AB-1369-74

Pronounced ultrastructural changes in the presynaptic terminals of central nervous tissues of rats were observed after various durations of sustained hypoxia or hypercapnic hypoxia. Two distinct types of morphological alterations were found. In the first type, the presynaptic terminal was greatly enlarged, measuring 3 to 10 µm in the greatest diameter. These terminals contained unusual multilamellar bodies in the form of compact lamellar whorls or loosely arranged concentric lamellae. The second type of terminal changes consisted of aggregated or clumped vesicles, often surrounded by attenuated glial processes. The first type of altered terminals occurred predominantly in the deep cerebellar nuclei, while the second type was present in all regions of the central nervous system examined.

AB-1370-74
**Dantrolene Sodium: Long-Term Effects in Severe Spasticity** — Chyatte SB (Emory University School of Medicine, Woodruff Memorial Building, Atlanta, Georgia 30322), Basemajan JV — *Arch Phys Med Rehab* 54:311-315 (July) 1973*

In 30 of 105 patients with neurological disorders characterized by spasm of skeletal muscle, treatment with dantrolene sodium (Dantrium®), a muscle relaxant, continued for 6 to 27 months to time of report. These 30 patients had experienced benefits from the drug during a double-blind trial period and had elected to continue taking it.

AB-1371-74
**Arterial Injury in Dogs After Multiple Percutaneous Catheterizations at the Same Site of Entry** — Crnic DM, Seifert FC, Ranniger K (Department of Radiology, Medical College of Virginia, Richmond, Virginia 23298) — *Radiology* 108:295-299 (Aug) 1973*

Seventeen dogs which had undergone selective visceral arteriography three to ten times over a period of three years were catheterized repeatedly via the femoral arteries. Seven dogs showed arteriographically demonstrable abnormalities of the arterial wall, corresponding to the histological findings of intimal hyperplasia with collagen deposition and fibroblastic proliferation in the media. The presence of these lesions did not correlate with the number of catheterizations. None of the dogs demonstrated signs of peripheral arterial insufficiency.

AB-1372-74
**The Syndromes and Surgical Treatment of Aneurysms of the Great Vein of Galen** — Amacher AL, Shillito Jr (Children’s Hospital Medical Center, Boston, Massachusetts 02115) — *J Neurosurg* 39:89-98 (July) 1973*

The authors review 37 cases of primary aneurysms of the vein of Galen reported in the literature and present five new ones. The magnitude of the shunt from arterial feeders to the primary aneurysm indicates the age at which the patient's symptoms first appeared as well as the nature and severity of those symptoms. Newborn infants have intractable heart failure, older infants have hydrocephalus, and adolescents have headache and syncope. Four clinical categories, based on the time of onset of symptoms, are described, and the diagnostic studies and surgical techniques discussed. Four-vessel angiography and ligation of the feeding vessels at the point of entry into the vein of Galen are recommended.

AB-1373-74
**Value of Normothermic Perfusion, Hypothermic Perfusion, and Durotomy in the Treatment of Experimental Acute Spinal Cord Trauma** — Tator CH (Division of Neurosurgery, Medical Sciences Building, Room 7317, University of Toronto, Toronto 5, Canada), Deecke L — *J Neurosurg* 39:52-64 (July) 1973*

Investigations were performed to determine the relative therapeutic value of local hypothermic perfusion, local normothermic perfusion, and durotomy in monkeys injured by circumferential compression of the spinal cord at T9-10. At lower compression forces, both hypothermic and normothermic perfusion improved the neurological recovery compared to that in control animals. At the higher degree of compression only normothermic perfusion produced significantly better recovery. Durotomy was excluded as a contributing factor. The results indicate that normothermic perfusion is a better method of treatment and that the beneficial effect of hypothermic perfusion is probably due to the perfusion rather than the hypothermia. The mechanism by which perfusion exerts its beneficial effect is unknown, but it is suggested that dialysis of noxious substances from the injured cord may play a role.

AB-1374-74

The authors discuss the observation of a 30-year-old woman who, as a result of an accident with a tracheal rupture, was in coma, presented an asphyxia and required a tracheostomy.

Twenty-four hours later the coma deepened and a bilateral carotid arteriography demonstrated a bilateral carotid thrombus.

The traumatic origin of the thrombosis was confirmed by autopsy which showed a rupture of the elastic lamina,
Prostaglandin $E_2$ (PGE$_2$) was infused intravenously to eight women for the termination of pregnancy and tests of platelet function: coagulation and fibrinolysis were studied before and during the infusion. Platelet adhesiveness, as measured by a cellophane membrane test-cell system, was significantly diminished by PGE$_2$, a change which was not noted by the glass-bead column technique. The administration of PGE$_2$ caused more rapid platelet disaggregation following ADP-induced aggregation but had no effect on the platelet count, collagen-induced aggregation, or platelet factor 3 activity. An increase in plasma antithrombin concentration and euglobulin lysis activity was also noted.

These results support the concept that prostaglandin $E_2$ might have a role in the prevention of thrombosis.

**AB-1375-74**


Isolated cerebral hypoxic perfusion ($P_a$ of 35 mm Hg) was performed in 50 subjects belonging to seven different species of experimental animal. Pathophysiologic pulmonary lesions consistent with the respiratory distress syndrome developed in all. We postulate that the respiratory distress syndrome is secondary to cerebral hypoxia and autonomically mediated increased pulmonary venular resistance.

**AB-1376-74**


The relationship between serum lipids, i.e., serum cholesterol and casual serum triglycerides, and dietary intake was investigated in men of Japanese ancestry resident in Japan, Hawaii and California as part of a large scale comparative study of cardiovascular diseases. The study provided a good opportunity for such an effort because dietary intake patterns varied remarkably among the three cohorts although their genetic background is essentially the same. Serum cholesterol showed a positive regression with dietary intake of saturated fat, animal protein, and dietary cholesterol. The regression with saturated fat was more strongly observed in Japan where average body weight and serum cholesterol levels are considerably lower than in the more Americanized cohorts, and where average dietary fat intakes are roughly 40% of those recorded in Hawaii and California. Interestingly, the relationship between saturated fat intake and serum cholesterol was stronger in the groups with lower relative body weight in both Japan and Hawaii. Serum cholesterol was negatively associated with complex carbohydrate intake, but no association was observed with simple carbohydrate. Regression of nutrient variables with lower relative body weight in both Japan and Hawaii. Serum cholesterol showed a positive regression with dietary intake of saturated fat, animal protein, and dietary cholesterol. The regression with saturated fat was more strongly observed in Japan where average body weight and serum cholesterol levels are considerably lower than in the more Americanized cohorts, and where average dietary fat intakes are roughly 40% of those recorded in Hawaii and California. Interestingly, the relationship between saturated fat intake and serum cholesterol was stronger in the groups with lower relative body weight in both Japan and Hawaii. Serum cholesterol was negatively associated with complex carbohydrate intake, but no association was observed with simple carbohydrate. Regression of nutrient variables with lower relative body weight in both Japan and Hawaii.

**AB-1377-74**

Effect of Intravenous Prostaglandin $E_2$ on Platelet Function, Coagulation, and Fibrinolysis — Howie PW, Calder AA, Forbes CD, Prentice CRM (University Departments of Gynecology and Medicine, Royal Infirmary, Glasgow, Scotland) — *J Clin Path* 26:354-358 (May) 1973*

*Authors' abstract.

Stroke, Vol. 5, January-February 1974

93

Ophthalmoscopical examination of the left eye revealed numerous yellowish-white plaques involving the major branches of the central retinal artery in a 55-year-old man. Significant laboratory examinations demonstrated hyperlipidemia with hypercholesterolemia. A diagnosis of occlusive vascular disease of the left retina caused by atherosclerotic plaques was made. The patient was treated with heparin and clofibrate, with no significant change in ophthalmoscopical appearance of the plaques or in the lipid values in his blood. After sudden death 15 months later, both eyes were obtained. Gross examination of the left eye disclosed numerous yellowish-white plaques in retinal arteries, corresponding exactly to those previously observed ophthalmoscopically. Two plaques demonstrated that they represented multiple atheromas of retinal vessels.

AB-1385-74
His Bundle Recordings in Patients With Bundle Branch Block and Transient Neurologic Symptoms — Scheinman M (Regional Medical Programs, San Francisco General Hospital, San Francisco, California 94110), Weiss A, Kunkel F — Circulation 48:322-330 (Aug) 1973*

His bundle electrograms were recorded in 19 patients with bundle branch block (BBB) and transient neurological symptoms allowing for determination of intra-atrial (P-A), atioventricular (A-V), nodal (A-H) as well as infranodal conduction (H-Q) times. The patients were initially monitored in a coronary care unit and have been followed for a mean period of 8 ± 4 months. In six patients (Group I) neurological symptoms were observed in the absence of electrocardiographical evidence of A-V block. In six patients (Group II) the cause of symptoms was uncertain; two of these patients had relief of symptoms after permanent cardiac pacemaker insertion and were presumed to have episodic high grade A-V block. In seven subjects (Group III) complete A-V block was documented as the cause of the symptoms; these patients were studied when 1:1 antegrade A-V conduction returned. There was no significant difference between mean P-A, A-H, and QRS durations among the patients in the three groups. Mean H-Q (89 ± 20 msec) for Group III was significantly longer than that for Group I (56 ± 9 msec) or Group II (64 ± 11 msec) (P < 0.001). All patients with presumed or documented episodes of high grade A-V block had abnormal H-Q intervals, and six of the nine patients with presumed or documented complete A-V block had H-Q intervals > 80 msec. The present data suggest that patients with transient neurological symptoms, bifascicular or left BBB associated with marked prolongation of H-Q (≥ 800 msec), should be seriously considered as candidates for insertion of a permanent cardiac pacemaker even in the absence of documented high grade or complete A-V block.

AB-1386-74
 Intracranial Hemorrhage in Patients With Hemophilia — Seeler RA (Cook County Hospital, Chicago, Illinois 60612), Iman R.B — J Neurosurg 39:181-185 (Aug) 1973*

Intracranial hemorrhage occurred in four patients with hemophilia following mild head trauma. Three patients had...
severe factor VIII (antihemophilic factor, AHF) deficiency while one had mild (5.5%) AHF deficiency. The authors stress the need for immediate AHF replacement therapy and appropriate neurosurgical work-up, and a joint effort by hematologist and neurosurgeon to minimize neurological damage. In the four patients, three subdural hematomas, one epidural and one intracerebral hematoma were safely evacuated.

AB-1387-74
Cerebral Blood Flow Regulation During Experimental Brain Compression — Miller JD, Suneke AE, Langhit TW (Division of Neurosurgery, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania 19104) — J Neurosurg 39:186-196 (Aug) 1973*

The effect of brain compression on cerebral blood flow was measured in 13 anesthetized, ventilated dogs by inflation of extradural balloons. The effects of the raised intracranial pressure, so produced, were correlated with the presence or absence of autoregulation of cerebral blood flow to induced changes of arterial pressure, which was tested immediately prior to each episode of inflation of the balloon. Cerebral blood flow was measured by a venous outflow method and monitored continuously together with arterial and supratentorial intracranial pressure; arterial Po2 and body temperature were held constant. Three stages were identified. When autoregulation to a change of arterial pressure was intact, initial inflation of the balloon did not reduce cerebral blood flow until the difference between arterial and intracranial pressure (which was taken to represent cerebral perfusion pressure) was less than 40 mm Hg. When autoregulation was impaired, which occurred after the first inflation of the balloon or was due to preceding arterial hypotension, raised intracranial pressure caused an immediate reduction of cerebral blood flow. At this stage of impaired autoregulation there was a tendency for hyperemia to develop on deflation of the balloon. Finally, after repeated inflation and deflation of the balloon, when brain swelling supervened, cerebral blood flow decreased steadily and failed to increase despite induced increases of arterial pressure and cerebral perfusion pressure.

AB-1388-74
The Role of Intracranial Pressure in the Arrest of Hemorrhage in Patients With Ruptured Intracranial Aneurysm — Nornes H (Department of Neurosurgery, University Hospital, Rikshospitalet, Oslo, Norway) — J Neurosurg 39:226-234 (Aug) 1973*

Intracranial epidural pressure (EDP) was recorded in 29 patients admitted with ruptured saccular aneurysms, but unfit for immediate surgery. In ten patients a total of 13 recurrent hemorrhages were recorded; the average time before rerupture was 7.7 days after the last hemorrhage. Ten of the rebleedings started from intracranial pressure levels at or below 400 mm H2O whereas three started from higher prerupture levels. The observations indicate an increasing risk of rebleeding as the epidural pressure decreases toward normal pressure. Most repeat hemorrhages are arrested at ED levels about that of the diastolic blood pressure. The resulting reduced pressure gradient across the aneurysm wall is important in the arrest of hemorrhage and the maintenance of hemostasis. Measurement of internal carotid artery blood flow during the acute stage of recurrent hemorrhage shows marked changes in blood flow pattern. Arrest of blood flow occurred only at the end of diastole; forward flow occurred only during systole. The effect of intracranial-pressure-buffering mechanisms on the increased EDP after rupture is discussed. Activation of these mechanisms may reduce the EDP to acceptable pressure levels within minutes and should be awaited before decompressive management is considered. Continuous recording of the EDP in patients unfit for immediate aneurysm surgery is important in the selection of the optimal time for operation.

AB-1389-74
Platelet Aggregation and Release: Effects of Low Concentrations of Thrombin or Collagen — Packham MA, Guccione MA, Chang PL, Mustard JF (Department of Pathology, McMaster University Faculty of Medicine, Hamilton, Ontario, Canada) — Amer J Physiol 225:38-47 (July) 1973*

Rabbit platelets were labeled with serotonin-14C, washed twice, and resuspended in Tyrode-albumin solution. Exposure of these platelets to thrombin or collagen caused them to aggregate when the concentration of released ADP was too low to cause aggregation if added by itself. Aggregation by low concentrations of ADP was augmented by the presence of nonaggregating concentrations of collagen or thrombin. Thus, thrombin or collagen increased the responsiveness of platelets to ADP-induced aggregation. In the experiments with thrombin or collagen, release occurred mainly after aggregation was well underway. Release by platelets exposed to low concentrations of thrombin or collagen was greatly enhanced by the addition of ADP; the ADP was most effective when it was added after thrombin or collagen. ADP added before thrombin or collagen made the platelets refractory to the effects of these stimuli. The enhanced response to ADP caused by thrombin or collagen was dependent on their continued presence in the medium and could not be attributed to material released from the platelets (serotonin, epinephrine). The synergistic effects of thrombin and ADP or collagen and ADP were also demonstrable with rabbit platelet-rich plasma and with suspensions of washed platelets from humans. The combined effects of low concentrations of these stimuli may be important in the formation of hemostatic plugs and thrombi.

AB-1390-74
Percutaneous Embolic Occlusion of Dural Arterio-Venous Malformation — Kendall B (X-ray Department, Middlesex Hospital, London) — Brit J Radiol 46:520-523 (July) 1973*

A dural arteriovenous shunt in the wall of the cavernous sinus was successfully treated by embolic occlusion of the middle meningeal artery, from which its main arterial supply was derived. The advantages of this method of treatment in selected cases are discussed.

AB-1391-74
Plasma Half-Lives, Plasma Metabolites and Anticoagulant Efficacies of the Enantiomers of Warfarin in Man — Hewick DS, McEwen J (Department of Pharmacology and Therapeutics, University of Dundee,
Dundee, United Kingdom — J Pharm Pharmacol 25:458-465 (June) 1973*

S-(−)-Warfarin was found to be a more potent anticoagulant than R-(+)-warfarin in man. However, S-warfarin was cleared more rapidly from the plasma; respective mean plasma half-lives (from four subjects) for R and S-warfarin were 45.4 and 33.0 hours. Unlike the assay of Lewis, Ilincicki and Carlstrom (1970), the assay of Corn and Berberich (1967) for measuring plasma warfarin gave spuriously long half-life values, particularly with R-warfarin. The apparent volumes of distribution of the enantiomers were not significantly different. A major plasma metabolite detected was warfarin alcohol, which was seen in much greater quantities after giving R-warfarin than after S-warfarin. The corresponding diastereoisomer, warfarin alcohol, was seen in trace amounts after S-warfarin only.

AB-1392-74

Evaluation of Anticoagulant Therapy in Cloth-Covered Prosthetic Valves — Isom OW, Williams CD, Falk EA, Spencer FC, Glassman E (Departments of Surgery and Medicine, New York University Medical Center, New York, New York 10016) — Circulation 47 and 48 (Suppl III):49-50 (July) 1973*

Over a period of four years, a series of 303 patients had prosthetic valve replacement with the Starr-Edwards cloth-covered metallic ball prosthesis. There were 135 aortic replacements, 105 mitral, 42 combined mitral and aortic, and 21 combined mitral and tricuspid. The frequency of thromboembolism and hemorrhage was studied in patients receiving warfarin sodium (Coumadin) and in those not receiving warfarin.

Thrombotic emboli occurred during 2,052 patient-months of observation in patients with aortic prostheses who were receiving warfarin, but ten episodes of hemorrhage occurred. By comparison, after anticoagulants were discontinued, there was one episode of thromboembolism during 786 months of patient observation.

Among patients with mitral prostheses who were receiving warfarin, three episodes of thromboembolism occurred in 2,081 patient-months of observation, during which five hemorrhagic episodes also occurred. By comparison, after warfarin was discontinued, there were three episodes of thromboembolism during 402 months.

In patients with mitral prostheses who were receiving warfarin, one episode of thromboembolism occurred in 670 patient-months, and no episodes of hemorrhage. Without anticoagulation, two episodes of thromboembolism occurred in 130 patient-months.

In patients with mitral and tricuspid prostheses who were receiving warfarin, there were no episodes of thromboembolism during 186 patient-months, but there was one episode of hemorrhage. Without anticoagulation, however, there were three episodes of thromboembolism during 32 months of patient observation.

AB-1393-74


A system that allows the objective determination of blood flow in individual blood vessels (that is, coronary arteries) in intact man is described. Roentgenographical images (produced at a rate of 60 per second) are recorded on video tape before and during a single injection of radiopaque contrast material into the circulation and replayed any number of times. The dilution and dispersal of this contrast material then can be quantitatively determined from simultaneous indicator-dilution (roentgen density) curves obtained from any site within the x-ray field by multiple roentgen videodensitometric analyses of the video tape record. Cyclic nonspecific changes in roentgen density due to motion of the vessel or catheter and changes in cardiac size and position are compensated for in real time measurements by digital computer. By obtaining the difference in mean transit times from indicator-dilution curves a measured distance apart along a coronary vessel, mean blood velocity can be determined and blood flow then can be calculated as the product of velocity and the vessel cross-sectional area obtained from biplane orthogonal roentgenograms. The effects of persistent contrast medium in the myocardium and cardiac chambers superposed in the videodensitometric sampling system are minimized by computer dynamic background cancellation techniques. Simultaneous determination of flow values in a canine "coronary" artery by roentgen videodensitometry and electromagnetic flowmeter show a good correlation (r = 0.95) among flow values of less than 150 ml per minute. Similar coronary artery-roentgen density curves suitable for videodensitometric determination of flow have been obtained from clinical catheterization studies in man.

AB-1394-74

Stress and the Induction of Intravascular Platelet Aggregation in the Heart — Haft JI (Cardiac Section, VA Hospital, Bronx, New York 10468), Fani K — Circulation 48:164-169 (July) 1973*

Intravascular aggregation of platelets similar to that found in dogs after norepinephrine infusion was demonstrated using the electron microscope in the hearts of 20 of 23 rats subjected to two forms of stress (immersion in hot water, seven of eight rats; repeated small electric shocks to the feet, 13 of 15 rats). Only one of 14 unstressed rats was found to have similar intravascular platelet aggregates. These findings suggest that catecholamines secreted endogenously during stress are sufficient to cause platelets to aggregate intravascularly and raise the possibility that clinical myocardial infarction occurring during severe or prolonged stress may be caused by catecholamine-induced platelet thrombi which occur at, or travel to, and occlude a coronary artery already narrowed by previous atherosclerosis.

AB-1395-74

Responsiveness of Isolated Cerebral and Peripheral Arteries to Serotonin, Norepinephrine, and Transmural Electrical Stimulation — Toda N, Fujita Y (Departments of Pharmacology and Neurosurgery, Kyoto University Faculty of Medicine, Kyoto, Japan) — Circulation Research 33:98-104 (July) 1973*

Spinal cord strips of cerebral and peripheral arteries from dogs were used for comparing the vasoconstricting effect of serotonin, norepinephrine, K+, and transmural electrical stimulation. Sensitivity of cerebral (basilar, posterior cerebral, and middle cerebral) arterial strips to serotonin...
was markedly greater than that to norepinephrine with respect to the median effective concentration (ED$_{50}$) and the maximum response. Contractile responses of isolated human cerebral arteries to serotonin and norepinephrine were similar to those observed in the dog arteries. In contrast, proximal and distal strips from superior mesenteric arteries and strips from renal arteries were more sensitive to norepinephrine than they were to serotonin. Mean values of contractions caused by $5 \times 10^{-6}$M serotonin relative to those caused by 30 mM K$^+$ in cerebral, internal carotid, external carotid, common carotid, and superior mesenteric arteries were in a descending order, whereas those for norepinephrine were in an ascending order. These studies demonstrate that a gradual transition occurs from characteristic responses seen in mesenteric arteries (high sensitivity to norepinephrine, low sensitivity to serotonin) to those seen in cerebral arteries (high sensitivity to serotonin, low sensitivity to norepinephrine). Transmural stimulation did not produce contractions of cerebral and internal carotid arteries, but contractions were produced in external carotid, common carotid, and superior mesenteric arteries. It appears that sympathetic nerves cannot play an important role in the regulation of vascular tone in large cerebral arteries.

**AB-1396-74**

**Induction of Experimental Arterial Occlusive Thrombi in Rats** — Hornstra G, Vendel mans-Starrenburg A (Unilever Research, Vlaardingen, The Netherlands) — *Atherosclerosis* 17:369-382 (May-June) 1973*

A method is described for the induction of arteri al occlusive thrombi in rats. A loop-shaped cannula is inserted in the abdominal aorta. Histological investigation revealed that the cannula tip damages the endothelial wall as a result of which platelets adhere to the subendothelial tissue. Passing platelets aggregate to the adhered ones, thus forming a platelet thrombus which is stabilized by fibrin formation. The technique is simple and inexpensive. Thrombosis incidence, which can be checked easily, is 100%, while mortality is negligible. The usefulness of this technique is shown by measurement of the antithrombotic effect of intravascularly administered prostaglandin E$_2$ and of dietary sunflowerseed oil.

**AB-1397-74**

**Participation of Cerebrovascular Nerves in Generalized Sympathetic Discharge. Nonspecific Release of Norepinephrine in the Presence or Absence of Subarachnoid Hemorrhage and Vasospasm** — Rosenblum WI (Division of Neuroradiology, Health Sciences Center, Box 17, Richmond, Virginia 23298), Guilanti D — *Arch Neurol* 29:91-94 (Aug) 1973*

The cerebral surface was exposed in cats, and cerebral vasospasm was produced by subarachnoid hemorrhage (SAH) and mechanical stimulation. After four hours of repeated SAH, mechanical stimulation, and vasospasm, fluorescence histochemistry revealed a significant diminution in norepinephrine in cerebrovascular nerves ipsilateral and contralateral to the side of surgical manipulation. An identical diminution was found in nerves to mesenteric vessels of the experimental animals and in nerves to cerebral vessels of sham animals with exposed cortices, but no SAH or spasm. We conclude that the loss of norepinephrine from cerebrovascular nerves is not specifically related to SAH and mechanical stimulation of cerebral vessels, but is instead part of a more generalized adrenergic discharge produced in response to one or more undefined stimuli ("stress") present even in the sham situation.

**AB-1398-74**

**Hemodynamic Studies Within the Brain During Migraine** — Skinhøj E (Department of Neurology, Bispebjerg Hospital, DK-2400 Copenhagen, Denmark) — *Arch Neurol* 29:95-98 (Aug) 1973*

Using the intracarotid xenon (Xe 133) clearance method for determination of regional blood flow within the internal carotid area, we examined four patients during the prodromal phase of migraine. They all showed a severely reduced perfusion, in some areas to a level known to be critical for an adequate oxygenation. Six patients examined during the headache phase showed a significant hyperperfusion. As a possible cause of this hyperperfusion, an intracerebral lactate-acidosis was found in all cases, indicating that even common migraine is preceded by a subclinical cerebral hypoxia. Angiographical studies during the prodromal phase support the hypothesis that vascular dysregulation in the basilar artery, as well as in the carotids, play a substantial role in the pathogenesis of migraine.

**AB-1399-74**

**The Surgical Treatment of Intracerebral and Intraventricular Haematomas** — Pia HW (Neurosurgical Clinic, University of Giessen, D-6300 Giessen, Federal Republic of Germany) — *Acta Neurochir* 27:149-164, 1972 (Springer-Verlag, publisher)

Of 251 patients with spontaneous intracerebral hematomas (125 intraventricular bleedings), 48 had aneurysms, 89 had angiomas (or microangiomas), 64 had hypertension, 28 had tumors, and 22 had other causes of bleeding. The relationships of etiology, age, localization, type of ventricular bleeding, evaluation and severity of symptoms, and prognosis are discussed. Early diagnosis of intracerebral hematoma formation was aided by echoencephalography, angiography, and CSF examination, and was more important as an indication for surgery than a patient’s age or the etiology of the lesion. Except for extreme cases with severe central regulatory disorders, the author recommends surgery for all intracerebral and intraventricular hemorrhages with progressive symptoms or lack of remission. Of the 144 patients treated surgically in this report 111 survived.

**AB-1400-74**

**Experimental Production of Aneurysms by Microvascular Surgery in Rabbits** — Stehbens WE (Department of Pathology, Veterans Administration Hospital, Albany, New York 12208) — *Vase Surg* 7:165-175 (May-June) 1973

The author describes microvascular surgical techniques using autogenous vein grafts on the small arteries of rabbits for the experimental production of three types of aneurysms, viz. a berry type at an arterial bifurcation, a fusiform type,
and a lateral type, forming a diverticulum from the side of an artery.

**AB-1401-74**

**Dipyridamole and Aspirin Tested Against an Experimental Model of Thrombosis** — Mayer JE Jr, Hammond GL (Surgical Cardiovascular Research Laboratory, Department of Surgery, Yale University School of Medicine, New Haven, Connecticut) — *Ann Surg* 178:108-112 (July) 1973

Induction of arterial clotting by perfusion of the femoral arteries of four groups of dogs with the proteolytic enzyme pronase was used as a model to test the antithrombotic effect of dipyridamole and aspirin. One group was perfused with a pronase solution, which resulted in occluding thromboses in each of ten vessels. Another group, perfused through similar arteriotomy sites with saline alone, showed no evidence of thrombosis even with microscopic inspection. The group of dogs treated with oral doses of dipyridamole before and after pronase perfusion showed patency in five of ten vessels up to six weeks later. The group treated with aspirin showed patency in nine of ten arteries examined six hours to six weeks after pronase perfusion.

**AB-1402-74**

**Vitamin C and Thrombotic Episodes** — Andrews CT, Wilson TS (Barcooose Hospital, Redruth, Cornwall) — *Lancet* 2:39 (July 7) 1973

The effect of 200 mg per day of vitamin C on the incidence of thrombotic episodes, cerebrovascular and coronary, was studied in a geriatric population during a six-month period. The overall number of thromboses was slightly greater in the treated group, but the numbers were too small to be significant.

**AB-1403-74**

**Simultaneous Avulsion of the Innominate and Left Infrathoracic Subclavian Arteries. A Case Report** — Thio TR (The Atlanta Heart and Lung Clinic, Atlanta, Georgia 30312), Stanton PE Jr, Logan WD Jr — *J Thorac Cardiovasc Surg* 66:96-98 (July) 1973

A 17-year-old boy, after a motorcycle accident, was found by aortography to have complete interruption of the left subclavian artery and a laceration of the innominate artery with a pseudoaneurysm. Surgical repair through a median sternotomy with extension into the neck resulted in a full and uncomplicated recovery. Other reports have indicated that only 20% of patients have survived the immediate results of traumatic aortic rupture.

**AB-1404-74**

**Cerebral Metabolism and Blood Flow After Circulatory Arrest During Deep Hypothermia** — Perna AM, Gardner TJ, Tabaddor K, Brawley RK, Gott VL (Department of Surgery, The Johns Hopkins University School of Medicine, Baltimore, Maryland 21205) — *Ann Surg* 178:95-101 (July) 1973

Cerebral blood flow and oxygen consumption were measured with a mass spectrometer (inert gas technique) in ten dogs during deep hypothermia (18°C) and circulatory arrest for 45 minutes induced by surface cooling, ether anesthesia, and hyperventilation. Continuous measurements of cerebral cortical Pco2 during the 45 minutes of arrest in five dogs indicated that brain oxygen utilization stopped after the first 15 minutes. Despite marked lowering of the blood Pco2 during deep hypothermia, as a result of hyperventilation, there was no apparent increase in cerebral vascular resistance. At the completion of circulatory arrest and rewarming, cerebral oxygen consumption increased 15% compared to the precooled state, while cerebral blood flow decreased 18% and cerebral vascular resistance increased 8%. Thus, despite a reduction in cerebral blood flow, the animals' cerebral metabolism did not seem to be impaired.

**AB-1405-74**

**Surgical Treatment of Spontaneous Intracerebral Hemorrhage. Immediate and Long-Term Results in 250 Cases** — Paillas JE (Neurosurgical Clinic, Hôpital de la Timone, University of Marseille, Marseille, France), Alliez B — *J Neurosurg* 39:145-151 (Aug) 1973

The authors report the surgical treatment of 250 patients with spontaneous intracerebral hemorrhage, excluding patients in whom arterial or A-V aneurysms were diagnosed preoperatively. In 31 cases (12%) a malformation was discovered during the operation. Arterial hypertension and atherosclerosis were the main causes of hemorrhage in 75% of the cases. In 137 the etiology was unknown. In 116 cases the patients were between 50 and 60 years of age, compared to 89 patients less than 50 years old and 45 patients older than 60 years. Deep hemorrhages, predominantly putamenocapsulothalamic, outnumbered "lobar" ones in the white matter 129 to 106.

The authors found the most favorable operative time to be five to seven days after the bleed. Unfavorable factors included deep-seated hemorrhage, arterial hypertension, advanced age, deep coma, and premature operation. During the first month postoperatively 89 (35.6%) deaths had occurred. Many of the remaining 161 patients were lost to follow-up, but at least 40% were alive five years later, 21% were alive ten years later, and 13% were alive more than ten years later. In patients with deep-seated hemorrhages the mortality rate was 48% compared to 21% in those with superficial hemorrhages. Three cerebellar hemorrhages and one pontine hemorrhage also were treated surgically. In all cases the surgical goal was the total evacuation of the clots.

**AB-1406-74**

**Carotid Artery Hyperperfusion During Open-Heart Surgery. Report of a Case** — Krous HF (Department of Pathology, Children's Orthopedic Hospital and Medical Center, Seattle, Washington 98105), Mansfield PB, Sauvage LR — *J Thorac Cardiovasc Surg* 66:118-121 (July) 1973

An eight-year-old girl underwent cardiac surgery requiring cannulation of the aortic arch and bypass perfusion. Soon after aortic clamping her left face became edematous, responsive to Decadron and furosemide. Postoperatively she remained comatose and then died four days later. At necropsy extensive intradural hemorrhage in the left middle and anterior fossae, marked brain swelling with bilateral uncal herniation, and petechiae in a focally necrotic right cerebral cortex were apparent. Jet flow from the arterial perfusion catheter directed into an anomalous left carotid ostium is discussed as the mechanism of the brain damage.

**AB-1407-74**

**Demand Pacemaker for the Treatment of Carotid Sinus Syncope** — Ramirez A (Harvard Medical Unit,
ABSTRACTS

Boston City Hospital, Boston, Massachusetts 02118 — J Thorac Cardiovasc Surg 66:287-289 (Aug) 1973

A 52-year-old man with a three-year history of syncopal episodes is discussed. During hospitalization the episodes were reproduced by carotid sinus massage and were characterized by hypotension (BP drop from about 130/90 to 80/50), sinus bradycardia, and unconsciousness. His electrocardiogram during the episodes revealed a Mobitz type II A-V block. He was treated with a permanent, unipolar, demand, ventricular pacemaker and has been asymptomatic for more than a year.

AB-1408-74
Femoro-Cerebral Angiography: Analysis of 2,000 Consecutive Examinations, Special Emphasis on Carotid Arteries Catheterization in Older Patients — Vitek JJ (Department of Radiology, University of Alabama Medical Center, Birmingham, Alabama) — Amer J Roentgen 118:633-647 (July) 1973

In a series of 2,000 consecutive femoro-cerebral angiographical procedures the following results occurred: for left carotid artery studies the success rate was 99% overall with 98% successes for 1,042 carotid studies in patients over 50 years old; for right carotid arteries the success rate was 98% overall and 96% for patients (1,028 carotids studied) older than 50 years; the overall complication rate was 2.25% with two deaths (0.1%), 0.25% permanent neurological deficits, 1.25% transient neurological deficits, 0.35% subintimal injections into the internal carotid arteries, 0.25% significant hematomas at the femoral arteries, and 0.05% (one case) of thrombosis of a femoral artery. The rate of failure was directly proportional to the patient’s age, severity of atherosclerosis, and hypertensive disease. Congenital anomalies of vessels, especially when combined with atherosclerosis and hypertension, were the most important single reason for failures. In general, successful catheterization depended on the appropriate predesigned shape of the catheter and, of course, its skillful manipulation.

AB-1409-74

In several species of animals the author demonstrates that cerebral hypoxia induces the respiratory distress syndrome; that pulmonary denervation presents the lesions of shock lung, high altitude pulmonary edema, and oxygen toxicity; and that diphenylhydantoin protects the lungs in hemorrhagic shock. Thus, these pulmonary syndromes may be the result of autonomically mediated vascular spasm; and that diphenylhydantoin protects the lungs in hemorrhagic shock. Thus, these pulmonary syndromes may be the result of autonomically mediated vascular spasm.

AB-1410-74

Injuries to arteries and veins in dogs were produced by Fogarty catheterization, crushing with a Kelly clamp, or passage of current through the vessels. Each of these methods of injury resulted in a different type of lesion as detected by electro-osmosis, scanning electron microscopy, microscopic densitometry, and streaming potential measurements. The catheterization technique damaged the intima, thus exposing the underlying media and collagen and changing the surface charge from negative to positive in that region. Crush injury damaged the ridges and produced crevices in the vessels, into which fibrin thrombus with platelets were deposited. Electrical injury denuded the architecture of the entire vessel wall and elicited a bizarre "cobblestone" type of thrombus. Heparin given before vessel injury markedly decreased the amount of thrombus deposited in vessels damaged by any of the above methods as compared to untreated controls; heparin given after the injury was effective, but to a lesser extent than when given before the injury. Dextran 40 (0.5 gm per kilogram) prevented visible thrombi after all three types of injury. The authors discuss the mechanisms of the injuries and the treatment with heparin and dextran, which perhaps are most effective in combination.

AB-1411-74
Cerebrovascular Permeability After Meglumine Iothalamate Administration — Murphy DJ (Department of Surgery, University of Kansas Medical Center, Kansas City, Kansas 66103) — Neurology 23:926-936 (Sept) 1973

The effects of high dose, prolonged carotid injection of contrast material (meglumine iothalamate) was studied in rabbit brains. Electron microscopy revealed swelling of astrocytic foot processes, mitochondrial ballooning, and disruption of myelinated fibers. Blood-brain barrier disruption was demonstrated by a horseradish peroxidase technique; opening of previously tight interendothelial junctions was detected. Preservation of normal ultrastructure, demonstrated by the absence of trypan blue staining, was found if the rabbits were pretreated with low molecular weight dextran alone or in combination with steroids.

AB-1412-74
Rim Sign in Brain Scintigraphy of Epidural Hematoma — Ter Bruggke GG, Meindok H (Toronto Western Medical Building, Suite 410, Toronto 2B, Ontario, Canada) — J Nucl Med 14:709-710 (Sept) 1973

A 53-year-old man had a left hemiparesis and homonymous hemianopia after a head injury. A brain scan seven days after the fall showed a region of increased uptake, about 10 cm in diameter, surrounding a region of lesser uptake, about 6 cm in diameter. This rim sign corresponded to a 7 cm epidural hematoma found at surgery. Thus the increased activity in the rim sign seemed to correspond to the tissue surrounding the hematoma.
The effects of 12 different drugs on regional cerebral blood flow were measured with a modified 133Xe intracarotid injection technique in 211 patients, all of whom had focal flow abnormalities (175 of them had cerebrovascular disease). The drugs included two α-receptor stimulators, two β-receptor stimulators, a xanthine, two papaverine-like drugs, a hemodiluting agent, a dehydrating agent, a vasodilator, and a stimulant. The data were compared with blood flow changes in untreated control patients.

Heterogeneous responses (decreased flow in some areas with increased flow concomitantly in other regions of the brain) of two types were observed. The cerebral vasodilator (Hexobendine) produced an "intracerebral steal syndrome" wherein blood was shunted away from ischemic regions. Xanthines, papaverine-like drugs, the hemodiluting agent, and the dehydrating agent produced an inverse cerebral steal syndrome, i.e., the shunting of blood from well-perfused regions to ischemic regions of brain.

Defective Platelet Disaggregation Associated With Occlusive Arterial Diseases — Davis JW (Hematology Research Laboratories, Veterans Administration Hospital, Kansas City, Missouri 64128) — Angiology 24:391-397 (July-Aug) 1973

Platelet aggregation in blood samples from 227 men was studied by induction of aggregation with ADP and measurement of light transmission through the sample. Disaggregation was measured as the decrease in light transmission three minutes after maximum transmission had occurred, expressed as a percent of the maximal transmission. The disaggregation of platelets from 68 patients with occlusive arterial diseases (coronaries in 51) was found to be significantly less than that from 124 controls and 35 men with no personal vascular disease history but with family histories of vascular disease.


Measurement of regional blood flow by 133Xe clearance after intracarotid injection was studied in 35 patients with completed strokes and 22 patients with transient ischemic attacks. Lesions diagnosed clinically agreed with regional blood flow localization in about 80% of the cases. In 60% of the regional blood flow localized abnormalities, however, there were no associated symptoms. The authors suggest these were either clinically "silent" regions or the lesions were not severe enough to produce symptoms.

The Regulation of Regional Blood Flow in the Brain by Visual Input — Bondy SC (Division of Neurology, University of Colorado Medical Center, Denver, Colorado 80220) — J. Neurosci 19:425-432 (Aug) 1973

Reduction of visual input to the brains of chicks (newly hatched) by monocular eyelid closure produced decreased blood supply first to the primary optic regions in the optic lobes and thalamic contralateral to the closed eyelid, and later to the entire contralateral hemisphere. If both eyelids had been closed and then one re-opened and exposed to light and patterned light, the hemisphere contralateral to the opened eyelid had a rapid increase in blood flow. The intensity of the light, not its information (pattern) content, seemed to determine the degree of vascular response. This regulation of cerebral blood flow was diminished after the chicks’ brains were depleted of catecholamines by reserpine. The response to light persisted, however, even when CO2 levels sufficient to cause maximal dilatation of cerebral vessels was maintained. Thus, the blood supply to some regions of the chicks’ brains seems to be regulated in part by direct autonomic innervation of cerebral blood vessels.


This paper confirms earlier studies which have shown that the incidence of myocardial and cerebral vascular accidents is higher in the winter. This association is only significant in older subjects (75.5 years). Changes of temperature within individual days does not seem important in this regard. Although respiratory and infective diseases also are more frequent in the winter, they were not found to be causally related to the high incidence of vascular accidents.


The authors report a method for the nearly total vascular isolation of the brains of baboons. Isotope leakage measurements confirmed the degree of anatomical isolation. Brain function was monitored by EEG, the animals' reflexes, eye movements, and spontaneous body motion. The animals remained neurologically intact postoperatively. This model thus allows an investigator to document that the brain alone is being perfused and that the brain is functioning normally.

Spontaneous Dissecting Aneurysms of the Cervical Internal Carotid Artery. Two Case Reports and a Survey of the Literature — Brown OL (Department of Radiology, The Christ Hospital, Cincinnati, Ohio 45219), Armitage JL — Amer J Roentgen 118:648-653 (July) 1973

Spontaneous dissecting aneurysms of the cervical internal carotid arteries of a 48-year-old man and a 27-year-old woman are reported. Neither patient was hypertensive; the man had significant atherosclerotic changes in the internal carotid artery involved, and the woman had histological changes of fibromuscular dysplasia of her right internal carotid artery. After surgical treatment the male patient’s neurological deficit has remained stable for two years; the young woman was symptom-free as of 18 months after surgery. These two cases and ten other patients reported previously are discussed.
ABSTRACTS

AB-1420-74
Treatment of Subdural Hematomas in Infants — Anderson FM (Division of Neurosurgery, Childrens Hospital of Los Angeles, Los Angeles, California) — Bull LA Neurol Soc 38:103-109 (July) 1973

In reviewing the treatment of chronic subdural hematomas in 152 infants (six days to two years old), the author suggests that daily subdural taps on alternating sides be continued for two weeks as long as 10 cc of fluid is regularly obtained. If the flat volume persists along with signs of increased pressure, another week of taps is suggested, to be followed by bilateral burr holes. If the internal membranes are thin and translucent and more subdural fluid is present, a subdural-peritoneal shunt is recommended. In patients whose initial taps reveal normal pressures and less than 10 cc of fluid, repeated taps about every third day for two weeks, then weekly for another month are recommended. Finally, in those infants with longstanding subdural hematomas by history whose taps produce diminishing fluid for ten days, burr holes are suggested, to be followed by craniotomy and removal of the internal membranes, if thick, inelastic membranes are found. If pressure symptoms recur, a shunt may be necessary.

AB-1421-74
Pulseless Disease Presenting With Isolated Abducens Nerve Palsy and Recurrent Cutaneous Angiitis — A B-1422-74

A 20-year-old man with a right abducens nerve palsy was found to have complete obstruction of the left common carotid at its origin on transfemoral angiography; the left subclavian artery was not seen. The right internal carotid artery did not fill during right brachial angiography. The right vertebral artery fed blood to both cerebral hemispheres through collateral circulation. Biopsy of his skin lesions revealed vasculitis with some giant cells present. The possibilities of infarction of the nerve trunk or a granulomatous process affecting the nerve directly are discussed.

AB-1422-74
Vascular Injury in Vietnam Combat Casualties: Results of Treatment at the 24th Evacuation Hospital July 1, 1967 to August 12, 1969 — McNamara JJ (Department of Surgery, University of Hawaii School of Medicine and Queen’s Medical Center, Honolulu, Hawaii) — Bull J Med 3:27-28 (July 7) 1973

In a group of 275 patients with peripheral vascular injuries treated at an evacuation hospital in Vietnam, 31 had carotid artery injuries, of which 21 involved the common carotid and ten the internal carotid. Arterial repair was performed on 25 of these 31 patients. Preoperatively six of the 25 patients had neurological deficits; five of these six worsened or died after surgery and one remained unchanged. Nineteen were normal neurologically before and after surgery. Of six patients treated only by ligation, there were two who were normal neurologically before surgery and remained so postoperatively, whereas four had serious neurological deficits preoperatively and died after surgery.

AB-1423-74
Antigenicity of Vascular Heterografts — Mattila SP, Fogarty TJ (Stanford University School of Medicine, Stanford, California 94305) — J Surg Res 15:81-86 (Aug) 1973

The authors demonstrate that the treatment of vascular material from cattle and pigs with the proteolytic enzyme ficin followed by the tanning agent dialdehyde reduces its antigenicity in grafts. This treatment lowered the soluble protein concentration of the vascular wall and seemingly preferentially reduced the immunologically active proteins. Although no accurate immunological technique is available to demonstrate the rejection of vascular grafts, this report shows that pretreatment of vascular heterografts with ficin and glutaraldehyde makes them more inert by decreasing the amount of antibody formation toward them.

AB-1424-74
Tongue Necrosis Attributed to Ergotamine in Temporal Arteritis — Wolpaw JR (National Institutes of Health, Building 36, Room 5D-10, Bethesda, Maryland 20014), Brottem JL, Martin HL — JAMA 225:514-515 (July 30) 1973

A 68-year-old woman with headaches for many years (worse in recent weeks) was treated with ergotamine tartrate; three hours after a 0.5 mg dose was given intramuscularly, she developed numbness in her tongue, and she had difficulty swallowing. After 1 mg doses orally six hours apart, six days later she experienced difficulty talking and swallowing and stated that her throat and tongue felt swollen and that her jaws were painful. During her hospitalization a temporal artery biopsy revealed temporal arteritis. Although she required debridement of the left tip of her tongue (0.75 x 1.0 x 2.5 cm), she otherwise improved with prednisone therapy.

AB-1425-74
Anatomical Relationships of the Cerebral and Dural Venous Systems in the Parasagittal Area — Browder J (The Surgical Service, Veterans Administration Hospital, East Orange, New Jersey 07019), Browder A, Kaplan HA — Anat Rec 176:329-332 (July) 1973

In 370 fresh cadavers the anatomy of all major venous channels in the parasagittal region were studied by inspection and dissection. In 38 cases vinylite casts of the superior sagittal sinus and its tributaries were made. The cerebral veins apparently arise from the inner layer of the vascular plexus that covers the brain in the embryo, whereas the dural veins, the lateral lacunae, and the dural sinuses arise from the outer plexus. In an adult these two systems are connected only occasionally between a lateral lacuna and a superior cerebral vein just before the vein joins the superior sagittal sinus. The venous meshwork of the lateral lacunae should be considered a part of the dural venous system.

AB-1426-74

A hypertensive 57-year-old woman was shown to have a ruptured aneurysm of the intraventricular part of the right anterior choroidal artery with intraventricular clots, cisternal blockage, and tetraventricular hydrocephalus. Angiography, pneumoencephalography, and tomography...
Cerebral blood flow, cerebral consumption of oxygen and glucose, and cerebral production of lactate were studied as a function of intracranial cerebrospinal fluid pressure in anesthetized dogs. A CSF-like fluid was infused into the cisterna magna to produce intracranial hypertension. Arterial blood pressure and oxygenation were kept constant. Cerebral consumption of oxygen and glucose was not significantly altered at cerebral perfusion pressures of 77 mm Hg, but was affected when the cerebral perfusion pressure fell below 50 mm Hg. Glucose uptake was especially changed during raised intracranial pressure. The authors compare their data to other recent reports.

Diagnosis and Treatment of Spinal Angiomas — Pia HW (Neurosurgical Clinic of Giessen University, D-6300 Giessen, Federal Republic of Germany) — Acta Neurochir 28:1-12, 1973

Of 93 spinal angiomas in 74 patients 55 were solitary and 28 were complex malformations. Angioma plus angioblastoma were both found in each of five patients, and in another patient an angioma plus an aneurysm were found. Diagnosis depended on type and onset of symptoms. CSF examination, spinal osteovenography, isotope myelography, selective angiography, and myelography. Operative success depended on the location of the lesion. After total removal of intradural angiomas in 34 patients, 14 recovered completely, 13 partially, five did not change, and two deteriorated. The difficulties with diagnosis and treatment are discussed.

The Thalamic Hemorrhage. An Anatomo-Clinical Study — Fazio C (la Clinica delle Malattie nervose e mentali dell’Università, Viale dell’Università 30, I-00161, Roma, Italy), Sacco G, Bugiani O — Europ Neurol 9:30-43, 1973*

An anatomoclinical study has been performed on five cases with thalamic hemorrhages. The clinical picture occurring in elderly hypertensive subjects was constituted by a sudden hemiparesis or hemiplegia with bilateral miosis and Babinski signs, inconstant involvement of sensation, bloody CSF, frequent initial improvement followed by sudden impairment. When the hemorrhage involved the dominant thalamus, a mixed aphasia occurred. Anatomically, a massive hemorrhage of the thalamus occurred in all cases. These findings are discussed.

Vertebrobasilar Ischaemia and the Extracranial Arteries — Lord RSA (University of New South Wales Department of Surgery, St. Vincent's Hospital, Sydney, Australia) — Med J Aust 2:32-37 (July 7) 1973*

Vertebrobasilar ischemia is frequently caused by atheromatous lesions of the extracranial arteries. Identification of an extracranial cause is important since symptoms can often be relieved by surgical revascularization.

A Note on the Use of Anticoagulant Therapy in Chronic Brain Syndrome — Lukas ER (Research Department, Woodville State Hospital, Carnegie, Pennsylvania 15106), Hambacher WO, Fallica AJ — J Amer Geriat Soc 21:224-225, 1973*

A “single-blind” study on the use of anticoagulant therapy in eight geriatric patients with chronic brain syndrome indicated that the subjects performed significantly less well on the Graham-Kendall test (for organic abnormalities) both immediately after, and three months after cessation of a four-month course of treatment. Scores from the Mental Status Questionnaire indicated a significant improvement in psychological functioning after treatment. However, the apparent contradiction in these results could be attributed to differences in the maintenance of positive effects engendered by the initial high levels of motivation.


The relation between plasma-renin activity and the occurrence of heart attacks and strokes was examined in 371 black patients with essential hypertension, who were categorized as having low, normal, or high renin activity according to their 24-hour sodium excretion. The incidence of such complications was found to be identical in each of the renin subgroups. No evidence was found to support the proposal that patients with low renin hypertension are protected against these complications, or that high renin activity is vasculotoxic per se. These findings are not consistent with the view that plasma-renin activity is a potential risk factor in uncomplicated essential hypertension, and emphasize the need for effective therapy in all hypertensive patients regardless of the plasma-renin activity.


The morphological characteristics of brain death were examined in baboons and cats after artificial cerebral ischemia. All animals showed autolytic changes in the brain, ischemic neuronal changes, midbrain hemorrhages, focal necrosis of the brain stem, demarcation at C 1/C 2 cord segment, and displacement of cerebellar tissue. Ultrastructural

ABSTRACTS
The circulatory arrest is initially caused by venous compression, changes, and complete obstruction of capillaries by astrocytic and endothelial swelling and intravascular blebs. These data indicate that brain death develops in several stages. If the process starts in the supratentorial space it first leads to a breakdown of the cerebral circulation and to transtentorial herniation. As a result, midbrain hemorrhages develop and the infratentorial pressure begins to rise. The second stage is terminated by demarcation of the brain. The circulatory arrest is initially caused by venous compression but becomes irreversible when vascular obstruction develops.

**ABSTRACTS**

**Extensive Intracerebral Hemorrhage During Open-Heart Surgery** — Nelson JS (Department of Pathology, St. Louis University School of Medicine, St. Louis, Missouri 63104), Case MES, Gold J — *Acta Neuropathol (Berlin)* 25:163-165, 1973 (Springer-Verlag, publisher)*

Massive intracerebral hemorrhage developed during open heart surgery on a normotensive patient. This type of hemorrhage is a rare complication in such surgical procedures. The clinical and pathological findings suggest that drug-induced hypertension, systemic heparinization, and preexisting cerebrovascular damage are associated with the pathogenesis of the lesion.


Among 195 patients with intracranial aneurysms, 79 had fundal hemorrhages (FH), an incidence of 40.5% (99% confidence limits 31 to 50). FH occurred alone in 26.7% and were associated with papilledema in 13.8% of the cases. The total incidence was found to be higher than the frequencies found by similar studies, and the reasons are discussed. Among the 79 patients, 33 had mild retinal hemorrhages (Grade I), in 25 the hemorrhage was more severe (Grade II), and 21 had preretinal or vitreous hemorrhages (Grade III). Aneurysms on the anterior communicating artery, with the tendency, upon rupture, to large hemorrhages, were responsible for the greater part of FH as well as for the most severe cases (Grade III), indicating a positive correlation between the amount of bleeding which suddenly occurs in the subarachnoid space and the incidence and severity of FH. No correlation could be demonstrated between the shape and site of FH and the aneurysmal site, or between the laterality of FH and the hemispheric site of the aneurysm.

**Fundal Haemorrhages in Ruptured Intracranial Aneurysms. II. Correlation With the Clinical Course** — Fahmy JA (Department of Ophthalmology, Kommunehospitalet, DK 1399, Copenhagen K, Denmark) — *Acta Ophthal 51:299-384, 1973*.

The occurrence of fundal hemorrhages (FH) was correlated with the various ocular and neurological signs as well as with some factors with possible relation to the intracranial pressure. A positive association was found to papilledema (P < 0.0005), unconsciousness (P < 0.005) and cerebral vascular sclerosis (P < 0.025). FH proved to be an important prognostic factor and occurred mostly among fatal cases and disabled survivors (P < 0.0005).

Among all patients with FH, those with the severest changes (Grade III) had the poorest prognosis (P < 0.05). This fact, among others, seems to justify a previous suggestion (Fahmy 1972 a, 1973 b) that FH classification ought to be graded according to severity.

**Cerebrovascular Accidents in Infants and Children With Cyanotic Congenital Heart Disease** — Phornphutkul C, Rosenthal A (Department of Cardiology, The Children’s Hospital Medical Center, Boston, Massachusetts 02115), Nadas AS, Berenberg W — *Amer J Cardiol 32:329-334 (Sept 7) 1973*.

Cerebrovascular accidents unrelated to surgery, brain abscess or subacute bacterial endocarditis remain a serious complication in patients with cyanotic congenital heart disease. To determine the risk factors for cerebrovascular accidents, we reviewed our experience in 29 consecutive cases and a control group of 220 cases. The overall incidence of cerebrovascular accidents in patients with cyanotic congenital heart disease was 1.6%. Of 30 cerebrovascular accidents, 21 occurred in infants and children between five months and four years of age and nine in older patients. Ninety percent of the accidents occurred in patients with tetralogy of Fallot and dextrotransposition of the great arteries. Hemiplegia was precipitated by acute febrile illness in six patients, cardiac catheterization in two and hyperpneic spells in two. Seven patients recovered completely, and 20 had residual hemiplegia. A seizure disorder developed in five patients and mental retardation in four. Three patients died (mortality rate 10%). Cerebrovascular accidents in patients less than four years of age were associated with anemia (low mean corpuscular hemoglobin concentration) and hypoxemia. By contrast, cerebrovascular accidents in older patients were associated with polycythemia and hypoxemia.

The data suggest that spontaneous cerebrovascular accidents may be prevented in infants and young children with cyanotic congenital heart disease by medical treatment of anemia and surgical relief of the hypoxemia. Since the cardiovascular malformations in 90% of our patients who had a cerebrovascular accident are amenable to surgical correction, an aggressive surgical approach with early correction of the malformations may significantly reduce the incidence of this complication.

**Carotid Artery Occlusive Disease Following External Cervical Irradiation** — Levinson SA, Close MB, Ehrenfeld WK, Stoney RJ (Department of Surgery, University of California Medical Center, San Francisco, California 94143) — *Arch Surg 107:395-397 (Sept) 1973*.

Cerebrovascular insufficiency caused by atypical atherosclerotic lesions in cervical arteries more than 25 years after external cervical irradiation occurred in three patients. Symptoms were produced by cerebral embolization in one patient, impaired retinal perfusion in another, and decreased total cerebral perfusion in a third. Arterial
reconstructions were successfully employed in two patients who had bilateral, ulcerative lesions of the common carotid artery. Spontaneous thrombosis of the involved arteries precluded repair in one patient.

The nature and mechanism of arterial damage following irradiation is described, and previously reported cases of radiation-induced arterial injury are reviewed. Radiation-induced carotid artery disease must be considered in patients with symptoms of cerebrovascular insufficiency, who have had previous cervical irradiation. Localized occlusive lesions may be identified that are amenable to vascular surgical reconstructive techniques.

AB-1439-74

Pacemaker-Induced Hypotension for Intracranial Aneurysm Surgery — Fein JM, Weinstein J, McVety H, Rovit RL (Department of Neurosurgery, St. Vincent’s Hospital, New York, New York 10011) — Arch Surg 107:374-378 (Sept) 1973*

Pacemaker-induced hypotension has been utilized during 16 craniotomies for intracranial aneurysm. A background of moderate hypotension is provided by ganglionic blocking agents during the “approach phase” to the aneurysm. The need for pacemaker-induced hypotension may be signaled by sudden rupture of the aneurysm, or the desire to diminish the turgor, within a thin-walled aneurysm during the exposure. In all of these cases rapid hypotension was achieved with cardiac pacing allowing for definitive treatment in a relatively dry field. The one death occurred after inordinately prolonged and rapid pacing rates led to ventricular fibrillation, which can now be averted with the use of background ganglioplegic agents to induce initial moderate hypotension.

ITEMS OF INTEREST

Cisternography: From Early Tribulations to a Useful Diagnostic Procedure — Dh Chiro G (National Institutes of Health, Building 10, Room 2D-17, Bethesda, Maryland 20014) — Johns Hopkins Med J 133:1-15 (July) 1973


Essential Hypertension: New Concepts About Mechanisms — Sambhi MP (Department of Medicine and Division of Hypertension, Veterans Administration Hospital, Sepulveda, California), Crane MG, Genest J — Ann Int Med 79:411-424 (Sept) 1973

Anesthetic Effects on Cerebral Metabolism — Fink BR (Department of Anesthesiology, University of Washington School of Medicine, Seattle, Washington 98195), Haschke RH — Anesthesiology 39:199-215 (Aug) 1973

Angiographic Anatomy of the Anterior Inferior Cerebellar Artery — Gerald B, Wolpert SM, Haimovici H (Department of Radiology, Tufts-New England Medical Center Hospitals, and Boston Veterans Administration Hospital, Boston, Massachusetts) — Amer J Roentgen 118:617-621 (July) 1973

The Maxillary Artery: Normal Arteriographic Anatomy — Allen WE III (Department of Radiology, Yale University School of Medicine, New Haven, Connecticut 06510), Kier EL, Rothman SLG — Amer J Roentgen 118:517-527 (July) 1973

Anomalies of the Middle Cerebral Artery: Accessory Artery, Duplication, and Early Bifurcation — Teal JS, Rumbaugh CL, Bergeron RT, Segall HD (Department of Neuroradiology, Los Angeles County-University of Southern California Medical Center, Los Angeles, California) — Amer J Roentgen 118:567-575 (July) 1973

Abnormal Vascular Patterns in Benign Intracranial Lesions: Pseudotumors of the Brain — Leed WE III (Department of Radiology, Monetore Hospital and Medical Center, Bronx, New York 10467), Goldberg HI — Amer J Roentgen 118:575-585 (July) 1973

A review of other courses of hypervascular pattern, luxury perfusion of Lassen.

Non-Atheromatous Stenosis and Occlusion of the Internal Carotid Artery and its Main Branches — Momose KJ (Department of Radiology, Harvard Medical School, Massachusetts General Hospital, Boston, Massachusetts 02114), New PFJ — Amer J Roentgen 118:550-566 (July) 1973

A review of other rare causes.

The Hypoglossal Artery and Hypoglossal Canal — Wardwell GA, Goree JA (Department of Radiology, Duke University Medical Center, Durham, North Carolina 27710), Jimenez JP — Amer J Roentgen 118:528-533 (July) 1973

Persistence of primitive artery.
Abstracts

Stroke. 1974;5:92-104
doi: 10.1161/01.STR.5.1.92

Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 1974 American Heart Association, Inc. All rights reserved.
Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/5/1/92.citation