Abstracts

AB-619-72
Long-Term Follow-Up of the Poststroke Patient—Moskowitz E (Division of Physical Medicine and Rehabilitation, Grasslands Hospital, Valhalla, New York 10595), Lightbody FEH, Freitag NS—Arch Phys Med Rehab 53:167-172 (Apr) 1972*

An analysis of 518 poststroke patients from a three-county area who were enrolled in a hemiplegia registry was conducted using the PULSES Profile to evaluate their function. There was no correlation between handedness and the side affected by the stroke. Diabetes occurred in 20% of the patients. Motor recovery occurred within the first six months and was unrelated to the rehabilitation program. The return of function was not always consistent with motor recovery. Function in both the upper and lower extremities was inversely proportional to the degree of spasticity. Contractures were positively correlated with spasticity in the arm and the leg. An ambulatory status was achieved by 85% of the patients with one-third requiring a brace. Of the stroke patients with a hemisensory loss, almost half were not ambulatory without any significant difference between those with either right or left hemiplegia. The hand-shoulder syndrome occurred in 5% of the patients. The incidence of postapoplectiform seizures increased with the survival rate of the patients.

AB-620-72
Effects of Treatment on Morbidity in Hypertension. III. Influence of Age, Diastolic Pressure, and Prior Cardiovascular Disease; Further Analysis of Side Effects—Veterans Administration Cooperative Study Group on Antihypertensive Agents (Dr. Edward D. Freis, Veterans Administration Hospital, 50 Irving Street, N.W., Washington, D. C. 20422)—Circulation 45:991-1004 (May) 1972*

Additional data are presented from the Veterans Administration Cooperative Study with respect to the 194 control and 186 treated male patients with initial diastolic blood pressures averaging 90 to 114 mm Hg. Attack rates and effectiveness of treatment were examined with respect to the following risk factors present at entry: (1) cardiovascular-renal (CVR) abnormalities, the prevalence of which was higher than in the general population of hypertensive patients; (2) diastolic blood pressure; and (3) age. Both attack rates and effectiveness of treatment increased directly with the number of these risk factors present at entry. Age and presence of CVR abnormalities at entry appeared to strongly influence subsequent attack rates, whereas entry level of blood pressure had a relatively smaller effect on attack rates. On the other hand, "effectiveness of treatment" appeared to be most influenced by the initial level of blood pressure. Patients with prerandomization diastolic blood pressure in the range of 90 to 104 mm Hg derived relatively little benefit from treatment unless they had CVR abnormalities at entry or were over 50 years of age. A longer period of follow-up would be needed to assess the value of treatment in the lower risk subgroups.

With respect to side effects the incidence of mild hypokalemia, hyperuricemia, and elevated fasting blood sugar was significantly higher in the treated group. These and other side effects should be weighed against the benefit to be expected from treating hypertensive patients at low risk.

AB-621-72
Experimental Spinal Cord Injury. Electrocardiographic Abnormalities and Fuchsinophilic Myocardial Degeneration—Greenhoot JH (Division of Neurological Surgery, University of California School of Medicine, San Diego, California), Shiel FO'M, Mauck HP Jr—Arch Neurol 26:524-529 (June) 1972*

Alterations of the electrocardiogram, blood pressure, and myocardial histological findings were produced in dogs subjected to cervical spinal cord injury. Enhanced sympathetic discharge is the primary event, occurring within seconds of injury, and is manifested by hypertension and tachycardia. Parasympathetic effects occur secondarily and are revealed by a variety of cardiac arrhythmias. Fuchsinophilic degeneration of myocardial cells is seen in spinal cord injured animals. This lesion is similar to that produced by experimental brain stimulation and seen clinically with intracranial hemorrhage. Clinical observations and these studies emphasize the need for early evaluation of the cardiovascular status in acute spinal cord injuries.
One hundred seventy-one estimations of arterial pH and Pco₂ were correlated with quantitative electroencephalographical findings during open heart surgery in 34 patients. Electroencephalograms could not be related to such fortuitous changes in the pH and Pco₂ during open heart surgery as might occur in normal activity of the brain or body. It is not possible to measure the pH of cortex in human studies, and data based on blood flowing from a peripheral artery may not accurately reflect changes in the brain. Also, there may be some mechanisms by which the brain is protected from wideswings of acid-base imbalance.

Two hundred fifty-seven recordings of arterial pressure and 191 recordings of the venous pressure were correlated with incidental, quantitative electroencephalographical findings during open heart surgery in 34 patients. A fall in mean arterial pressure to 50 mm Hg and below was invariably associated with electroencephalographic slowing. This was defined as the "critical" pressure below which the cerebral blood flow falls. EEG is a very sensitive index of impaired cerebral blood flow during open heart surgery.

The clinical response to a monamine oxidase inhibitor and a sympathomimetic amine or tyramine containing foodstuffs has been studied in four patients with idiopathic postural hypotension. Each was receiving fludrocortisone acetate therapy. One patient had substantial clinical improvement for over 26 months on the combination and another improved symptomatically for nine months before further neurological deterioration. One patient with additional chronic polymyositis had little change in symptoms. Another with milder manifestations of the syndrome had intolerable headaches with the therapy. Maintenance of blood volume was a necessary though not sufficient condition for symptomatic improvement with the regimen.

The effects of independent changes in arterial Pao₂, Pco₂, and pH on the impulse frequency of 35 single afferent fibers arising from aortic body chemoreceptors were studied in 29 cats anesthetized with sodium pentobarbital, paralyzed with gallamine triethiodide, and artificially ventilated. The rates of discharge of 16 fibers changed very little as Pao₂ was lowered from 500 to 100 mm Hg (Paco₂ and pH constant) and then increased.

*Authors' abstract.
sharp as PaO₂ was reduced further; the mean PaO₂ at which the rate of discharge increased noticeably in the 16 fibers was estimated to be 95 ± 12 mm Hg (± sd). There were wide variations in maximum and minimum discharge rates among individual fibers at comparable levels of arterial PO₂, PCO₂, and pH. The rates of discharge of each of five fibers over a wide range of PaO₂ were increased when PaCO₂ was raised at constant pH a. In contrast, a fall in arterial pH at constant PCO₂ did not increase and sometimes depressed the responses of aortic chemoreceptors to hypoxia. When arterial pH was decreased at constant arterial CO₂ and O₂ tensions, the impulse frequencies of seven fibers did not change, of three fibers decreased, and of one fiber increased slightly. These results demonstrate that the activity of aortic body chemoreceptors is increased both by a decrease in PaO₂ at constant PaCO₂ and pH a, and by an increase in PaO₂ at constant PaCO₂ and pH a. On the other hand, a fall in arterial pH at constant PaO₂ and PaCO₂ does not excite and may depress activity of these arterial chemoreceptors in the cat.

AB-627-72
Return of EEG Activity After Electrocerebral Silence: Two Case Reports—Green JB, Lauber A (Department of Neurology, Indiana University School of Medicine, Indianapolis, Indiana 46202)—J Neurol Neurosurg Psychiat 35:103-107 (Feb) 1972

Two cases, both children, are described, in which there was a return of the electroencephalogram after a period of electrocerebral silence. One child survived for six weeks. Electroencephalographic technique and instrumentation adequately excluded noncerebral potentials as a source of confusion in the second case. Hypothermia and drug overdosage, known to reversibly depress the electroencephalogram, were not present in either case. The return of EEG activity was associated with improvement in neurological status. It is concluded that the EEG should always be repeated after electrocerebral silence before the determination of cerebral death, and that the applicability of adult criteria of brain death to children is questionable.

AB-628-72
The Effects of Dextran Infusion, Glucose Infusion, and State of Hydration on Cerebral Toxicity of Arteriographic Contrast Media—Doust BD, Fischer HW (Department of Radiology, Wayne County General Hospital, Eloise, Michigan)—Radiology 103:607-609 (June) 1972

Previous studies suggest that premedication with low molecular weight dextran prior to angiography confers a measure of protection from the toxic effects of the administered contrast agent. In a series of animal experiments using contrast media injected into the carotid system, the effects of infusion of dextran and of variation in hematocrit and state of hydration were investigated. Change in end-diastolic blood pressure produced by the injection was used as the index of toxicity. No evidence of a protective effect from dextran infusion or from improved hydration of the animal could be demonstrated.

AB-629-72
Angiography and Cisternography in Acute Meningitis due to Hemophilus influenzae—James AE Jr (Assistant Professor of Radiology, Director, Radiology Research Laboratory, Johns Hopkins Medical Institutions, Baltimore, Maryland), Hodges FJ III, Jordan CE, Mathews EH, Heller RJ—Radiology 103:601-606 (June) 1972

Two cases of Hemophilus influenzae meningitis in infants are presented. In both cases, narrowing of vessels at the base of the brain and multiple small vessel occlusions of the middle and callosal systems were demonstrated at angiography, and acute communicating hydrocephalus was demonstrated by cisternography. Cisternography is a safe diagnostic technique that will demonstrate bulk movement of cerebrospinal fluid and changes associated with acute meningitis, thereby aiding in the selection of patients who may benefit from diversionary shunts.

AB-630-72
The Brain Scan in Sturge-Weber Syndrome—Kuhl DE, Bevilacqua JE, Mishkin MM, Sanders TP (Nuclear Medicine Section, Department of Radiology, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania)—Radiology 103:621-626 (June) 1972

Brain scans of 14 patients with Sturge-Weber syndrome showed characteristic abnormalities not related to intellectual development, calcification presence or site of nevus. The affected hemisphere's image is smaller, the overlying cap widened, and both more radioactive than the uninvolved side. In cerebral calcification regions, patients frequently displayed diffusely increased occipital uptake; some had discrete focal uptake. Hemisphere involvement and capillary alteration are deeper and more widespread than is usually indicated by either leptomeningeal lesions or cortical calcifications. The scan can localize major regions of hemisphere involvement but will not detect small lesions. Two case reports are offered.
ABSTRACTS

AB-631-72
A Simple Method of Removing Intra-Arterial Clots Formed During Catheterization—Jeffery RF (Department of Radiology, Hitchcock Clinic, Hanover, New Hampshire)—Radiology 103:573-575 (June) 1972

To prevent the formation of an embolizing platelet and fibrin clot during angiography, the author advocates that preparatory to catheter withdrawal the femoral artery below the puncture site be firmly compressed; that continuous suction be exerted as the catheter is slowly withdrawn, in an attempt to entrap the thrombus; and that the artery be allowed to bleed for a few seconds. He has used this method in 49 cases, recovering clot by massage in five and by suction in 16. Other precautionary measures include anticoagulation and use of antithrombogenic catheters.

AB-632-72

Pre- and postoperative pneumoencephalo-roulette tomography has been carried out in two cases of primary pontine haemorrhage with long survival. A pontine or cerebellar atrophy was revealed in case 1, in whom an intrapontine haematoma was removed. A markedly hollowed pons on the affected side has been demonstrated nearly five months after ventriculoatrial shunting in case 2.

AB-633-72
Contrasting Patterns of Memory Span Decrement in Ageing and Aphasia—Kinsbourne M (Division of Pediatric Neurology, Duke University Medical Center, Durham, North Carolina 27706)—J Neurol Neurosurg Psychiat 35:192-195 (Apr) 1972

As compared with young adult controls, elderly subjects matched for verbal ability showed only a minor deficit in mean auditory letter memory span but proportionately more dependence upon the occurrence of letter groupings prevalent in the written language. An aphasic group that also had a relatively mean letter span conversely made no detectable use at all of such groupings. These findings suggest that the aged tend if anything toward undue assimilation of information into preformed schemata, while aphasics accommodate to individual messages without evidence of such organization.

AB-634-72
Injury of the Basilar Artery Associated With Closed Head Trauma—Shaw C-M, Alvord EC Jr (Laboratory of Neuropathology, Department of Pathology, University of Washington Medical School, Seattle, Washington 98105)—J Neurol Neurosurg Psychiat 35:247-257 (Apr) 1972

The neuropathological findings at necropsy are described in three cases of basilar artery injuries and their consequences after head trauma and the mechanism of injuries is discussed. The first case was that of massive pontine infarct due to an occlusion of the basilar artery trapped in the fracture of the clivus, 13 days before death. The second case, also with a pontine infarct, survived for two and two-thirds months; the trauma was probably similar, but the presence of the basal skull fracture and the occlusion of the basilar artery can be surmised only in retrospect. The third case was one of delayed rupture of the basilar artery occurring three to four weeks after the injury, which caused aneurysmal formation in the left posterior cerebral artery.

AB-635-72
Insoluble Lipoproteins in the Pathogenesis of Experimentally Induced Atherosclerosis—Waters LL (Department of Pathology, Yale University School of Medicine, New Haven, Connecticut 06510)—Arch Path 93:525-529 (June) 1972

Embolization of the pulmonary arteries of rabbits with insoluble plasma lipoglobulins of human origin results in a prompt lipophagic, mononuclear, and sclerosing lesion at the involved arterial site. The lesions at certain stages reproduce many of the morphological features of experimentally induced atherosclerosis. The observations direct attention to denatured plasma lipoproteins rather than to platelets or to components of thrombus as a source of lipids in atherogenesis. A virtually "instant" model for experimental atherogenesis is provided.

AB-636-72

In 28 dogs with controlled ventilation and circulation, the passage of microspheres (MS) injected into the carotid in size ranges from 1 μ to 100 μ through the brain was observed. A cannula placed into a cortical vein provided recovery of
MS from pure cortical venous blood and a semicontinuous outflow measurement. In control animals MS up to 7μ passed freely through the brain; bigger MS were almost completely entrapped. In states of ischemic and hypoxemic hypoxia, as well as in prolonged reactive hyperperfusion caused by a previous hypoxic exposure, MS up to 76μ passed through the brain within two minutes after injection. Hypercapnia did not change the filter capacity. The presence in the dog's brain of arteriovenous connections much larger than capillaries, but not larger than 76μ, is postulated. These connections, closed in the normal brain, are opened by hypoxia.

AB-637-72
Cerebrospinal Fluid Cytology After Stroke—Sörenäs R (Department of Neurology, University Hospital, Lund, Sweden), Oxlund H, Müller R—Arch Neurol 26:489-501 (June) 1972*

Cerebrospinal fluid (CSF) samples obtained by consecutive lumbar puncture of 26 patients with presumed pale cerebral infarction, 66 with presumed hemorrhagic infarction, 16 with lobar hematoma, and 18 with cerebral infarction verified at autopsy were examined with a cytological method permitting a total and differential cell count. A transitory outflow of polymorphonuclear neutrophilic leukocytes (PNL) was found in 70% of the patients with hemorrhagic infarction and lobar hematoma, with a peak three to four days after onset. The strongest PNL reaction was recorded in CSF from patients with lobar hematoma. In 75% of patients with pale infarction, no PNL or only a few PNL were found. In the autopsy group the PNL reaction in the brain as well as in the CSF was stronger in patients with hemorrhagic infarcts than in those with pale infarcts.

AB-638-72
Systemic Fat Embolism. A Diagnostic Profile in 24 Patients—Thomas JE (Department of Neurology, Mayo Clinic, Rochester, Minnesota 55901), Ayyar DR—Arch Neurol 26:517-523 (June) 1972*

In a series of 24 patients with systemic fat embolism, clinical signs commenced within 12 hours of the trauma in one-third and within 24 hours in two-thirds of the cases. Impairment of consciousness was the most common finding. The neurological manifestations usually were bilateral and symmetric, being chiefly pyramidal signs, epileptic seizures, and decerebrate rigidity. Thirty percent of the patients also had focal neurological deficit. Sudden onset of fever, tachycardia, and tachypnea was common, whereas roentgenographical evidence of pulmonary fat embolism was noted in only one of every three patients. Petechial hemorrhages, signs of retinal fat embolism, lipuria, and a major decrease in hemoglobin level were found in half the patients. Seven of the 24 patients died, all within 96 hours and all in deep coma. Survival for longer than four days carried a good prognosis. Treatment with massive doses of steroids may be useful.

AB-639-72
Subdural Hematoma During Long-Term Hemodialysis—Bechar M, Lokie JPWF, van der Hem GK, Beks JW, Penning L (Neuroradiological Department, University Hospital, Groningen, The Netherlands)—Arch Neurol 26:513-516 (June) 1972*

Two examples of subdural hematoma complicating chronic intermittent dialysis are presented. The administration of anticoagulants seemed to play a significant role, but other factors such as biochemical changes caused by hemodialysis and renal disease may have contributed. Prolonged headache and the appearance of unilateral neurological signs were significant early warnings and helped to differentiate the presence of a hematoma from the more common neurological changes that sometimes accompany hemodialysis. Carotid angiography definitively established the diagnosis.

AB-640-72
Decreased Carotid Flow With Ascending Aortic Cannulation—Magilligan DJ Jr, Eastland MW, Lell WA, DeWeese JA, Mahoney EB (Department of Surgery, University of Rochester School of Medicine, Rochester, New York)—Circulation (Suppl 1) 45 and 46:130-133 (May) 1972*

Poor perfusion of the aortic arch vessels was suspected of causing unexplained neurological complications after cardiopulmonary bypass with aortic cannulation. Blood flow in the canine carotid artery was measured by electromagnetic flow meter when the aortic cannula was in various positions and compared to flows during perfusion via the femoral artery. With constant pump flow, carotid flow was greatest with femoral artery perfusion. When the aortic cannula was positioned parallel and proximal to the brachiocephalic artery and close to the lesser curve of the arch, carotid flow was significantly diminished. Pump flow was then varied from 1,500 to 2,500 ml/min. With femoral perfusion, carotid artery pressure and flow had an increasing linear relationship to increasing flow rates. With aortic perfusion, carotid artery pressure and flow increased to a point after which both declined and were decidedly diminished at a pump flow of 2,500 ml/min. The Coanda effect or tendency of a jet to adhere to a boundary wall offers a possible explanation for poor carotid flow with aortic cannulation.
The involvement of all five offspring of consanguinous and hypertriglyceridemic parents (first cousins) is reported.

Three sons and two daughters of this family have increased triglycerides, normal cholesterol, and normal or slightly increased phospholipids. Mother and elder daughter have abnormal glucose tolerance. Father and mother are hypertensive; father had recent development of myocardial infarction and gout. The two elder sons had myocardial infarction and repeated bouts of angina. All three male offspring of this family have gout and are being treated with xanthinolinosidase inhibitor (allopurinol). Planar xanthoma was present in one son with myocardial infarction. No chylomicronemia was noted. The response to diet and Atromid-S was satisfactory.

Cerebral blood flow (CBF) was measured during 28 carotid endarterectomies in 25 patients, by injection of $^{185}$Xe into the exposed internal carotid artery (ICA). Twenty-three patients had episodic cerebral or retinal ischemia and five had neurological deficits before operation. Initial CBF values were variable. Increases of Paco2 caused neurological deficits before operation. Initial CBF increased after injection of 18S Xe into the exposed internal carotid artery (ICA). Twenty-three patients had episodic cerebral or retinal ischemia and five had neurological deficits before operation. Initial CBF values were variable. Increases of Paco2 caused neurological deficits before operation. Initial CBF increased after injection of 18S Xe into the exposed internal carotid artery (ICA).

Cerebral blood flow and metabolism in supratentorial structures was reduced to about one-fifth of normal values. The highest flow values, but still subnormal, were recorded in the subacute case which survived for only one month.

Autopsy in the two fatal cases confirmed a global, almost complete loss of the neurons of the telencephalic gray matter (the "pallium"). The brain stem structures, including the thalamus, the hypothalamus and the reticular formation, were fairly well preserved.

Complete apallic syndromes differ from incomplete similar syndromes which show remnants of telencephalic functions (severe dementia, global agnosia, etc.), including an abnormal EEG. They also differ from cases of "brain death" (total brain infarction) which lack all brain reflexes (including brain stem functions, notably respiration) and which never become chronic.

The term "coma" should not be used in complete or incomplete apallic syndromes, since such cases are arousable, i.e., react behaviorally, often quite promptly, with primitive motor reaction upon sensory stimulation. The term "coma" might be reserved for cases which cannot be aroused (behaviorally, or in the EEG) due to a permanent or temporary dysfunction of the reticular system of the brain stem.

Complete or incomplete apallic syndromes also differ from the "pure" akinetic mutism ("coma vigilé") which is accompanied by a normal EEG and only moderately reduced cerebral blood flow. Here lesions in the lower brain stem are often found which mainly affect efferent pathways leading to a "loss of behavior" which does not necessarily imply a "loss of consciousness."
Carotid sinus baroceptor function in the spontaneously hypertensive rat (SHR) was studied in isolating and perfusing the sinuses at various perfusion pressures and recording the systemic arterial pressure responses. Under steady-state conditions for systemic arterial and carotid sinus perfusion pressures, the threshold pressure to elicit a hypotensive response was significantly higher in SHR (120 to 140 mm Hg) than in normotensive controls (60 to 100 mm Hg). Higher perfusion pressures were required to elicit maximum hypotensive responses in SHR (200 to 240 mm Hg in SHR; 140 to 160 mm Hg in normotensive controls). Baroceptor sensitivity was also evaluated by stepwise increases of the sinus pressure. In normotensive controls, blood pressure responses to steps of 20 mm Hg were greater at the basal perfusion pressure of 100 mm Hg than at 60 or 160 mm Hg. In the SHR, baroceptor responsiveness to equivalent steps was minimal at 100 mm Hg basal perfusion pressure, but it increased remarkably at 160 mm Hg. Electrophysiological studies showed that these differences were due mostly to the altered function of the carotid sinus baroceptors. It was concluded that baroceptor sensitivity (both transient and steady-state) in SHR is shifted toward higher pressure levels. Possible mechanisms of these functional baroceptor differences are discussed.

Reperfusion for Early Complications of Arterial Surgery—Sproul G (Mercy Hospital and Medical Center, San Diego, California 92103), Pinto JM, Trummer MJ, Stevens DM—*Arch Surg* 104:814-816 (June) 1972*

Early complications directly related to the vascular procedure and which required urgent reoperation occurred in 8% of 628 patients undergoing operations on the arteries of the neck, extremities, and abdomen. The indications for reoperation in this group of 50 patients were recurrent vascular occlusion (29), hemorrhage (13), and bowel ischemia (8). The mortality for those patients not requiring reoperation was 7.5%, but rose to 32% for those patients who did require reoperation. While the risk attending reoperation for abdominal bleeding or bowel ischemia is high (71% and 75%, respectively), these complications are fatal if untreated. Reperfusion for occlusion of arteries in the leg carried a low risk (5%), and successful results were obtained 68% of the time. Mortality in neck and upper extremity operations (not reoperated) was 6.7%.


The most frequent localization of occlusion processes in the cerebral circulation is the carotid bifurcation (56%) followed by the stenosis of the terminal portions of the three great supra-aortic main trunks (25%). In most cases there are combined occlusions. From the etiological point of view, arteriosclerosis is at the top with 83%. In the first and second stages of cerebrovascular failure, restoration of the vascular system is a true prophylaxis against apoplexy. The same is true of stage IV with improved collateral circulation. A curative effect can be obtained only in stage III under two conditions (preservation of consciousness and six-hour limit). In occlusive processes in the region of the carotid bifurcation the open enucleation operation is the reconstruction method of choice. In the region of the supra-aortic branches the bypass method comes into its own. Terminal stenoses of the vertebral arteries are treated by open enucleation from a supraclavicular approach.
A prospective ten-year follow-up study at the Cardio-Vascular Clinic, Sydney Hospital, of patients under the age of 60 years with severe hypertension, diastolic blood pressure of 110 mm Hg, is reported. The ten-year mortality rate was 51%. The adverse prognostic significance of the male sex, high diastolic blood pressure, advanced retinopathy, impaired renal function, gross cardiac enlargement, marked left ventricular hypertrophy and the presence of cardiac and cerebral complications was confirmed. Age of patient, duration of hypertension, etiological diagnosis, positive family history and the presence of non-specific symptoms such as headache were of little prognostic significance.

The five-year mortality pattern in two consecutive groups of 100 patients first seen in 1955 and 1960 was compared. There has been improvement in the overall prognosis of hypertensive patients during the past decade. There appears to have been a reduction in the prevalence of accelerated hypertension as well as prolonged survival of patients with the acute form of the disease. A marked drop in mortality due to cerebrovascular accidents has been observed. The number of deaths due to myocardial infarction seems to be increasing in spite of apparently better hypertensive treatment.

AB-649-72
The Relationship Between Serum Lipid Abnormalities and Other Major Risk Factors in Myocardial Infarction—Mundy GR (Department of Medicine, University of Tasmania, Hobart, Tasmania, 7000, Australia), Cutforth RH—*Aust N Z J Med* 1:8-12 (Feb) 1972*

The association between some of the major risk factors in coronary heart disease and abnormal serum lipoprotein patterns was explored in 85 patients who had suffered a myocardial infarction. It was found that hyperlipoproteinemia was associated significantly with age less than 50 and with a positive family history of premature coronary heart disease. There was no significant association in this group of patients between hyperlipoproteinemia and sex, obesity, smoking, diabetes mellitus, level of activity or hypertension.

AB-650-72
Epidemiological Studies of Hypertensive Disease in Singapore—Ooi BS (Department of Medicine, Medical Unit II, University of Singapore, Sepoy Lines, Singapore 3), Tan LKT, Toh CCS, Kiloo OT—*Med J Aust* 1:680-682 (Apr 1) 1972*

Analysis of a hospital population of hypertensive patients in Singapore revealed important ethnic group differences in the distribution of the complications of hypertension. Indian males showed a higher prevalence of coronary heart disease, while Chinese males showed a higher prevalence of cerebral hemorrhage. Cardiac failure, renal insufficiency and cerebral thrombosis showed no differential prevalence among the ethnic groups.

AB-651-72
Visualization of Arterial and Arterial Graft Patency by Intravenous Radionuclide Angiography—Meindok H (Department of Nuclear Medicine, Toronto Western Hospital, Toronto 2B, Ontario, Canada) —*Canad Med Assoc J* 106:1180-1182 (June 10) 1972*

A method of visualizing patency of arteries and arterial grafts by means of intravenous W51Tc pertechnetate using a Nuclear Chicago Pho/Gamma HP camera is described. Polaroid pictures showing normal arteries in the upper and lower limbs, as well as partial and complete occlusion of arteries and the state of arterial bypass grafts in pre-operative and postoperative patients are compared with conventional arteriograms. The advantages and limitations of this method are discussed.

AB-652-72
Atherosclerosis in Wild Turkeys: Morphologic Features of Lesions and Lipids in Serum and Aorta—Manning PJ, Middleton CC (Sinclair Comparative Medicine Research Farm and the Department of Veterinary Pathology, University of Missouri, Columbia, Missouri 65201)—*Amer J Vet Res* 33:1237-1246 (June) 1972*

The histopathological features of naturally occurring aortic atherosclerosis, as well as cholesterol and triglyceride concentrations of serum and aorta, were described in captivity-reared wild turkeys 48 to 57 months of age. Although serum concentrations of these lipids were relatively small, all turkeys had plaques in the abdominal aorta with a mean atherosclerosis index of 20%. Triglyceride and cholesterol concentrations were increased to approximately the same extent in fatty streaks and atheromas, with the concentration of total cholesterol being about three times greater than that of triglycerides. Thoracic aortas of free-living wild turkeys had significantly greater concentrations of triglyceride even though the intimal surface did not stain with oil red O. Microscopically the lipid was in the central part of the tunica media.

When compared with data obtained from studies of experimental atherogenesis in various birds, including turkeys, the serum lipid concentrations in the present study were quite low, and...
yet many of the atheromas were of the advanced type. This fact indicates that increased serum lipids enhance the onset and aggravate, but are not necessary for the development of, atherosclerosis in turkeys.

**AB-653-72**

**Intracranial Pressure Responses to Alterations in Arterial Carbon Dioxide Pressure in Patients With Head Injuries—Paul RL** (Division of Neurosurgery, University of Maryland School of Medicine, Baltimore, Maryland 21201), Polanco O, Turney SZ, McAslan TC, Cowley RA—/J Neurosurg 36:714-720 (June) 1972*

Cerebral vasomotor responses to alterations in arterial carbon dioxide (PaCO2), as manifested by intraventricular pressure changes, were studied in a group of patients with head injuries. These patients could be classified into three types based on various degrees of responsiveness thought to reflect the integrity of their cerebral vasomotor reactivity.

**AB-654-72**

**Lipid Depletion in Atheromatous Coronary Arteries in Rhesus Monkeys After Regression Diets—Armstrong ML** (Department of Internal Medicine, University Hospitals, Iowa City, Iowa 52240), Megan MB—/Circulation Research 30:675-680 (June) 1972*

Lipids were measured in the coronary arteries of monkeys on an atherogenic diet and in the arteries of matched monkeys on the atherogenic diet followed by regression diets. Cholesterol content was 51 mg/gm dry weight in the arteries of monkeys with atheromatosis; after 40 months on the regression diets it was 18 mg/gm. Cholesterol ester was 69% lower and free cholesterol 53% lower after the regression diets. Decreases in triglycerides and phospholipids were not significant. The cholesterol content of the arteries of two monkeys autopsied after 20 months on the regression diets was close to the mean value after 40 months. The data show that cholesterol in both its free form and its ester form is depleted from experimentally induced coronary atheromatosis by dietary regression regimens. The data also suggest that most of the cholesterol depletion occurs during the first half of regression; the susceptibility of the residual excess arterial cholesterol to mobilization from the vessel wall by dietary means is questionable.

**AB-655-72**

**The Localization of Lesions in the Orbital Apex and Cavernous Sinus by Frontal Venography—Lloyd GAS** (X-ray Department, Moorfields Eye Hospital, City Road, London, E.C.1, England)—Brit J Radiol 45:405-414 (June) 1972*

Twenty-nine patients with a clinically suspected lesion in the orbital apex, superior orbital fissure and cavernous sinus have been examined by injection of a contrast medium into the frontal vein. Adequate contrast filling of the veins at the apex of the orbit and of the cavernous and inferior petrosal sinuses may be obtained by this method and these structures may be visualized satisfactorily provided second order subtractions are used routinely. A venous abnormality was present in 16 (55%) of those examined. Venous obstructions have been shown at the orbital apex and superior orbital fissure due to space-occupying lesions, both inflammatory and neoplastic. Filling defects and displacements of the cavernous sinus and inferior petrosal sinuses have been demonstrated in pituitary enlargements and intracavernous aneurysms. A single example of an optic nerve glioma causing a filling defect in the roof of the cavernous sinus is also recorded.

**AB-656-72**

**A Purified Procoagulant Enzyme from the Venom of the Eastern Diamondback Rattlesnake (Crotalus adamanteus): In Vivo and In Vitro Studies—Damus FS, Markland FS Jr** (Department of Biological Chemistry, University of California School of Medicine, Los Angeles, California 90024), Davidson TM, Shanley JD—/J Lab Clin Med 79:906-923 (June) 1972*

A procoagulant enzyme in the venom of the eastern diamondback rattlesnake, *Crotalus adamanteus*, has been isolated and purified. The enzyme acts directly on purified fibrinogen or fibrinogen in plasma, forming a friable fibrin clot. The enzyme does not activate factors of the extrinsic system, nor does it activate factor XIII. It also does not aggregate platelets and is not inhibited by heparin. Incubation with plasma produces insignificant changes in all coagulation factors except fibrinogen. The enzyme does not activate components of the fibrinolytic system, but is itself fibrinolytic at extremely high concentration. Infusion into dogs produces well tolerated hypofibrinogenemia lasting up to eight hours. Postinfusion, intense fibrinolysis is observed with high titers of nonclottable fibrinogen derivatives in the serum, some with an electrophoretic mobility similar to native fibrinogen. Following infusion, declines in factors II, V, and VIII were noted by one stage assays, but may be artifactual due to high levels of fibrinogen derivatives in the test plasmas.
**ABSTRACTS**

**AB-657-72**

*Lipoprotein Synthesis in Chickens Fed Cholesterol*—Kruski AW, Narayan KA (Nutrition Division, Food Laboratory, U.S. Army Natick Laboratories, Natick, Massachusetts 01760)—*Atherosclerosis* 15:141-145 (Mar-Apr) 1972*

L-[14C] Leucine was used to investigate the synthesis of serum lipoproteins in normal and cholesterol-fed chickens. No radioactivity was present in the fasting serum VLDL fraction from normal birds while a substantial amount of radioactivity remained in the same fraction from cholesterol-fed animals, even four hours after the injection of label. The total incorporation of the label into LDL, HDL and serum proteins was not influenced by the inclusion of cholesterol in the diet. Almost no activity was found in the VLDL fraction of normal unfasted chickens during a two hour period after the injection of label, whereas a steadily increasing amount of radioactivity was observed during the same time interval in the cholesterol-fed birds. As one possible explanation, it was proposed that the large increase in the VLDL fraction observed in the cholesterol-fed chickens as compared to the normal birds was due to a decreased rate of removal of this lipoprotein from circulation.

**AB-658-72**

*Platelet Aggregates in Intramyocardial Vessels of Patients Dying Suddenly and Unexpectedly of Coronary Artery Disease*—Haerem JW (Ullevål Hospital, Department of Pathology, University of Oslo, Oslo, Norway)—*Atherosclerosis* 15:199-213 (Mar-Apr) 1972*

The present study was carried out in order to explore if platelet aggregates in the intramyocardial vessels of man could play a role in the pathogenesis of sudden coronary death, especially in patients with no major lesion in the epicardial arteries. The vessels of the conduction system were of particular interest.

The intramyocardial vessels of 54 patients were examined by microscopical screening of standard myocardial sections. The sinus- and atrioventricular nodes, the bundle of His, and the bundle branches were included in the sections. Twenty-seven patients died suddenly and unexpectedly of coronary artery disease. Sixteen patients had chronic coronary disease, but did not have coronary artery disease. Eleven patients died without known coronary disease.

Among patients who had no acute major lesion in the epicardial arteries, those who died suddenly of coronary disease had the highest number of intramyocardial arteries with platelet aggregates.

**AB-659-72**

*Prolonged Control of Increased Intracranial Pressure With Glycerin*—Newkirk TA, Tourtellotte WW (Department of Neurology, UCLA School of Medicine, Los Angeles, California 90024), Reinglass JL—*Arch Neurol* 27:95-96 (July) 1972*

Glycerin, an oral osmotic agent, causes rapid dehydration of brain without hemolysis, overshoot rehydration of the central nervous system, and electrolyte disturbance or immunosuppression. It can be used effectively for prolonged periods in the face of adequate fluid and electrolyte supplementation. There is no toxicity associated with oral administration and only negligible amounts of glycerin pass the blood-brain barrier. Nausea and vomiting occur with large undiluted doses.

**AB-660-72**

*The Influence of Sympathetic Nervous Activity on Cerebral Blood Flow*—Harper AM (Wellcome Surgical Research Institute, Garscube Estate, Bearsden Road, Glasgow, Scotland), Deshmukh VD, Rowan JO, Jennett WB—*Arch Neurol* 27:1-6 (July) 1972*

The effect on the cerebral blood flow (CBF) of stimulation of the cervical sympathetic nerve trunk and of intracarotid infusion of levarterenol was explored in anesthetized baboons at varying levels of arterial carbon dioxide pressure. Sympathetic stimulation reduced CBF, and this reduction was more pronounced during hypercapnia; levarterenol reduced CBF by 17% during hypercapnia. On morphological grounds and from physiological data it is argued that there is a dual control of the cerebral circulation—the extraparenchymal vessels being influenced by the sympathetic nervous system, while the intraparenchymal vessels are under local intrinsic metabolic regulation. The pial vessels are possibly influenced by both systems.

**AB-661-72**

*Hemodynamic and Metabolic Concomitants of Brain Swelling and Cerebral Edema due to Experimental Cerebral Infarction*—Teraura T, Mayer JS (Department of Neurology, Baylor College of Medicine, Texas Medical Center, Houston, Texas
Severe cerebral ischemia was produced in 25 baboons by clamping the carotid and vertebral arteries bilaterally for ten minutes. Cerebral hemodynamics and metabolism were monitored throughout. Cerebral anoxia was less severe in animals in which a marked pressor response occurred due to ischemia of the vasomotor center, and a reversible type of brain swelling was usual. In those with more severe ischemic anoxia, progressive cerebral edema was a pathological entity. Evidence is presented that cerebral edema was caused by loss of autoregulation of cerebral blood flow (CBF) concomitant with hyperemia and an increase of water and chloride content of brain tissue. Cerebral edema began when CBF was reduced during occlusion and progressed for several hours after termination of occlusion. Evidence is adduced that uncoupling of oxidative phosphorylation may be an important concomitant of cerebral edema.

ABSTRACTS

AB-662-72
Circulatory Effects of Moderately and Severely Increased Intracranial Pressure in the Dog—Gonzalez NC (Department of Physiology, University of Kansas Medical Center, Kansas City, Kansas 66103), Overman J, Maxwell JA—J Neurosurg 36:721-727 (June) 1972*

Anesthetized dogs were subjected to elevated intracranial pressure (ICP) of 60 and 100 mm Hg. At 60 mm Hg, decreases in heart rate and arterial blood pressure were observed associated with an increase in femoral blood flow that suggested vasodilation in the somatic areas. Cardiac output showed little change. Subsequent elevation of ICP to 100 mm Hg was followed by an increase in arterial blood pressure; cardiac output increased, and femoral flow increased still further. Since resistance to flow did not change, the hypertension was thought to be due to an increase in flow rather than peripheral resistance. An increase in heart rate was associated with the elevation in cardiac output; the fact that femoral blood flow increased proportionately more than cardiac output suggested a redistribution of blood flow. The changes in peripheral blood flow and in cardiac output were associated with a decrease in the arteriovenous oxygen (A-V O2) difference. No signs of tissue hypoxia were observed; specifically there was no significant change in the lactate-to-pyruvate ratio; the changes in A-V O2 difference were correlated with changes in flow and the product of the two variables, namely, oxygen consumption, remained unchanged. The data show that experimental elevation of ICP restricted to moderate levels is followed by hemodynamic changes suggesting peripheral vasodilation, and that when an increase in blood pressure then occurs, it is due to an increase in blood flow despite the decrease in peripheral resistance.

AB-663-72

Intermittent occlusion of the descending aorta just below the origin of the brachiocephalic vessels by a preformed balloon passed via the femoral artery is capable of significantly increasing the pressure and flow in the common carotid artery. Regional cerebral blood flow determination by the krypton-85 washout technique measured maximum increases of over 40% of the controls, which could easily be achieved and maintained. This technique apparently takes advantage of the finite delay in autoregulatory response to the increased arterial pressure before the onset of maximal autoregulation. Dogs were "pumped" in this way for up to 18 hours and survived in good health. Principal problems with this technique were the development of cerebral edema in the presence of diffuse established cerebral anoxia, and a shock-like cardiovascular response if the intermittent aortic occlusion was discontinued too abruptly. The clinical application of this technique to cerebral ischemia secondary to postoperative vasospasm may not require the extremes of hyperperfusion used in these experiments.

AB-664-72
Effects of Experimental Ischemia on Electrolytes of Cortical Cerebrospinal Fluid and on Brain Water—West CR (Neurosurgery, Roswell Park Memorial Institute, Buffalo, New York 14203), Matsen FA III—J Neurosurg 36:687-699 (June) 1972*

A procedure for perfusion over the cortical surfaces of the cerebral hemispheres of monkeys (Macaca mulatta) was used in combination with a procedure for producing sudden, temporary circulatory arrest in one hemisphere while the carotid circulation to the other hemisphere remained intact. The underlying disturbance in brain metabolism subsequent to circulatory arrest for 60 minutes was reflected in part by a decrease in the concentration of sodium and an elevation in the concentration of potassium in the cortical cerebrospinal fluid (CSF) on the ischemic side. The changes occurred at or within 30 minutes of the onset of circulatory arrest. The concentration...
of chloride in the cortical CSF on the ischemic side did not show significant differences from the control values. The ischemic brain exhibited as much as 18% swelling of cortical gray matter and 16% swelling of subcortical white matter at five hours after reestablishment of the carotid circulation. Vascular injury pursuant to ischemia was reflected in a significantly increased permeability to $[^{3}H]$-albumin entering the cortical CSF from the cerebral blood vessels. It is suggested that the CSF and vascular water are the sources of increased brain water.

AB-665-72
 Alteration of Platelet Adhesion to Glass in Vascular Disorders and Certain Other Diseases—Mason RG (Department of Pathology, University of North Carolina, Chapel Hill, North Carolina 27514), Summerlin DC—Amer J Clin Path 57:611-617 (May) 1972*

The adhesion of platelets to glass has been quantitated in control subjects and in patients with vascular disease, diabetes mellitus, uremia, disorders of the prostate gland, or congenital deficiency of certain blood coagulation factors. Platelet adhesion was quantitated by means of a simple in vitro test which permits differentiation of adhesion from aggregation. Platelet adhesion was elevated above control values in patients with vascular diseases who were not taking anticoagulants. Decreased platelet adhesion occurred in patients with uremia and in four of five patients with disorders of the prostate gland. Marked variation in platelet adhesion values was found in diabetic patients and in patients with vascular diseases who were taking anticoagulants. Patients deficient in coagulation factors V, VIII, IX, X, or XII had normal platelet adhesion values.

AB-666-72
 Arterial Thrombosis Induced by Hypertension and Fatty Acid Mobilization—Still WJS (Department of Pathology, Medical College of Virginia, Richmond, Virginia 23219), Dennison S—Arch Path 94:23-28 (July) 1972*

Arterial microthrombi were induced in hypertensive rats by raising their endogenous-fatty acid levels by the administration of corticotropin injections (ACTH). It is postulated that such microthrombi may form in human arteries under similar circumstances.

AB-667-72
 The Value of the Autogenous Dermal Graft for Carotid Artery Protection—Curutchet HP, Terz JJ, Lawrence W Jr (Division of Surgical Oncology, Health Science Division, Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia)—Surgery 71:876-880 (June) 1972

Following neck dissection and oropharyngeal resection for cancer, carotid artery rupture usually follows a major wound complication (necrosis of skin flaps, salivary fistula, infection) which is more common following a full course of preoperative irradiation. In 73 patients over a 40-month period autogenous dermal grafts were used to cover and protect the carotid artery. A similar group of 128 patients did not receive grafts. Thirty-seven percent of the latter group required subsequent carotid ligation, whereas dermal graft vessels that became exposed had a lower incidence of carotid ligation (20%). In those patients who have factors predisposing to wound breakdown after head and neck surgery for cancer, dermal graft carotid artery coverage is advantageous.

AB-668-72
 Detection of Microemboli During Cardiopulmonary Bypass—Lichti EL, Simmons EM Jr, Almond CA (University of Missouri School of Medicine, Department of Surgery, Columbia, Missouri)—Surg Gynec Obstet 134:977-980 (June) 1972

Particulate matter, such as microemboli, flowing in an intact vessel produce a high-pitched clicking sound in the Doppler flowmeter when the sensing probe is placed over the vessel. By monitoring over the superficial temporal artery during cardiopulmonary bypass surgery, microbubbles of air could be correlated directly with the PaO$_2$ of the oxygenated blood. Controlling the PaO$_2$ of the oxygenated blood reduced the number of microemboli and thereby reduced the incidence of neurological deficit in patients undergoing open-heart procedures.

AB-669-72
 Aneurysm of a Saphenous Vein Graft to the Common Carotid Artery—Carrasquilla C (V. A. Hospital, Allen Park, Michigan 48101), Weaver AW—Vasc Surg 6:66-68 (Mar-Apr) 1972

A 22-year-old veteran had the right common carotid artery repaired using a saphenous vein graft following shrapnel wounds of the neck. Twenty-one months following the original surgery he was re-admitted with a three-month history of progressive swelling in the right neck. A pulsatile mass without bruit was noted and angiography revealed a fusiform dilatation in the region of the previous injury. At surgical exploration aneurysmal dilatation of the saphenous vein graft was replaced with a dacron graft. Review of the literature indicated aneurysmal dilatation of vein grafts to be an unusual complication following arterial repair.

*Authors' abstract.
It is suggested that these changes play a role in the occurrence of thrombosis. These results would seem to indicate that coagulation and fibrinolytic analysis should be made in patients with retinal occlusion. The acidotic changes developed slowly and progressively and were explained only partially by rise in lactic and pyruvic acid concentrations in the CSF. Systemic acid-base balance was unaltered. Acid-base changes occur selectively in the CSF. The selective CSF acidosis can explain the occurrence of systemic respiratory alkalosis and altered consciousness seen in association with subarachnoid hemorrhage.

Regional Cerebral Blood Flow Measured by Intracarotid Injection of Hydrogen. Comparison of Regional Vasomotor Capacitance from Cerebral Infarction Versus Compression—Meyer JS (Department of Neurology, Baylor College of Medicine, Baylor-Methodist Center for Cerebrovascular Research, Houston, Texas 77025), Fukuuchi Y, Kanda T, Shimazu K, Hashi K—Neurology 22: 571-584 (June) 1972

Regional cerebral blood flow (rCBF) was measured with chronically implanted hydrogen electrodes in the territory of the anterior cerebral artery, the middle cerebral artery and the bordering zone between these two areas. Following occlusion of the MCA, rCBF was reduced in the ischemic zone. In most of the cases collateral circulation and rCBF in the bordering zones were increased. Five percent CO₂ inhalation increased rCBF in all electrodes except two (8%) which were located in zones of infarction or edema (intracerebral steal). Conversely, hyperventilation reduced rCBF except for an increase of flow shown by 20% of the electrodes placed in the infarcted areas. Loss of vasomotor capacitance to CO₂ during 5% CO₂ inhalation was noted in one-half the electrodes in brain compressed by an induced mass. Regional CBF could be increased if brain edema was reduced by mannitol or 10% glycerol. Inhalation of 5% CO₂ following the hyperosmolar agents increased rCBF in the area with retained vasomotor capacitance, but reduced rCBF in areas of impaired vasomotor capacitance. Intracerebral steal or squeeze induced by 5% CO₂ is rare in association with cerebral infarction and occurs only in areas of massive infarction and edema. Hyperosmolar agents as well as cerebral vasodilator agents may be effective therapy in cases with massive infarction.

Acid-Bone Balance in Hemorrhagic Cerebrospinal Fluid—Shannon DC (Pulmonary Unit, Massachusetts General Hospital, Boston, Massachusetts 02114), Shore N, Kazemi H—Neurology 22: 585-589 (June) 1972

Intercisternal injection of red blood cells produced metabolic acidosis in the CSF of dogs. The acidotic changes developed slowly and progressively and were explained only partially by rise in lactic and pyruvic acid concentrations in the CSF. Systemic acid-base balance was unaltered. Acid-base changes occur selectively in the CSF. The selective CSF acidosis can explain the occurrence of systemic respiratory alkalosis and altered consciousness seen in association with subarachnoid hemorrhage.

Cerebral Infarction. Clinical and Angiographical Correlations—Alten M (Chief, Neurology Service, V. A. Hospital, Minneapolis, Minnesota 55417), Kieffer S, Resch J, Ansari K—Neurology 22: 590-602 (June) 1972

Sixty patients with the clinical diagnosis of cerebral infarction had all brachiocephalic vessels visualized angiographically and the percentage of stenosis was computed when present. The greatest agreement between clinical and angiographical findings occurred in carotid artery occlusion (49%). Verteobasilar infarction gave the lowest percent of agreement (24%). Angiographical confirmation of a clinical localization did not always reveal a severely stenosed vessel. Vessels confirmed to be stenosed were at times mildly involved but were relatively more stenosed than any of the other
AB-677-72  
Cerebral Angiographic Study on C.V.D. in Japan—Mihara H—Angiology 23:228-239 (Apr) 1972

Cerebral angiography (four-vessel study) was performed in 1,107 patients with central venous system vascular lesions in Japan with a complication rate of 2.8%. About 50% of the patients had cerebral arteriosclerosis only. The authors note a higher percentage of cases with hemorrhagic diseases but fewer occlusive diseases when their results were compared to those of other countries.

ABSTRACTS

cerebral vessels for that patient. Left hemispheric lesions were more commonly confirmed than right, which may have been due to earlier angiographical examination in the left hemispheric lesion since these symptomatic patients tended to seek aid earlier. The authors concluded that the angiogram showed limited correlation with clinically deduced sites of vascular stenosis or occlusion. Angiographically demonstrated stenosis or occlusion in a high proportion of cases had no clinical significance.

AB-675-72  

A case is presented of a patient who developed a transient inability to read in the left visual field following subarachnoid hemorrhage. Vertebral angiography revealed an arteriovenous malformation involving the medial aspect of the anterior inferior left occipital lobe and adjacent cingulate area. Disruption of fibers from the splenium conveying visual pattern information from the right occipital cortex to the language areas of the left hemisphere may be an anatomical explanation for this unusual syndrome. Resolving edema or ischemia may explain the transient nature of the defect.

AB-676-72  
A Study of Pattern of Recovery in Aphasia—Koenin M (Institute of Rehabilitation Medicine, New York, New York), Swisher LP—Cortex 8:56-68 (Mar) 1972

Fifteen patients who were aphasic secondary to a cerebrovascular accident were studied. The patients were tested initially and, within one and one-half to three months with the Neurosensory Center Comprehensive Examination for Aphasia, all patients tended to improve, with improvement in comprehension of language being greater than improvement in expressive language. The completeness of improvement appeared related to the overall severity present on initial evaluation. Improvement on imitative tasks was the only improvement shown by those most severely impaired, while those mildly impaired patients improved on all modalities on which they had not achieved a maximum score. The patient who recovers beyond the level of imitation and copying tends to improve auditory retention span, increases vocabulary and increases the use of forms and structures of connected speech.

AB-679-72  
The Effect of Heparin and Dipyridamole on Chronic Vascular Lesions in Monkey Cardiac Allografts—Kahn DR (Professor of Surgery, Head, Division of Thoracic and Cardiovascular Surgery, University of Wisconsin Hospital, Madison, Wisconsin 53706), Dufek JH, Oberman HA, Beck ML, Bree M, Kirsh MM, Moore WY, Prior M—J Thorac Cardiovasc Surg 63:720-722 (May) 1972

Twelve heterotopic cardiac allotrafts were performed on monkeys. All monkeys received azathioprine and prednisone to maintain WBC at 10,000/cu mm. Four animals served as controls and received only the immunosuppressives; five animals received subcutaneous heparin and three animals were given dipyridamole orally. Vessels were examined at death to determine changes of chronic rejection and the effect of the above medications. Considering the long-term survivors in which there was time for vascular changes to develop, there was no difference between the control group and the groups treated with heparin and dipyridamole. All long-term survivors in this
study showed marked vascular changes regardless of the drug therapy.

AB-680-72
Constrictor and Compliance Responses of Some Arteries to Nerve or Drug Stimulation—Gillespie JS (Department of Pharmacology, University of Glasgow, Glasgow W.2, Scotland), Rae RM—J Physiol 223:109-130 (May) 1972

The magnitude of maximum constrictor response to nerve stimulation was measured in various arteries in the rabbit and guinea pig. Constrictor response correlated with the density of adrenergic innervation, with the wall-thickness-to-lumen ratio, and with the function of the artery and the amount of connective tissue in its wall. When comparing maximum constrictor response of various agonist drugs, noradrenaline was the most powerful agonist. When measuring artery wall stiffness in the relaxed artery, two components were present, an easily distended phase and a late undistensible phase. Noradrenaline caused a third very stiff phase to appear which was believed to be due to contracted muscle. In conducting arteries such as the carotid the change in stiffness was a more sensitive parameter of noradrenaline action than vasoconstriction. Nerve stimulation, even in arteries where its vasoconstrictor effects were equal to those of noradrenaline, gave only slight increases in artery wall stiffness, suggesting that even in these densely innervated arteries only a small fraction of the muscle is activated by nerve stimulation.

AB-681-72
Angiographic Documentation of the Development of Cerebral Circulatory Arrest—Bergquist E, Bergström K (Department of Diagnostic Radiology, Akademiska Sjukhuset, University of Uppsala, Sweden)—Acta Radiol (Diag) 12:7-11 (Jan) 1972

A 62-year-old woman was admitted unconscious with gradual improvement over the next 24 hours and later complained of severe headache. Within a week of admission right carotid angiography revealed normal filling of the internal carotid artery and the carotid siphon. The patient had sudden onset of convulsions and lost consciousness. A further injection of contrast material confirmed the diagnosis of ruptured aneurysm at the level of the upper part of the carotid siphon. Within about 45 minutes of the first injection when the patient was still conscious, a four-vessel study was performed. Stagnation of contrast material was evident in both carotid arteries as well as in the vertebral arteries about 4 to 5 cm below the base of the skull. No medium passed upward to the brain. The patient died two hours after arrest of cerebral circulation. The diagnosis was confirmed at autopsy. The case is unique in that it was possible to follow the development of total cerebral infarction. Previous studies have indicated that a rapid rise in intracranial pressure occurs following cranial injuries and cerebral hemorrhage which, in addition to vasospasm in the large cerebral arteries, may contribute to cerebral circulatory arrest.

AB-682-72
Etiology of Thrombus Formation on Prosthetic Metal Heart Valves. The Role of Spontaneous In Vivo Interfacial Potentials and Their Measurements—Lee ME, Murakami T, Stanczewski B, Parmeggiani A, Srinivasan S, Sawyer PN (Electrochemical and Biophysical Laboratories of the Vascular Surgical Services, Department of Surgery and Surgical Research, State University of New York, Downstate Medical Center, Brooklyn, New York 11203)—J Thorac Cardiovasc Surg 63:809-819 (May) 1972

Metal heart valves were implanted in calves to determine factors important in the genesis of thrombus on the valve surface. Various impurities, silicates, fingerprints, and oxide formation produce mixed interfacial potentials which may induce thrombus in spite of a net negative surface charge, the optimum polarity to prevent thrombus formation. Surface oxide formation occurs within the blood stream on several metals (stainless steel, titanium, Inconel). The surface oxidation increases the positive potential between blood and metal, increasing the tendency for thrombosis at the valve interface.

AB-683-72
Smoking, Platelets and Thrombosis—Hawkins RJ (Division of Pathology, Huntington Research Center, Huntington)—Nature 236:450-452 (Apr 28) 1972

To evaluate the effect of smoking on platelet function, three separate groups were studied: nonsmokers, light smokers (less than 20 cigarettes per day) and heavy smokers (more than 20 cigarettes per day). Adverse changes in coagulation, the rate of initial clot formation, the maximum thrombus strength, its rate of formation, and clot retraction in the smoker might lead to a hypercoagulable or hyperthrombolic state. These studies seem to indicate a greater risk of formation of hemostatic plugs and the build-up of a thrombus in thrombogenic conditions in the smoking subject.

AB-684-72
Australia Antigen and Polyarteritis Nodosa—Trepo CG (Laboratoire d'Hygiene, Faculte de Medicine, 69 Lyon S. France), Thivolet J, Prince AM—Amer J Dis Child 123:390-392 (Apr) 1972

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Au-SH antigen was found in 14 cases of periarteritis nodosa (PAN) in France. In one case Au-SH antibody was detected. In those cases of PAN with Au-SH antigen, liver studies were abnormal in the early stages of the disease. Serum hepatitis virus may be an etiological factor in a proportion of cases of PAN in which Au-SH antigen is detected. Other cases of PAN may be etiologically distinct since the use of sensitive hemagglutination inhibition techniques fail to detect either Au-SH antigen or antibody.

ABSTRACTS

Two further cases of giant cell angiitis of the central nervous system are added to the 17 cases previously reported. The condition has been reported in either sex and in adults of all ages. Spinal manifestations on occasion precede the cerebral disorder, which may present with focal and generalized cerebral disease or epileptic seizures. CSF examination revealed excess protein and increased numbers of white cells, mostly lymphocytes; CSF pressure was increased while glucose was normal. The duration of illness varied from a few days to four years. Micro-organisms were not found nor was antibiotic therapy of benefit; however, two patients improved with steroid therapy. Histological similarity to certain cases of sarcoidosis with cerebral involvement were noted in this form of angiitis. A definite etiology for this condition or relationship to other vascular inflammatory disorders is not possible at present.

Cortical Surface pH as a Means of Determining Regional Brain Perfusion—Rogers LA, Berman JR (Department of Surgery, New York University Medical Center, New York, New York)—Surg Gynec Obstet 134:799-802 (May) 1972

Dogs were subjected to extracranial cerebral vascular occlusion with, and without, systemic hypothermia and hyperoxemia, and the surface pH of the brain was measured. Interruption of major cerebral blood flow produced a predictable fall in cortical pH and pH was returned toward normal by restoring cerebral perfusion. Hyperoxigenation failed to alleviate cortical acidosis after cerebral vascular interruption, but some protective effect was afforded by hypothermia. In all dogs, with or without cortical acidosis, systemic hypertension occurred; the pressor response was greater after carotid interruption proximal to the carotid sinus.

Impaired Microvascular Filling After Focal Ischemia in the Monkey. Modification by Treatment—Cowell RM (Neurosurgical Service, Massachusetts General Hospital, Boston, Massachusetts 02114), Olsson Y—Neurology 22:500-504 (May) 1972

Microsurgical clipping of the middle cerebral artery (MCA) for four hours was carried out in 61 monkeys. The extent and severity of improper microvascular filling was evaluated by the carbon-black perfusion technique. During the focal ischemia, various treatments were attempted, including low-molecular-weight dextran, heparin, or hyperventilation. All treated animals had less improper vascular filling than controls. Low-molecular-weight dextran was most beneficial in preventing improper vascular filling.

Cerebrospinal Fluid Lactic Acid in Death and in Brain Death—Paulson GW (Ohio State University Hospitals, Columbus, Ohio 43210), Wise G, Conkle R—Neurology 22:505-509 (May) 1972

Three groups of patients were studied: those with “brain death,” cadavers, and living patients with neurological disorders. CSF was analyzed for $P_{CO_2}$, pH, $P_{O_2}$ and lactic acid in each group. Marked elevations of lactic acid occurred in the cadaver group (14.8 to 49.9 mEq/liter; normal less than 2 mEq/liter), and in the “brain death” group (4.4 to 15.4 mEq/liter). Lactic acid was elevated only in those patients with meningeal inflammation or hemorrhage in the group of patients with neurological dysfunction. Increased production with decreased removal of lactic acid are the mechanisms postulated to explain the rise in this parameter after death. It is suggested that CSF lactic acid may be a valuable adjunct to clinical criteria and electroencephalography in evaluation of brain death.

The Natural Course of Experimental Cerebral Infarction in the Gerbil—Kahn K (1200 Druid Road South, Clearwater, Florida 33516)—Neurology 22:510-515 (May) 1972

Ligation of a single common carotid artery in 30 mature gerbils produced evidence of infarction and death in 16 animals (53%). This study confirms previous reports that the gerbil is particularly susceptible to ischemic brain damage due to lack of posterior communicating arteries. This anatomical characteristic makes the gerbil an excellent model for cerebral infarction studies. Several studies by other authors utilizing various medications during the acute phase of infarction are discussed.
ABSTRACTS

AB-690-72

The team and the nonteam approach to nursing care was evaluated over an 18-month period in stroke and fracture patients. The team approach produced a statistically significant correlation of increase in activities of daily living and patient satisfaction. There was also a tendency for increased dependency in the team setting. Nurse satisfaction was markedly increased when the team approach was used, which would indicate this method to be the pattern of service most sound fiscally.

AB-691-72

The experience of a Regional Medical Program staff in implementing planning activities to provide optimum care for stroke patients is presented. Three main themes receive emphasis. Planning is crucial for the success of the program. Each program must be developed within the natural community utilizing the existing resources available and the abilities of concerned individuals. Information from major medical centers often cannot be applied to the smaller community program. Finally, multidisciplinary approach appears to be the most effective in view of the complexity of individual health care problems today.

AB-692-72
The Origin of Fibrin Breakdown Products and the Interpretation of Their Appearance in the Circulation—Gallimore MJ, Tyler HM, Shaw JTB (Research Division, Pfizer Ltd., Sandwich, Kent, England)—J Clin Path 25:185-190 (Mar) 1972*

It has been shown that the incubation of human plasma with urokinase at a concentration sufficient to cause rapid lysis of the clots formed on the addition of thrombin does not give rise to the production of measurable concentrations of nonclottable fibrinogen breakdown products. Also, breakdown products could not be detected in the course of experiments in vivo when urokinase was administered to monkeys and only in very low concentrations when a fibrinolytic state was induced by exercise in three healthy human volunteers. In contrast, high concentrations of breakdown products were found after thrombin infusion into monkeys.

It is concluded that circulating fibrinogen is not readily broken down into nonclottable products by the fibrinolytic enzymes, and that normal animals and healthy human subjects do not have substantial deposits of fibrin that are available for breakdown during a fibrinolytic episode. The presence of breakdown products in the circulation is therefore likely to be indicative of the fibrinolytic response to an initial coagulation event.

AB-693-72
Ferromagnetic Silicone Vascular Occlusion in a Superconducting Magnetic Field. Preliminary Report—Rand RW, Mosso JA (UCLA School of Medicine, Department of Neurosurgery, Los Angeles, California 90024)—Bull L A Neurol Soc 37:67-74 (Apr) 1972

Occlusion of arterial vascular beds by injection of a ferrosilicone compound into feeding arteries via transcatheater or direct needle-puncture technique is described. A powerful superconducting electromagnet over the field of proposed arterial occlusion provides a means of confining the embolized iron-silicone compound to the target organ. Significant toxicity to iron and silicone compound was not observed in dogs. This new technique may be of value in the treatment of vascular neoplasms and aneurysms.

AB-694-72
Vertebral Artery Insufficiency and Cerebellar Infarct Due to Manipulation of the Neck. Report of a Case—Kanshepolsky J (Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona 85001), Danielson H, Flynn RE—Bull L A Neurol Soc 37:62-66 (Apr) 1972

Vascular accidents and death have been reported previously secondary to chiropractic manipulations of the neck, and the authors document a similar case. Following chiropractic manipulation of the neck a 39-year-old woman became unresponsive to painful stimulation, Following tracheostomy, angiography and ventriculography, the patient underwent suboccipital craniotomy. The cerebellum extruded under pressure and the pathological diagnosis confirmed the presence of ischemic infarction. The patient survived but spastic gait, nystagmus, hearing loss and drift to the right were the residual neurological findings when examined 15 months later.

AB-695-72
Early and Delayed Hyperbaric Oxygenation in Experimental Brain Edema—Kanshepolsky J (Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona 85001)—Bull L A Neurol Soc 37:84-89 (Apr) 1972
ABSTRACTS

Experimental brain edema was produced in 43 cats by inducing cold lesions through the intact skull. Of the untreated group, 38% survived. Seventy percent of those animals treated with hyperbaric oxygenation at 2.5 atmospheres for 90 minutes three times per day survived if treatment began two hours after the injury. There was less brain edema noted in this group. Animals treated six hours postinjury failed to show significant improvement when compared with controls. Hyperbaric oxygenation is advocated early in the treatment course of acute head trauma.

AB-696-72
Investigation of Stroke—Shaw DA (Department of Neurology, Royal Victoria Infirmary, Newcastle upon Tyne, England)—Brit Med J 1:91-93 (Jan 8) 1972

Utilizing the three main categories for stroke classification (completed stroke, advancing stroke and transient ischemic attack) the authors discuss the bases for diagnosis for each. In attempting to diagnose completed stroke, such differential possibilities as tumor, subdural hematoma, abscess, and drug overdosage must be considered. Rheumatic heart disease, bacterial and marantic endocarditis, atrial myxoma, and air or fat emboli must be considered as possible causes of cerebral infarction. Precaution is urged in attempting lumbar puncture when the possibility of tumor exists. Cerebral angiography is the definitive investigative procedure in completed stroke. The risk of hemorrhage as the complication of administering anticoagulants to the patient with advancing stroke is emphasized. The authors feel it is wise to carry out angiography in the advancing stroke if it involves the carotid distribution, but in the classic advancing vertebrobasilar stroke, angiography can be omitted. In transient ischemic attacks emphasis is placed on diagnosing extracranial sources of emboli.

AB-697-72
Lesions in Cerebrovascular Disease and Their Clinical Implications—Hutchinson EC (Consultant Neurologist, North Staffordshire Hospital Center, Stoke on Trent, England)—Brit Med J 1:89-91 (Jan 8) 1972

A more dynamic approach to the problems of cerebral ischemia seems justified since the recognition of the importance of thromboembolism from extracranial vascular sites in both cerebral infarction and transient cerebral ischemia. Cerebral vascular changes in the hypertensive patient may be reversible with effective lowering of the blood pressure. The clinician must decide which of the above two processes is essential and treat accordingly.

AB-698-72
Effects of Hyperventilation With and Without Carbon Dioxide on Experimental Cerebral Ischaemia and Infarction. Studies of Regional Cerebral Blood Flow and Histopathology After Occlusion of a Middle Cerebral Artery in Cats—Yamaguchi T, Regli F, Waltz AG (Department of Neurology, University of Minnesota, Minneapolis, Minnesota 55455)—Brain 95:123-132, 1972

Beginning half an hour following extradural occlusion of a middle cerebral artery (MCA) in 11 cats, the animals were hyperventilated for 10 to 24 hours. \( P_{\text{a}CO_2} \) was maintained near normal in five cats by adding carbon dioxide to the ventilatory mixture, and the other six cats were allowed to become hypocapnic. Regional cerebral blood flow (rCBF) was measured five days following MCA occlusion. Estimates of brain swelling and sizes of the ischemic and infarcted areas were made. The presence or severity of a neurological deficit, the sizes of infarcted areas, or decreases of CBF resulting from MCA occlusion did not differ between the two groups. In the normocapnic group hyperemia was more frequent and brain swelling may have been more prominent. Hyperventilation to hypocapnia did not protect against cerebral ischemia or infarction in this experimental model.

AB-699-72

High fibrinolytic activity has been noted in patients with cerebral hemorrhage. This enhanced humoral activity may likewise induce a fragility of the capillary wall not only in the brain but in extracranial sites as well (i.e., the oral cavity). The study involved estimating the number of erythrocytes in the sediment of oral washings during the acute period of cerebrovascular accidents. In those patients with cerebral infarction, the erythrodiapedesis was similar to the control group, while in more than half the cerebral hemorrhage patients high oral erythrodiapedesis was observed. The investigation of oral erythrodiapedesis is a reliable test for differentiation between hemorrhagic and ischemic cerebral accidents.

AB-700-72
Cryoglobulinemia and Cerebrovascular Accident—Abramsky O, Herishanu Y, Lavy S (Hadassah Medical Organization, Department of Neurology, P.O. Box 499, Jerusalem, Israel)—Confin Neurol 33:291-296, 1971
The association of three cases of cerebrovascular accident with essential cryoglobulinemia is reported; peripheral neuropathy also was documented in one of the cases. Precipitation of cryoglobulins in small vessels has been considered to be the underlying mechanism in many of the complications of essential cryoglobulinemia (i.e., retinal hemmorhage, epistaxis, ulceration of the lower extremities). Since other dysproteinemias have been associated with ischemic strokes (i.e., cryofibrinogenemia) and vascular occlusions have been demonstrated in various organs in the presence of cryoglobulins, it has been assumed that cryoglobulinemia may be a precipitating factor in the development of the ischemic stroke.

AB-701-72
Regressing Aneurysms in Periarteritis Nodosa. A Report of 3 Cases—Robins JM, Bookstein JJ (Department of Radiology, University of Michigan Medical Center, Ann Arbor, Michigan)—Radiology 104:39-42 (July) 1972*

Three patients with angiographical evidence of periarteritis nodosa were restudied 12 to 31 months after diagnosis. Each demonstrated total disappearance of the aneurysms and an improved vascular appearance. There was no correlation between regression of the aneurysms and the clinical course or therapeutic manipulations. Evidence is increasing that aneurysms and stenoses of small arteries are not limited to patients with classical periarteritis nodosa and may be demonstrated angiographically in several types of necrotizing angitis.

AB-702-72
The Angiographical Delineation of Sellar and Parasellar Masses—Baker HL Jr (Department of Diagnostic Roentgenology, Mayo Clinic, Rochester, Minnesota 55901)—Radiology 104:67-78 (July) 1972*

The anatomical and normal angiographical appearance of small vessels which vascularize the neural and glandular structures in and about the sella turcica is discussed. Findings in a group of abnormal cases illustrate alterations in the local vessels which occur in the presence of sellar and parasellar masses. Some of the changes seen appear to be helpful in differentiating the various types of tumors. Tumors in which characteristic dislocations were seen include pituitary adenoma, "empty" sella, nonmeningiomaticous parasellar masses, parasellar meningioma, cranioopharyngioma, optic chiasm glioma, and colloid cyst of the third ventricle.

AB-703-72
Intracranial Vascular Damage Associated With Skull Fractures. Radiographic Aspects—Rumbaugh CL, Bergeron RT, Kurze T (Departments of Radiology, Neuromedicine and Neurosurgery, Los Angeles County-University of Southern California Medical Center, Los Angeles, California)—Radiology 104:81-87 (July) 1972*

Intracranial vascular damage of the meningeal and cortical arteries associated with skull fractures include deformity of these vessels, slow flow, retrograde flow, traumatic aneurysm, extravasation of blood and contrast medium at the fracture site, epidural, subdural, and intracerebral hematoma formation, and rarely arteriovenous fistulas formation. Many of these changes are relatively common, but often high quality cerebral angiography is essential for their delineation. Twelve cases are presented to demonstrate these various forms of vascular damage.

AB-704-72
A Histoenzymatic Study of Human Intracranial Atherosclerosis—Hoff HF (Department of Neurology, Baylor College of Medicine, Texas Medical Center, Houston, Texas 77025)—Amer J Path 67:583-600 (June) 1972*

A light microscopy study on the localization of enzyme activity within atherosclerotic human intracranial arteries was performed on autopsy material obtained within four hours of death. The data suggest that the atherosclerotic process first goes through a proliferative phase and then a degenerative phase culminating in the formation of a plaque. In the proliferative phase, smooth muscle cell proliferation has formed a thickened intima. Tetrazolium reductase, adenosine triphosphatase (ATPase) and adenosine monophosphatase (AMPase) activities are present in these cells, while all dehydrogenases and acid phosphatase activities were weak or not present. As the degenerative phase commences, an area of necrosis, lipid and macrophage accumulation is formed on the lumen side of the elastica. This area increases in size until a plaque is formed. Unsaturated polar and nonpolar lipid, cholesterol, \( \alpha \)-glycerophosphate dehydrogenase, acid phosphatase, and AMPase activities are associated with these areas and in foam cells, which are often found in the thickened intima of the proliferative phase. Tetrazolium reductase and ATPase activities decrease in the thickened intima as the area of necrosis increases in size, while dehydrogenase activity, except that for \( \alpha \)-glycerophosphate, remains low or not present. Patterns of enzyme alterations for various stages of the disease process in intracranial arteries, the aorta and coronary arteries suggest a similar, if not

*AAuthors' abstract.
identical, progression of the atherosclerotic process, irrespective of known differences in the prevalence of atherosclerosis.

AB-705-72
Bilateral Carotid Sinus Nerve Stimulation in the Treatment of Hypertension—Brest AN (Division of Cardiology, Jefferson Medical College, Philadelphia, Pennsylvania 19107), Wiener L, Bachrach B—Amer J Cardiol 29:821-825 (June) 1972*

Bilateral carotid sinus nerve stimulation induced significant blood pressure reduction in each of eight patients with severe essential diastolic hypertension which was previously uncontrolled despite a triple antihypertensive drug regimen. The acute hemodynamic response to bilateral carotid sinus nerve stimulation indicates that the procedure induces its antihypertensive effects as the result of both alpha and beta adrenergic blockade. It appears that the procedure is a useful means of controlling diastolic hypertension, on a long-term basis, especially in patients whose blood pressure is inadequately or incompletely controlled with antihypertensive drugs alone. In those instances in which bilateral carotid sinus nerve stimulation does not by itself reduce diastolic hypertension to normotensive levels, the response to antihypertensive drugs may be substantially enhanced.

AB-706-72

This study investigates geography, race, age and surgery as factors in survival after cerebral hemorrhage. Comprising the case series are 352 males, who constitute a five-year 20% sample from veterans' hospitals in the United States. Rates of incidence by age and residence are determined for each race. The frequency of hypertension is presented in relation to race, surgical treatment, performance of angiographical examinations and presence of coma on admission. Cumulative five-year rates of survival are analyzed for each of these variables and the sites of hemorrhage. The incidence of cerebral hemorrhage is highest among Negro residents of southern states and is quite high among whites from the Mountain States. With advancing age, case incidence increases and survivorship decreases. Survivorship in general is similar for each race by place of residence, age and levels of blood pressure, notwithstanding a marked excess of hypertension among Negroes. The survival rate for hypertensives is essentially half that for normotensives. As expected, the comatose cases are frequently hypertensive and have a correspondingly poor prognosis, while among cases selected by clinicians for angiographical examinations or brain surgery hypertension is relatively infrequent and survivorship is favorable. Of the surgical cases, the ones whose hemorrhages were subdural have a significantly higher five-year rate of survival than other cases, while cases undergoing no surgery have a slightly better prognosis than cases treated surgically for other intracranial sites of hemorrhage.

AB-707-72
Sympathetic Control of the Mechanical Properties of the Canine Carotid Sinus—Bashaw RJ, Peterson LH (Bockus Research Institute and Department of Physiology, University of Pennsylvania, Philadelphia, Pennsylvania 19146)—Amer J Physiol 222:1462-1468 (June) 1972*

The effects of electrical stimulation of the efferent sympathetic innervation to the carotid sinus upon the mechanical properties of the sinus wall were investigated in 17 dogs. The carotid sinus diameter and pressure were continuously monitored, and from these variables an expression for the dynamic elastic modulus of the carotid sinus wall was developed. In 13 dogs stimulation of the sympathetic innervation produced significant changes in the diameter and dynamic elastic modulus of the carotid sinus. These changes consisted of a reduction in diameter and a fall in the elastic modulus, dependent upon the frequency of stimulation. In 30% of the above animals, the sympathetically efferent innervation ran in an adaptive fashion.

AB-708-72
Complicated Migraine and Haemoglobin AS in Nigerians—Osuntokun BO (Professor of Neurology, University College Hospital, Ibadan, Nigeria), Osuntokun O—Brit Med J 2:621-622 (June 10) 1972*

Among 123 Nigerians with migraine seen at one clinic 49 (40%) had complicated migraine, with ophthalmoplegia in 20 and amaurosis or field
defects in 13. Hemoglobin AS was found in 60% of patients with complicated migraine, compared with 20% of those with simple migraine.

**AB-709-72**

*Traumatic Intimal Prolapse of the Common Carotid Artery*—McGough EC, Helfrich LR, Hughes RK (Department of Surgery, University of Utah College of Medicine, Salt Lake City, Utah 84112)—*Amer J Surg* 123:724-725 (June) 1972*

Injuries to carotid arteries from blunt trauma are uncommon. A case is reported of prolapse of the common carotid intima after blunt trauma to the neck. Carotid rupture did not occur. Significant arterial injury was not associated with occlusion and distal ischemia. The incidence and mechanism of blunt arterial injuries are discussed.

**AB-710-72**

*Venous Thrombosis Following Strokes*—Warlow C, Ogston D, Douglas AS (Department of Medicine, University of Aberdeen)—*Lancet* 1:1305-1306 (June 17) 1972*

Thirty patients with a recent cerebrovascular accident resulting in a "stroke" were studied for evidence of leg-vein thrombosis using the 125I-labelled fibrinogen technique. Sixty percent developed a deep-venous thrombosis, as measured by this technique, in their paralyzed leg; 7% had, in addition, a thrombus in the nonparalyzed leg.

**AB-711-72**

*Platelet Function in Venous Thrombosis and Low-Dosage Heparin*—O'Brien JR (Central Laboratory, St. Mary's General Hospital, Portsmouth PO3 6AG, England), Etherington M, Jamieson S, Klaber MR—*Lancet* 1:1302-1305 (June 17) 1972*

Compared with preoperative levels, patients immediately after a major operation showed a decrease in the platelet-aggregation response to adenosine diphosphate (A.D.P.) and thrombin, but the percentage of platelets retained in a glass-bead column was increased. By the next day the results of the aggregation tests and of the glass-bead-column test had all exceeded the preoperative levels. Heparin (5000 U. subcutaneously) prevented the immediate postoperative decrease in aggregation. It is tentatively suggested that a decreased responsiveness to A.D.P. and thrombin is related to the cause of postoperative deep-vein thrombosis.

**AB-712-72**

*Neuro-ophthalmologic Signs of Extracranial Cerebrovascular Insufficiency*—Sacks JG (Northwestern University-McGaw Medical Center, Chicago, Illinois)—*Postgrad Med* 52:115-119 (July) 1972*

Visual symptoms may be the first indication of carotid occlusive disease or of verteobasilar insufficiency. Common visual complaints are transient monocular blindness and binocular blurring, although such striking symptoms as hallucinations and diplopia may occur. Recognizing the significance of these episodes may aid in early identification of patients likely to have stroke.

**AB-713-72**

*Inhibition of Aggregation of Human and Rat Platelets by Fibrinolytic Drug Phenformin*—Kovács IB (Otto Korvin Hospital, Budapest, VII. Gorkij fasor 9-11, Hungary), Csalay L, Görög P—*Angiology* 23: 223-227 (Apr) 1972

Phenformin in citrated plasma inhibited aggregation of human platelets by ADP, adrenaline, and collagen. Fifty percent inhibition of adrenaline-induced aggregation of platelets could be produced by phenformin concentrations as low as 12.5 μg/ml. Phenformin diminished adrenaline-induced increased sensitivity of rat platelets to ADP. Previous studies have documented the ability of phenformin, an oral antidiabetic agent, to increase fibrinolytic activity of the blood. The combination of phenformin and ethyloestranol is effective in treating occlusive vascular diseases and in decreasing the adhesiveness of platelets to glass beads.

**AB-714-72**

*Pheochromocytomas of the Lumbar Sympathetic Chain Demonstrated by Angiography*—Cornell SH (Department of Radiology, University of Iowa Hospitals, Iowa City, Iowa)—*Amer J Roentgen* 115:175-178 (May) 1972

A nine-year-old girl presented with headache, nausea, abdominal cramps, seizures, and hypertension of recent onset (three weeks). Abdominal aortography revealed two masses in the paravertebral area. At surgery two benign pheochromocytomas were removed from the left lumbar sympathetic chain, one of which compressed the ureter producing unilateral hydronephrosis. The patient's blood pressure was normal one month later at postoperative evaluation.

**AB-715-72**

*The Velocity of Ultrasound in Human Blood Under Varying Physiologic Parameters*—Bradley EL (Department of Surgery, Emory University, Atlanta, Georgia), Sacerio J—*J Surg Res* 12:290-297 (Apr) 1972

Ultrasonic transmission velocity in human blood, Vol. 3, November-December 1972
blood was investigated using variables of frequency, distance, temperature, total protein content, and hematocrit. Temperature, total protein content, and hematocrit were the only factors affecting velocity values, and the magnitude of these variations was such that if a high degree of accuracy was not required, ultrasonic transmission velocity in human blood could be regarded as a constant.

AB-716-72
Sustained Bacteremia in Patients With Prosthetic Cardiac Valves—Sande MA (Department of Internal Medicine, University of Virginia School of Medicine, Charlottesville, Virginia 22901), Johnsonson WD Jr, Hook EW, Kave D—New Eng J Med 286:1067-1070 (May 18) 1972

Twenty-four episodes of bacteremia were analyzed in 22 patients with prosthetic heart valves. An attempt was made to define criteria which may differentiate those bacteremias with (11 patients) and those without (13 patients) proved infection of the prosthetic valves. Positive blood cultures developed 25 or more days after surgery in nine of the patients with prosthetic valve infection; gram-positive organisms were isolated from ten of the 11 patients with valve infection; there was no obvious source of bacteremia in any of these 11 patients, and there were no new or changing murmurs. Bacteremia occurred earlier (median, 12 days) in the group without documented valvular infection; gram-positive organisms were isolated from only of the 13 patients with valve infection; there was no obvious source of bacteremia in any of these 11 patients, and there were no new or changing murmurs.

AB-717-72
Chemical Degradation of the Intima From Normal Canine and Atherosclerotic Human Vessels—Hammond GL, Kabemba JM (Surgical Cardiovascular Research Laboratory, Department of Surgery, Yale Medical School, New Haven, Connecticut 06510)—J Surg Res 12:313-317 (Apr) 1972

Intima can be removed from normal and diseased arteries using various enzyme solutions in different strengths. After 30 minutes of perfusion with a 0.5% pronase solution, moderately diseased intima could be removed in human arteries, whereas areas of severe atherosclerosis required longer to remove. The prolonged contact with the enzyme solution resulted in degeneration of the elastic and muscularis layers in adjacent normal areas. Following ten minutes of enzyme perfusion in normal canine vessels the intima could be removed with preservation of the elastin layer.

AB-718-72
Successful Treatment of Cerebral Herniation in Five Patients—Zervas NT, Hedley-Whyte J (Departments of Surgery and Anesthesia, Harvard Medical School and Beth Israel Hospital, Boston, Massachusetts 02215)—New Eng J Med 286:1075-1077 (May 18) 1972

Intracranial hemorrhage produced decerebration in five patients. Each patient was treated with endotracheal intubation followed by hyperventilation and intravenous mannitol. In addition to the above, four patients received dexamethasone. In two patients prior to operative intervention for evacuation of the hematoma, the pupils reduced in size and decerebrate posturing ceased. Average arterial carbon dioxide tension following medical decompression was 36 mm Hg (26 to 46 mm Hg) and average arterial pH was 7.42 (7.30 to 7.51). Following surgery, anisocoria improved and decerebrate rigidity was absent. Within two to 26 hours all patients were fully conscious and ultimately regained normal intellectual and psychological function.

AB-719-72
Arterial Embolization During Subcutaneous Heparin Therapy. Case Report—Kaupp HA (Department of Surgery, Allentown Hospital, Allentown, Pennsylvania), Roberts B—J Cardiovasc Surg 13:210-212 (Mar-Apr) 1972

A case of arterial embolization while receiving heparin therapy for thrombophlebitis is presented. The patient had been receiving subcutaneous heparin for 14 days and the Lee White clotting time was greater than 25 minutes when he developed pain, coolness, and pallor in the left calf. At embolectomy a platelet embolus was found. The embolus had diminished considerably in size between its first demonstration on angiography and the later operative procedure. It is suggested that intravenous administration is the preferred route for heparin therapy since the above complication has been reported previously with intramuscular or subcutaneous administration of heparin.

AB-720-72
Routine Cerebral Angiography by the Femoral Catheter Approach—Brinker RA, Skucas J (Section of Neuroradiology, St. Vincent's Hospital and Medical Center, New York, New York)—Amer J Roentgen 115:27-34 (May) 1972

The authors feel the femoral cerebral angiographic approach is easier, faster, and a more satisfactory method of reaching the cerebral vessels. Advantages of the femoral cerebral technique include ease of injecting multiple vessels, subselective injection (i.e., external carotid study), selection of the right vertebral artery
when it is larger than the left (20% of the cases), and study of the opposite vertebral artery through reflexes from one injection in the opposite vertebral artery. Disadvantages are a need for more equipment, a greater expense to the patient, and a possible thrombosis of the femoral artery.


The fifth and sixth cases of a relatively new cerebrovascular disease are reported. Four previous cases presented by the same authors had hypoplasia and narrowing of the intracranial internal carotid artery associated with a pseudo-angiomatous pattern resembling an “arterio-arterial angioma.” The patients may be asymptomatic or have symptoms of transient focal ischemia, or even cerebral hemorrhage. The authors believe this lesion to be a congenital malformation.


The main factors responsible for neurological complications following surgical procedures on the aorta are systemic hypotension and interruption of the segmental vessels. It is suggested that a limited resection of the thoracic aorta will avoid interruption of segmental branches. If a major portion of the aorta is to be resected, major segmental vessels should be anastomosed to the graft. If an elevated systemic blood pressure is maintained, neurological complications of abdominal aortic surgery are rare.

Spinal Epidural Hematoma — Pear BL (Clinical Associate Professor of Radiology, University of Colorado Medical Center, Denver, Colorado) — Amer J Roentgen 115:155-164 (May) 1972

Acute spinal epidural hematoma may occur spontaneously or secondary to trauma, spinal surgery, angioma, vascular malformation, coagulopathies, or anticoagulant therapy. The spinal cord is the usual level of bleeding with sudden onset of focal symptoms, then radicular pain leading to paresis or paralysis. A less common event is chronic encapsulated epidural hematoma at the level of the cauda equina. Early myelographical demonstration of varying degrees of epidural block should lead to appropriate diagnosis and prompt treatment.

Abstract:


Ten Rhesus monkeys received identical cranioencebral gunshot wounds. Five animals served as controls and the remaining five were given dextran following withdrawal of 70 to 94 cc blood. All of the controls died (100% mortality), while only two of the treated animals expired (40% mortality). Carotid blood flow served as the most significant correlate of death. Previous studies in a similar model revealed the animal would die within one hour of injury if the three-minute carotid blood flow was 23% of baseline or less. In the present study, isovolemic hemodilution applied to those animals with three-minute carotid artery flow of less than 23% resulted in a 60% survival with an increase in carotid flow demonstrable in the survivors. Decrease in blood viscosity and vascular resistance were the factors presumed responsible for survival.

Oral Contraceptive Use in Patients With Thromboembolism Following Surgery, Trauma, or Infection — Greene GR, Sartwell PE (Professor of Epidemiology, Johns Hopkins University School of Hygiene and Public Health, Baltimore, Maryland 21205) — Amer J Public Health 62:680-685 (May) 1972

Female patients aged 15 to 44 who developed venous thrombosis or pulmonary embolism following trauma or surgery were studied and compared with matched controls. Questionnaires were mailed to the patients to obtain information regarding use of oral contraceptives. Twenty-one of 60 cases (35%) and 16 of 97 controls (16%) had been taking an oral contraceptive within the month prior to hospitalization. The relative risk for patients taking oral contraceptives was estimated at greater than sixfold when compared with controls.

Acute spinal epidural hematoma may occur spontaneously or secondary to trauma, spinal surgery, angioma, vascular malformation, coagulopathies, or anticoagulant therapy. The spinal cord is the usual level of bleeding with sudden onset of focal symptoms, then radicular pain leading to paresis or paralysis. A less common event is chronic encapsulated epidural hematoma at the level of the cauda equina. Early myelographical demonstration of varying degrees of epidural block should lead to appropriate diagnosis and prompt treatment.
ABSTRACTS

a cystodiathermy probe into the uppermost branches of the external carotid artery which were supplying the malformation and applying current intermittently to produce electrocoagulation. The external carotid was ligated at the end of the procedure and the patient was asymptomatic within four months of the operation. It is postulated that this method may be useful in treating intracranial vascular malformations as well.

AB-727-72
Cholesterol Embolization and Spinal Infarction Following Aortic Catheterization—Harrington D. Amplatz K (Department of Radiology, University of Minnesota Hospitals, Minneapolis, Minnesota)—
Amer J Roentgen 115:171-174 (May) 1972

A 76-year-old man underwent aortic catheterization to study the carotid and vertebral vessels to evaluate transient visual loss. During the procedure difficulty was encountered in passing the catheter and a test injection was subintimal. The patient complained of pain in both legs and livido reticularis was noted to extend downward from the umbilicus to both lower extremities. Both legs became weak. At translumbar aortography extensive vascular disease was noted but all large vessels were patent. During surgery for sympathectomy the patient developed electrocardiographical changes of an acute myocardial infarction and died six hours later. Postmortem examination confirmed the acute myocardial infarction and died six hours later. Postmortem examination confirmed the acute myocardial infarction; additional findings included aneurysm of the abdominal aorta, and cholesterol crystals in the partially thrombosed vessels of the spinal cord. Catheter manipulation and injection into abdominal aneurysms is hazardous.

AB-728-72
Experimental Cerebral Atherosclerosis in the Dog. I. A Morphologic Study—Suzuki M (Department of Pathology, Baylor College of Medicine, Houston, Texas 77025)—
Amer J Path 67:387-402 (May) 1972*

Prolonged feeding with an atherogenic diet can induce occlusive disease of the intracranial arteries and cerebral infarction in dogs. The morphological findings suggest that separation of the internal elastic lamina from the endothelial basement membrane is a consistent change and probably an initiating mechanism in the pathogenesis of atherosclerosis of the cerebral arteries.

AB-729-72
The Late Phase of Central Nervous System Lesions in Experimental Hypercholesterolemia in Normal and Subdiabetic Rabbits—Adachi M, Torii J, Wellmann KF, Volk BW (Isaac Albert Research Institute of the Kingsbrook Jewish Medical Center, Brooklyn, New York 11203)—
J Neuropath Exp Neurol 31:332-345 (Apr) 1972

A diet containing 1% cholesterol was fed to 14 normal rabbits and 28 subdiabetic rabbits which were sacrificed six to 12 months later. Higher blood lipids were noted in the subdiabetic animals before and initially after the diet was administered, but after seven months the differences between the control and subdiabetic groups were no longer present. Carotid atherosclerotic plaques were present at the seventh month in the subdiabetic group of animals. Light microscopy revealed Alzheimer type II astrogliosis, sudanophilic material, and cholesterol deposits in the brain after six to seven months in the subdiabetic group; in addition, Nissl granules were decreased in the neurons of the basal ganglia after ten to 12 months. In general, changes in the central nervous system were noted earlier in the subdiabetic animals than those same changes which developed later in the metabolically normal animals.

AB-730-72
Small Focus Roentgen Magnified 70 mm Films for Study of Extracranial Arteries—Brinker RA (Chief, Section of Neuroradiology, St. Vincent's Hospital and Medical Center, New York, New York). Skucas J—
Amer J Roentgen 115:137-142 (May) 1972

Disadvantages of aortic arch injections for visualization of extracranial vessels include large quantity of concentrated contrast material to visualize the vessels, poor filling of intracranial vessels, and overlap of neck vessels, making interpretation difficult. These disadvantages were overcome in part by using small focus roentgen magnified 70 mm films. This method provided savings in both time and contrast material. Optimal visualization of vessel bifurcations could be obtained by selective positioning of the patient. The film quality was adequate for evaluation of vessel stenosis or occlusion.

AB-731-72
Angiography of Vascular Intraspinal Tumors—Herdt JR, Shimkin PM, Ommaya AK, Di Chiro G (Section on Neuroradiology, Surgical Neurology Branch, National Institute of Neurological Diseases and Stroke, Bethesda, Maryland 20014)—
Amer J Roentgen 115:165-170 (May) 1972

Three cases of vascular intraspinal tumors are presented: an intradural extramedullary neuroinoma and two intramedullary hemangioblastomas. Each of the patients had angiography and the following findings were noted: nature and extent of tumor vessels and/or blush; displacement of the anterior spinal artery in the lateral view; dural or spinal cord arterial supply to the tumor; and
configuration of venous drainage via spinal or dural veins.

AB-732-72
The Hemodynamic Basis of Atherosclerosis. Further Observations: The Ostial Lesion—Texton M (Department of Forensic Medicine, New York University Medical Center, New York, New York)—Bull NY Acad Med 48:733-740 (June) 1972

Alterations seen at the orifice of a branching vessel may be related to influences of fluid mechanics. Zones of low pressure, zones of increased stress, and increased velocity gradient are associated with pathological effects at the above sites. Low pressure zones around the orifice of the branching vessel produce tensile stress which results in intimal proliferation around the orifice. The narrowed orifice is concluded to be the biological response of the blood vessels to the mechanical stimulus inherent in the effects of blood flow.

AB-733-72

A case is presented of a ten-year-old black girl with sickle cell disease (SS) who had decrease in vision and an atrophic macular retina in the left eye. Multiple obliterated arterioles in the macular region were demonstrated on fluorescein angiography. Several weeks later at repeat examination these vessels had become patent again without evidence of neovascularization, hemorrhage, or pigmentation. This unique case demonstrates the reversibility of vascular occlusion in sickle cell (SS) disease. This picture is to be distinguished from SC disease where a proliferative retinopathy develops.

AB-734-72
Hemifacial Spasm Associated With Redundancy of the Vertebral Artery—Kramer RA, Eckman PB (Departments of Radiology and Neurology, Palo Alto Medical Clinic, Palo Alto, California)—Amer J Roentgen 115:133-136 (May) 1972

Vascular compression of the seventh nerve in the cerebellopontine angle is a recognized cause of hemifacial spasm. The vascular compression syndromes can be evaluated on selective vertebral angiography. Three cases are presented in which redundant, non-aneurysmal loops of the vertebral artery project into the cerebellopontine angle and in each case there is an associated hemifacial spasm.

AB-735-72
A Reappraisal of the Scan Diagnosis of Subdural Hematomas—Arkles LB (Department of Nuclear Medicine, The Royal Melbourne Hospital, Melbourne, Australia), Andrews JT, Steven LW—Amer J Roentgen 115:62-71 (May) 1972

The “peripheral crescent” pattern of uptake on brain scan is seen with a variety of disorders, as well as with subdural hematoma. On the basis of experience with 1,600 scans, 12 of which had confirmed subdural hematomas, the authors describe criteria for diagnosis of subdural hematoma on scan. In that group in which there is no obvious underlying cause for uptake, a peripheral crescentic shape extending deep to the midline would favor the diagnosis of subdural hematoma. In addition, percentage contrast of sagittal sinus to hemisphere less than 35% on the corresponding side would favor the diagnosis. Cerebral angiography may not always be necessary to confirm the diagnosis of chronic subdural hematoma.

AB-736-72
Subdural Hematoma Shape. A New Look at an Old Concept—Radicliffe WB (Department of Radiology, University of North Carolina School of Medicine, Chapel Hill, North Carolina), Guinto FC Jr, Adcock DF, Krigman MR—Amer J Roentgen 115:72-77 (May) 1972

In the past, crescent-shaped subdural hematomas on angiographical study have been classified as “acute” and biconvex hematomas as “chronic.” In the present study angiograms of 57 cases of subdural hematoma reveal only 14% have a biconvex shape. Crescent-shaped hematomas occur at any time interval after injury, and biconvex hematomas may occur any time after 11 days postinjury. The authors conclude there is no valid basis for predicting the age of a subdural hematoma from its configuration on angiographical study.

AB-737-72
Evaluation of the Cerebral Circulation by Arch Aortography Supplemented by Subtraction Technique—Eisenman JI (Long Beach Veterans Administration Hospital, Long Beach, California), Jenkin CG, Pribram HF—Amer J Roentgen 115:14-26 (May) 1972

Evaluation of both intracranial and extracranial vessels is required for study of the patient with symptoms and signs of cerebrovascular ischemia. Aortic arch injections of contrast medium can accomplish the above safely and rapidly. A high-yield examination is obtained by the supplemental procedure of routine Light Intensity Variation Subtraction of all the key films of the angiographical series.
ABSTRACTS

ITEMS OF INTEREST

The Galenic Venom System: A Selective Radiographic Study—Wilner HI, Crockett J, Gilroy J (Departments of Radiology and Neurology, Harper Hospital, and Wayne State University School of Medicine, Detroit, Michigan)—Amer J Roentgen 115:1-13 (May) 1972

The Prognosis of Untreated and of Treated Hypertension and Advantages of Early Treatment—Smirk FH (University of Otago Medical School, Great King Street, Dunedin C.1, New Zealand)—Amer Heart J 83:825-840 (June) 1972


Endothelium and Fibrinolysis. Editorial—Todd AS (Department of Pathology, University of Dundee, Dundee, Great Britain)—Atherosclerosis 15:137-140 (Mar-Apr) 1972

Serum Lipids and Lipoproteins. Clinical Relevance—Lewis LA (Division of Research)—Cleveland Clin Quart 39:9-23 (Spring) 1972

Hyperlipoproteinemia. 1. Diagnosis and Clinical Significance—LaRosa JC (George Washington University School of Medicine, Washington, D.C.)—Postgrad Med 51:62-70 (June) 1972

Hyperlipoproteinemia. 2. Dietary Management—LaRosa JC (George Washington School of Medicine, Washington, D.C.)—Postgrad Med 52:75-79 (July) 1972
AN APPRECIATION

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