia and altered circulation in a brain scar. Vasomotor lability has been observed in the brain of the epileptic patient during craniotomy which appears out of proportion to the normal brain. Sympathectomy and carotid artery sinus denervation has little influence on this lability. Cytological evidence of ischemia has been seen in all types of epileptic lesions. Some undiscovered secret of cerebral circulation seems the likely ultimate cause of epilepsy.

AB-184-71

A case of venous infarction of the spinal cord in a 67-year-old man with carcinoma of the pancreas is described. A review of similar cases in the literature is presented. Common precipitating factors are sepsis, local spinal cord tumor and a thrombotic syndrome secondary to systemic disease such as carcinoma. The typical onset is rapid with pain in back, legs, or abdomen, weakness and loss of sensation in the legs and trunk with bladder and bowel paralysis. Protein and cells may be elevated in the spinal fluid but these changes may be slight or absent. Myelography suggests moderate swelling of the cord. The course in all cases has been rapidly progressive resulting in death during the first or second week.

AB-185-71

Adrenergic fibers in the cerebral vessels of rabbit brains were studied by specific fluorescent staining of monoamines. The adrenergic fibers were found in the deep adventitial layers and not within muscle layers of the vessels. The anterior cerebral, carotid, and middle cerebral arteries were richly supplied while the basilar vessels were sparsely innervated by adrenergic fibers. The most dense innervation occurred in the superficial vessels between 100 and 300 microns in diameter. Subarachnoid blood and mild trauma caused the catecholamine reaction to disappear. Following alpha methyl tyrosine and extreme elevation of blood pressure a depletion of adrenergic fibers was noted.

AB-186-71

Oxeprenolol and propanolol, two beta adrenergic blocking drugs, were compared in six patients with uncomplicated angina pectoris during treadmill exercise. Equal amelioration in symptoms was noted with both drugs which was correlated with improvement in the electrocardiograph changes and reduction in exercising heart rate and systemic arterial blood pressure.

AB-187-71

An aberrant internal carotid artery without aneurysm presenting in the middle ear as a mass was diagnosed preoperatively as a tumor of the glomus jugulare. An attempt at surgical removal was met with sudden, profuse hemorrhage. Definitive treatment of proximal ligation of the carotid and encasement of the involved portion of the vessel with muscle and fascia produced temporary aphasia and hemiparesis. The condition in the patient is believed to be bilateral due to bilateral physical findings preoperatively. The etiology is most likely congenital because of this fact as well as the presence of an associated anomaly of the carotid in the cervical area.

AB-188-71

A patient with postoperative bleeding was treated with epsilon aminocaproic acid (EACA). Subsequent coagulation studies supported the diagnosis of intravascular coagulation and the patient subsequently developed renal failure due to glomerular thromboses. Caution is urged in the administration of EACA to patients unless primary fibrinolysis is established or the patient concomitantly receives heparin.

AB-189-71
SOBOTKA P, GEBERT E: The Effect of Local Application of Strychnine and Acetylcholine on the Brain Cortex After Complete Ischemia. Pfliigers Arch 326:142-151, 1971 (Springer-Verlag, publisher)

The changes of the bioelectric activity of the brain after complete ischemia in normothermia were studied in experiments on 70 isolated and perfused heads of dogs. During the recovery period after complete ischemias of five to 60
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minutes' duration the cerebral cortex was stimulated by local application of 1% strychnine or 10% acetylcholine. The mean latency of recovery of typical strychnine spikes after ischaemias of different duration was as follows: 13 min (five min ischaemia), 16 min (10 min ischaemia), 26 min (20 min ischaemia), 47 min (30 min ischaemia), 82 min (45 min ischaemia) and 122 min (60 min ischaemia). Similarly, the latency of recovery of acetylcholine spikes was found to depend upon the duration of brain ischaemia. From these experiments the conclusion can be drawn that even after long-lasting ischaemias there are structures in the brain cortex which survive and are able to respond to local chemical stimulation.

AB-190-71
HOOBLE SW, SAGASTUME E: Clonidine Hydrochloride in the Treatment of Hypertension. Amer J Cardiol 28:67-73 (July) 1971

Clonidine hydrochloride (Catapres) combined with a diuretic agent was given to 57 patients for a period of six months to two years. It was shown to be an effective agent for the long-term treatment of hypertension. It acts by central inhibition of adrenergic vasomotor stimulation; its withdrawal can cause transient sympathoadrenal hyperactivity. Dry mouth, constipation and transient drowsiness were the most common side effects. They diminished with time, even when the dose was progressively increased. Bradycardia was produced by inhibition of cardiac sympathetic innervation, but no serious dysrhythmias occurred.

The drug can be used to advantage as a replacement for guanethidine or methyldopa (Aldomet) but must be given with a diuretic agent. Orthostatic hypotension was rare. Addition of a sympatholytic agent augmented the effects of such blockade, causing a further decline in both standing and recumbent blood pressure.

This three-year experience shows that clonidine is safe and free from toxicity. It is effective if patiently administered in increasing dosage until proper control of blood pressure is achieved.

AB-191-71

During the carotid occlusion pressor reflex in which elevation of arterial pressure was caused by an increase in total peripheral resistance, the change in local peripheral resistance was compared among various arteries in anesthetized dogs. For the superior mesenteric, femoral and renal arteries, the change in peripheral resistance was below average or at most nearly average. The vascular area which most contributed to the reflex was that in the head and neck supplied by the carotid and vertebral arteries. The conductance (inverse of resistance) change in this area, which unilaterally amounted to about 20% of the total conductance change, was induced by three mechanisms: 1. hemodynamically as a mechanical effect of carotid occlusion, which was however slight due to abundant collaterals, 2. neurally by a sympathetically mediated vasoconstriction especially in the area originally supplied by the occluded carotid arteries, which impeded collateral inflow and contributed to the elevation of systemic pressure, and 3. by autoregulation, which became apparent after the cervical sympathetic nerve had been divided.

AB-192-71

Regional myocardial blood flow before and after sublingual nitroglycerin was measured in ten patients with coronary artery disease. During thoracotomy, $^{133}$Xe was injected directly into the subepicardium in diseased regions of the anterior left ventricular wall, and washout rates were recorded with a scintillation counter. All disappearance curves were closely approximated by two exponential decays analyzed as two parallel flow systems by the compartmental method. The appearance of a double exponential decay pattern in diseased regions suggests that the slow phase was associated with collateral blood flow, although nonhomogeneous myocardium-to-blood partition coefficients for xenon cannot be excluded. Nitroglycerin increased the rapid phase flow in nine of ten patients and the slow flow in seven of ten patients. Average flow increased in nine of the ten patients ($P < 0.01$). Mean rapid phase flow in the control state was 110 ml/100 g per min and after nitroglycerin increased to 132 ml/100 g per min ($P < 0.01$); slow phase flow increased from 12 ml/100 g per min to 15 ml/100 g per min ($P < 0.05$). It is concluded that, under these conditions, nitroglycerin improves perfusion in regions of diseased myocardium in patients with coronary artery disease.

*Authors' abstract.
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ABSTRACTS

HOFMANN W: Zur vergleichenden Pathologie der Frühformen der Aortenklereose. (Comparative Pathology of the Early Forms of Arteriosclerosis). Virchow Arch (Path Anat) 352:246-254, 1971 (Springer-Verlag, publisher)*

Human, calf, chicken, and pig aortas (ten each) were examined histologically, histochemically, and chromatographically. It was shown that as arteriosclerosis begins to develop the so-called intimal edema is either free of fat or almost free of fat. This means that the fat-free intimal edema may be the first phase in the development of atherosclerosis.


Twenty-five autopsied cases meeting the Minnesota criteria for brain death were studied and their clinical picture correlated with the pathological findings in the brain stem. Clinical criteria of brain death were enumerated along with an EEG. It is concluded that except in unusual circumstances, the EEG need not be a required procedure for the determination of brain death, and that brain death can be established in a patient with known irreparable pathology, solely on clinical grounds.


Measurements of intracranial pressure were made in dogs during acute occlusion of major intrathoracic vessels and ventricular fibrillation. Pressure rises were noted within two minutes following circulatory cessation when all major vessels were ligated and during ventricular fibrillation, and lesser rises were seen following superior and inferior vena caval ligation, and superior vena cava blockage. No effect was noted with ligation of the azygos vein or inferior vena cava. Observation of the cerebral surface vessel showed no change in the diameter of the smaller arteries and veins and since a rise in central venous pressure was observed, it was postulated that the elevated intracranial pressure was due to venous back pressure. Other presumed possible causes of increased intracranial pressure assumed to be of lesser importance were neurogenic vasodilatation, cerebral edema or increased CSF production.

*Authors’ abstract.


A comprehensive study of central retinal artery occlusion is reported. The literature relevant to this disorder is reviewed and the data obtained from the additional study of 175 patients is presented. Retinal arterial occlusion was noted to be primarily, but not exclusively, a disease with male preponderance, afflicting an elderly population. Of those patients studied, 36% had died at the mean age of 65.5 years with the principle cause of death being cardiac and vascular disorders, with cerebrovascular insults predominating. Three percent of the total cases had temporal arteritis. Of the patients available for follow-up examination 58% of the involved eyes were blind. Fluorescein angiography of the ocular fundus in the late phase revealed recanalization had occurred in all cases studied. The incidence of open angle glaucoma in this group of patients was 5% and glaucoma was not felt to be of etiological significance in the development of this disorder.


The microangiography of epicerebral, transcerebral and cortical vessels is demonstrated by the differential injection of various radiopaque materials followed by projection x-ray microscopy. The capillary bed may be demonstrated more completely after staining with lead for alkaline phosphatase activity, and by this method more accurate differentiation of cortical arteries from cortical veins was obtained. The organization of these cortical vessels is described in relation to presumed functional implications. Examination of the neurons, in addition to the microvascular patterns, can be carried out by the additional lead staining for neuronal acid phosphatase activity.


Although the first and simplest surgical treatment of carotid-cavernous fistula has been carotid ligation, the overall cure rate is less than 50%. The case of a young man with severe deficit from...
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a carotid-cavernous fistula is presented and a technique for its intraluminal occlusion with a balloon catheter is described. The method illustrated is felt to be simple, yet effective, and to offer many advantages over pre-existing ones. After introduction of the balloon catheter from the cervical carotid artery its position and effectiveness are checked clinically and radiographically by inflation of the balloon with contrast material.

AB-199-71

Reptilase®-R is a purified thrombin-like enzyme obtained from the venom of the snake Bothrops atrox. The similarity to thrombin lends itself to study as a substitute for thrombin in various coagulation assay systems. Reptilase was shown to have the desirable properties of being more stable than thrombin and of not being inhibited by heparin and hirudin. The performance of the Reptilase time allows for rapid detection of samples with prolonged thrombin times due to heparin contamination. The Reptilase time is less prolonged than the thrombin time in the presence of fibrinogen/fibrin split products, and in patients with congenital dysfibrinogenemia with prolonged thrombin times, there is also prolongation of the Reptilase times. The Reptilase time may prove useful in replacing the thrombin test in patients treated with heparin because of a defibrination syndrome.

AB-200-71

Review of the data obtained during an 18-year follow-up of 3,263 San Francisco longshoremen who underwent multiphasic screening in 1951 was carried out to determine those factors predisposing to heart disease and stroke. Sedentary activities increased the incidence of heart disease but not that of stroke, suggesting that physical activity influences myocardial function to a greater degree than it influences the primary atherosclerotic process. Factors noted to increase stroke mortality were: diagnosed heart disease, elevated blood pressure and abnormal glucose metabolism. Factors increasing coronary mortality, in addition to sedentary jobs, were: pre-existing heart disease, elevated blood pressure, cigarette smoking and obesity.

*Authors' abstract.

AB-201-71

Utilizing the 133Xenon injection technique, cerebral blood flow was measured in ten patients with cerebrovascular disease and two normal individuals. Following administration of 0.6 to 1.2 mg Hydragrine (intramuscular) mean CBF was not changed significantly when compared to the baseline control values.

AB-202-71

A hypertensive pontine hemorrhage and two putaminal hemorrhages are studied via the use of microscopic serial sections. Multiple bleeding sites were noted in each hemorrhage and at each site a fibrin globe consisting of a ball hemorrhage with a central core of platelet material filling the gap in the artery was identified. The presumed primary site of bleeding was noted in both of the putaminal hemorrhages although none was found in the pontine lesion. Hypertensive lipohyalinosis was felt to be the predisposing vascular disease. The theory that hypertensive hemorrhage arises from aneurysms was not supported by this study.

AB-203-71

Transient cerebral ischemia of 30 minutes to two hours was produced in normothermic barbiturized cats by clamping the innominate and subclavian arteries and lowering the systemic blood pressure to under 100 mm Hg. Terminal depolarization of the cortical steady potential occurred after three to five minutes of ischemia. It was fully reversible after ischemia up to 1.5 hours. Cortical specific impedance increased from 267±10 to 661±1 ohm cm (means ± SD) during ischemia of 1.5 hours, i.e., a decrease of extracellular space from 21 to 9.7%. It was also reversible up to 1.5 hours of ischemia. Neuronal function was assessed by recording the EEG and the pyramidal response to electrical stimulation of the sensorimotor cortex. Suppression of the electrically evoked D wave of the pyramidal response coincided with the terminal depolarization of the cortex, and suppression of the synaptically evoked I wave with the initial positive shift in the steady potential. Recovery of the D
wave started before and recovery of the I wave and of the EEG after normalization of cortical impedance and steady potential. Failure of normalization of cortical impedance was an early and distinct criterion for the failure of neuronal recovery after transient ischemia.

AB-204-71

The effects of lowered perfusion pressure on the cerebral circulation, and on the lactate and acid-base parameter in cerebrospinal fluid (CSF), were studied in the light-anaesthetized dogs. The cerebral perfusion pressure was lowered by bleeding the animal at the controlled arterial \( P_{\text{PaO}_2} \). There was a progressive increase in cisternal CSF lactate with consequent decrease in CSF pH and bicarbonate when perfusion pressure was reduced even though cerebral blood flow was unchanged. It is concluded that cerebral autoregulation in response to reduced perfusion pressure appears to be a function of tissue lactic acidosis, signifying tissue hypoxia due to the lowering of local cortical blood flow.

AB-205-71

A device, the cerebral function monitor, provides a continuous record of the electrical activity of the brain occurring at frequencies from 2 to 15 Hz. It is relatively cheap, portable, and easy to use and interpret. The apparatus has proved of value in three circumstances: firstly, when the cerebral circulation is likely to be vulnerable during open heart surgery; secondly, as a measure of recovery or deterioration following brain damage or drug overdose; and thirdly, where information about more physiological changes in cerebral function is required, for instance when testing anesthetic and hypnotic drugs.

AB-206-71
ATSUMI T, MOTOMIYA T, ISOKANE N, SHIMAMOTO T: Treatment of Atherosclerosis Obliterans with Pyridinolcarbamate. Jap Heart J 12:335-346 (July) 1971*

One hundred and eighty patients with atherosclerosis obliterans were treated with pyridinolcarbamate for five to 225 weeks (mean 44.9 weeks).

1) Clinical symptoms and signs were improved by this treatment: intermittent claudication was improved in 50.9% of the total number of cases. Cyanosis disappeared in 37.9%. Paresthesia disappeared in 83.5%. Ulcers were healed in 84.0%. Pulse wave reappeared in plethysmogram in 44%. Crest time was shortened in 18% of the total number of cases.

2) During a treatment period of three years almost all of the cases with symptoms of intermittent claudication, cyanosis, paresthesia and finding of crest time that were improved had improved within 20 weeks.

Pain, ulcer and appearance of pulse waves in plethysmograms were also improved in more than half of all patients within 30 weeks; however, in a few cases, it took more than 30 weeks to cure and to improve these symptoms.

3) From the above results, it was concluded that pyridinolcarbamate treatment should be tried for 20 to 30 weeks as the first stage of the treatment and subsequently continue for one year even though clinical symptoms may not improve. It should also be tried for longer periods to prevent other complications resulting from atherosclerosis.

AB-207-71

Arteriovenous malformations within or adjacent to the brain stem produce unpredictable signs and symptoms mimicking other vascular diseases, tumors, and multiple sclerosis. Two cases with prominent ocular findings illustrate the ways in which these rare lesions present clinically and evoke local and distant neuro-ophthalmic changes.

AB-208-71
LOPES DE FARIA J, LOPES DE FARIA L: Predisposing Effect of Spontaneous Mesenchymal Intimal Thickenings of Rabbit Aorta to Early Lipid Deposition. Virchows Arch (Path Anat) 353:1-9, 1971 (Springer-Verlag, publisher)*

Ten rabbits received by gastric tube 0.3 to 0.8 g pure cholesterol every second day for four to eight weeks. Ten animals were used as control. Total serum cholesterol was determined weekly in experimental and control groups. The mean value of the total serum cholesterol in the experimental...
group was 482 ± 79.6 mg/100 ml, about 2.5 times more than the cholesterol value of the control group (206 ± 51.0 mg/100 ml).

Early and selective lipid deposition was present in spontaneous mesenchymal thickenings of all aortas of the animals receiving cholesterol. The deposition failed to be observed in the aortic intima without that thickening. The intimal thickening is a change of the arterial wall that predisposes to lipid deposition.

This observation supports the view that the proliferative changes seen in human atherosclerosis precede the lipid deposition and are a predisposing factor to this deposition.