Abstracts

AB-1792-74
Endothelial Injury and Platelet Aggregation Associated With Acute Lipid Mobilization — Maca RD (Blood Coagulation Research Laboratory, Division of Hematology-Oncology, Department of Medicine, University of Iowa College of Medicine, Iowa City, Iowa 52242), Hoak JC — Lab Invest 30:589-593, 1974*

Acute lipid mobilization, associated with a marked increase in the plasma free fatty acid concentration, was induced in rabbits by the subcutaneous injection of adrenocorticotropic hormone. Blood was drawn from these rabbits for detection and quantitative measurements of circulating platelet aggregates. The animals were then anesthetized and the thoracic aorta was removed, fixed, and processed for electron microscopy. Circulating platelet aggregates were measured quantitatively by a technique involving the drawing of arterial blood directly into formalin-ethylene-diaminetetraacetic acid fixative and lysing the erythrocytes. The platelet aggregates were grouped into three categories, according to the number of platelets in each aggregate, and were counted by phase contrast microscopy. Acute lipid mobilization was associated with an increased number of circulating platelet aggregates, which was not prevented by heparin. These aggregated platelets did not exhibit internal morphologic changes.

Varying degrees of endothelial damage were seen in the thoracic aortas from 11 of 12 rabbits treated with adrenocorticotropic hormone. The predominant microscopic changes seen in the aorta consisted of cytoplasmic vacuolation and mitochondrial swelling. In a few vessels, frank detachment of the endothelium was seen, with platelets attached to the underlying subendothelial structures. Cells resembling damaged endothelial cells were found in the lumen of the aortas. In one rabbit, the damage appeared progressive with loss of endothelium. Platelet aggregation and endothelial damage during adrenocorticotropic hormone-induced acute lipid mobilization may represent an effect of the increase in plasma free fatty acid concentrations.

AB-1793-74
External Carotid Artery Shunting During Carotid Endarterectomy. Evidence for Feasibility — Machleder HJ (Department of Surgery, UCLA School of Medicine, Los Angeles, California 90024), Barker WF — Arch Surg 108:785-788 (June) 1974*

The contribution of the external carotid artery to cerebral blood flow was evaluated in eight patients undergoing carotid endarterectomy. With restoration of external carotid artery flow, the internal carotid artery back pressure was augmented by an average of 20.9%. This represented a mean rise in internal carotid artery back pressure of 10.8 mm Hg, a median rise of 12.8 mm Hg, and a range of 0 to 17.5 mm Hg rise in pressure. To provide cerebral protection during carotid endarterectomy, an external carotid artery shunt was utilized in four patients without technical difficulty and with satisfactory operative results. In selected cases this modality of cerebral protection may be a valuable adjunct in the performance of carotid endarterectomy.

AB-1794-74
Cerebral Hypotension and Shock Lung Syndrome — Kusajima K (Department of Surgery, State University of New York, Upstate Medical Center, Syracuse, New York 13210), Wax SD, Webb WR — J Thorac Cardiovasc Surg 67:969-975 (June) 1974*

Pressure studies of systemic hemorrhagic hypotension at 40 mm Hg for two hours showed the initial change to be small pulmonary vein (SPV) constriction. Subsequently, during shock and particularly after reinfusion, gradients developed across the alveolar capillary bed. Hypoxia of the central nervous system is considered to be one of the prime factors in the pathogenesis of the shock lung syndrome. Cerebral hypotension can be produced by slight hemorrhage and ligation of both the right brachiocephalic and the left subclavian arteries. By this procedure, we maintained the cerebral blood pressure at 40 mm Hg while keeping the systemic blood pressure at control levels. Nevertheless, the pulmonary pressure studies conducted in animals with cerebral hypotension did not show any significant pressure or gradient changes even though cerebral neurologic disorders were caused by the procedure. Cinemicroscopically, damage was minimal, and the microcirculatory pattern was that of the normal animal.

AB-1795-74
Per-Operative Cerebral Angiography — Cummins BH, Griffith HB, Thomson JLG (Departments of Neurosurgery and Neuroradiology, Frenchay Hospital, Bristol, England) — Brit J Radiol 47:257-260 (May) 1974*

Angiography carried out during cerebral operations for vascular lesions provides useful information in relation to satisfactory clipping of aneurysms, removal of arteriovenous malformations, inadvertent occlusion of major vessels and the development of vessel spasm. A simple technique has been devised and used in 25 cases. This is described. An analysis of the cases has shown the value of the investigation. This is discussed and a few cases are selected for illustration.

AB-1796-74
Physiologic Factors in the Selection of Patients for Superficial Temporal Artery-to-Middle Cerebral Artery Anastomosis — Austin G, Laffin D, Hayward W (Section of Neurological Surgery, Loma Linda University School of Medicine, Loma Linda, California) — Surgery 75:861-868 (June) 1974*

Occlusion of the internal or common carotid artery in the neck, stenosis of the internal carotid artery at the siphon, or distally, and occlusion or stenosis of the middle cerebral artery are not amenable to endarterectomy. The possibility

*Authors’ abstract.

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of a bypass procedure, using a superficial temporal artery (STA) to middle cerebral artery (MCA) anastomosis, in such cases, poses the problem of optimal physiologic selection of patients. CBF, using the intravenous bolus injection technique ($\text{sXenon}$), was measured in this type of patient. If the patients are not hemiplegic or aphasic, have one or more TIs per week, and have at least a 25% reduction in gray matter blood flow, in the frontal area, on the side of the lesion, they may be considered as suitable candidates. Of 35 such patients who have undergone microsurgical anastomoses of the STA-MCA for cerebral ischemia, the CBF was studied before and after surgery in 22 patients.

Control cerebral blood flow in gray matter (CBFG) = 75 ± 9 ml per 100 gm. The mean CBFG, on the side of pathology, was 53 ± 13 preoperatively, and 64 ± 15 postoperatively (P = 0.02). All patients showing this degree of improvement by CBF measurement have improved significantly, in terms of psychometric testing and decrease in TIs. No patient has developed a stroke postoperatively.

**AB-1797-74**

**Exercise, Physical Conditioning, Blood Coagulation and Fibrinolysis** — Ferguson EW, Guest MM (Department of Physiology, University of Texas Medical Branch, Galveston, Texas 77550) — *Thromb Diath Haemorrh* 31:63-71, 1974*

Coagulation and fibrinolysis were evaluated in 29 healthy young male adults before, immediately after, and one hour after strenuous exercise on a treadmill. Seven subjects were studied after moderate, prolonged exercise. Fourteen volunteers were tested before and after successful physical conditioning. Measurements included: pulse rate, glass and silicone whole blood clotting times, one-stage prothrombin time, Stypven time, two-stage prothrombin time, prothrombin consumption, partial thromboplastin time, thrombin time, fibrinogen, euglobulin lysis time, antifibrinolysin, hematocrit, and platelet count. Immediately after exercise, a marked increase in fibrinolytic activity and an acceleration of most clotting assays were observed. After physical conditioning there was a decrease in the level of fibrinolytic activity and an acceleration of most clotting assays were observed. After physical conditioning, they may be considered as suitable candidates. Of 35 such patients who have undergone microsurgical anastomoses of the STA-MCA for cerebral ischemia, the CBF was studied before and after surgery in 22 patients.

**AB-1798-74**

**Medical and Surgical Experiences in Patients of a Large Southern Stroke Center** — Haerer AF (Division of Neurology, Department of Neurosurgery, University Medical Center, Jackson, Mississippi 32916), Smith RR — *Southern Med J* 67:667-671 (June) 1974*

Four hundred seventy-five patients in a care-oriented Southern stroke center were divided into four groups by occlusive and four groups by hemorrhagic syndromes. For each category, known contributing or aggravating etiologic factors were contrasted. Serious medical complications in patients surviving over 72 hours occurred in 34%, with pneumonitis, seizures, acute brain syndromes, rebleeding of aneurysms, and pulmonary emboli leading the list. Almost one-third of the 17% fatalities seemed potentially preventable (infections, rebleeds, emboli) with current aggressive therapeutic measures. Forty percent of patients had angiograms, two-thirds of which were abnormal. Neck vessel bruits occurred in only 3%. Seven percent required major neurosurgical procedures, but only 1% required neck vessel operation. Far fewer stroke cases from this region require vascular operation than patients from elsewhere in this country. Surgical lesions not suspected by the admitting physician occurred in only 3%; thus, a careful neurologic evaluation appears to be reliable in selecting surgical candidates.

**AB-1799-74**

**The Virtues of Continuous EEG Monitoring During Carotid Endarterectomy** — Horton DA, Fine RD, Leahlean AK (Prince Henry Hospital, Anzac Parade, Little Bay, N.S.W. 2036, Australia), Hicks RG — *Aust NZ J Med* 4:32-40 (Feb) 1974*

The advantages of continuous EEG monitoring during carotid endarterectomy are discussed. Observations of the types of EEG change seen when the common carotid artery is clamped are described, with the use of the EEG to indicate the adequacy of collateral circulation or the necessity for inserting a temporary shunt in the internal carotid artery.

**AB-1800-74**

**Traumatic Occlusion of Segmental Spinal Veins** — Parker AJ, Park RD, Stower JL (Department of Veterinary Clinical Medicine, College of Veterinary Medicine, University of Illinois, Urbana, Illinois 61801) — *Amer J Vet Res* 35:857-859 (June) 1974*

Trauma was applied to the lumbar spinal columns of anesthetized dogs, and lumbar venograms were used to identify damage to the lumbar intervertebral veins. Occlusion of some veins was seen in all dogs.

**AB-1801-74**

**Repeated Applanation Tonometry in Carotid Occlusive Disease** — Byynke H (Department of Experimental Ophthalmology, University Eye Clinic, Lund, Sweden), Wilke K — *Acta Ophthal* 52:125-133, 1974*

In nine out of 11 cases of carotid occlusive disease the decrease of intraocular pressure (IOP) on repeated applanation measurements was found to be less in the eye on the side of the carotid occlusion than in the contralateral eye. The results indicate that if there is to be a normal decrease of IOP the blood pressure must be maintained in the ophthalmic artery.

**AB-1802-74**


The results of antifibrinolytic therapy and early surgery in subarachnoid hemorrhage are reported in 20 consecutive cases. There was one instance of thromboembolism, no increase in mortality or morbidity in comparison with generally accepted figures, and no recurrent subarachnoid hemorrhage. The incidence of thromboembolism that occurred would seem incidental.
ABSTRACTS

AB-1803-74

The upper limit of autoregulation of cerebral blood flow was studied in ten young baboons. Blood pressure was increased by infusing angiotensin, and cerebral blood flow was measured by the intracarotid 133Xenon injection method. Autoregulation was maintained until blood pressure was 30% to 40% above resting values. At this blood pressure level, cerebrovascular resistance reached a maximum. Any additional increase in blood pressure resulted in an increase in cerebral blood flow and a decrease in cerebrovascular resistance; this situation is designated the "breakthrough of autoregulation." In four baboons subjected to unilateral sympathetic denervation, autoregulation of cerebral blood flow was studied bilaterally; no difference in the upper limit of autoregulation was found between the intact and the sympathectomized hemisphere. The breakthrough of autoregulation supposedly plays an important role in the pathogenesis of acute hypertensive encephalopathy. The old concept of hypertensive cerebral vasospasm has been revised in recent years, and it is now generally recognized that acute hypertensive encephalopathy is caused by focal overdistention of brain arterioles with lesions of the blood-brain barrier. However, whether this condition is associated with a high cerebral blood flow in the clinical syndrome has not been investigated.

AB-1804-74
Action of Levorenin and Papaverein on the Local Cerebral Blood Flow After Chronic Sylvian Artery Obstruction in the Cat. Preliminary Report — Capon A (Laboratoire de Neurochirugie Experimentale, Boulevard de Waterloo 114, B-1000 Bruxelles, Belgique), Noterman J, Demarteau M — Acta Neurol Belg 73:384-388, 1973*

The right sylvian artery has been clipped in 20 cats. The neurological signs have been checked during the postoperative period (mean duration 16 days). The volume of the softened brain has been estimated postmortem. In four of these animals, the local cerebral blood flow recorded with thermodiffusion probes allowed a comparison between a softened region and the control hemisphere. It was shown that the passive increase in flow in response to the injection of levorenin was larger in the diseased brain (lack of autoregulation), and that the response to papaverein was either a rise in flow smaller than in the control hemisphere or a decrease in flow ("steal phenomenon").

AB-1805-74
Spatbild eines beidseitigen zerebralen Anteriorverschlusses mit Stirnhirnsymptome (The Late Picture of a Bilateral Anterior Cerebral Occlusion With Frontal Lobe Syndrome) — Fiebrand H (Neurologische Klinik Hattungen/Ruhr [ehemals Psychiatrische und Nervenklinik der Universität], Kiel, Germany), Schmidt H — München Med Wscr 116:837-840 (Apr 19) 1974*

A rare case of a bilateral occlusion of the anterior cerebral artery is reported, which, because of the unfavorable situation of a saccular aneurysm on the anterior communicating artery of the cerebral, had to be surgically induced. At the follow-up examination four years after the operation, the woman showed, neurologically, atrophy of the optic nerve largely caused by the operation and a slight spastic paralysis of the left side; mentally — as an expression of the brain lesion — a lack of emotional control, poor emotional response, lack of drive and disturbances of functions of judgment and an inhibition of instinct. With good cardiovascular conditions a slow but permanent improvement of the physical and mental symptoms can be established.

AB-1806-74
Blood Pressure Distributions of Urban Adolescents — Kotchen JM (Department of Community Medicine, University of Kentucky School of Medicine, Lexington, Kentucky 40506), Kotchen TA, Schwertman NC, Kuller LH — Amer J Epidemiol 99:315-324 (May) 1974*

Relationships between blood pressure and race, weight, and socioeconomic background in an urban adolescent population are described. There was a positive correlation between weight and blood pressure. Adjusting for differences due to weight, blacks had higher blood pressures than whites (P < 0.0001), and inner city blacks had higher blood pressures (P < 0.01) than blacks attending a racially integrated school in a middle class residential area. Among blacks, higher blood pressures were found in children whose parents worked as laborers or were unemployed than in children of parents in professional occupations (P < 0.01). Greater than 10% of black males, 1% of black females, and no white males or females had systolic blood pressures greater than 140 mm Hg. High systolic pressures were found in black males at all weight levels. These data demonstrate that race, weight, and socioeconomic background have an impact on blood pressure at a relatively young age.

AB-1807-74
Cortical Blindness as a Manifestation of Basilar Artery Occlusion — Melamed E, Abraham FA, Lavy S (Departments of Neurology and Ophthalmology, Hadassah University Hospital and Hebrew University-Hadassah Medical School, Jerusalem, Israel) — Europ Neurol 11:22-29, 1974*

Three patients with cortical blindness resulting from simultaneous ischemia of both occipital lobes are presented. In all cases there was clinical and/or angiographic evidence of basilar artery occlusion. Visual agnosia was present in all three patients. The cortical blindness was completely transient in one case, partially transient in the second, and permanent in the third. The pathogenesis of the simultaneous loss of both visual half-fields in basilar artery occlusion is discussed and compared with the bilateral homonymous hemianopia resulting from successive, bilateral occlusions within the internal carotid arterial systems.

AB-1808-74
Local Arterial Wall Injury Caused by Thromboemboli — Salyer WR (Department of Pathology, The Johns Hopkins Hospital, Baltimore, Maryland 21205), Salyer DC, Hutchins GM — Amer J Path 75:285-300 (May) 1974*

The changes in the walls of pulmonary and systemic arteries caused by overlaying thromboemboli were studied at autopsy. A spectrum of alterations was observed, from...
mural inflammation to arterial false and dissecting aneurysms and rupture. The arterial abnormalities were confined to the region immediately beneath the thrombus. Although the pathogenesis of the arterial lesions is uncertain, mural ischemia secondary to the overlying thromboemboli is the most probable explanation. The similarity of the lesions in many instances to those of atherosclerosis also suggests that arterial mural thrombosis may be involved in the pathogenesis of atherosclerosis.

AB-1809-74

Prothrombin (factor II) was assayed in a one-stage system using several substrates and several tissue thromboplastins in normal plasmas, coumarin plasmas, plasmas congenitally deficient in factor II, VII, or X, and plasmas containing abnormal factor X (factor X Friuli). Using a substrate containing equal parts of bovine adsorbed plasma and porcine serum, factor II was higher after the addition of a small amount of human serum to the system in coumarin plasmas, plasmas deficient in factor VII or factor X, and plasmas containing abnormal factor X (factor X Friuli). On the contrary, no such difference in factor II levels was found in poorly anticoagulated plasmas, in plasmas congenitally deficient in factor II, or in normal plasmas. Using two other "equal-parts" substrates, both containing human serum instead of porcine serum, the phenomenon was not evident regardless of the tissue thromboplastin used. Using a substrate containing two parts bovine adsorbed plasma and one part human serum, the addition of a small amount of human serum to the system again resulted in higher factor II levels, compared with those obtained with the basal substrate.

AB-1810-74
Excision of Arteriovenous Malformation of the Vein of Galen Complicated by Congestive Heart Failure — Bartal AD (Department of Surgical Neurology, Ichilov Hospital, Tel Aviv Medical Center, Tel Aviv, Israel), Schiffer JM, Goodwin DR — Neurochirurgia 17:16-23 (Jan) 1974 (Georg Thieme Verlag, publisher)*

Arteriovenous malformations of the great vein of Galen and particularly those causing congestive heart failure are extremely difficult to manage. Out of 27 such cases reported in the literature 25 died; the two that survived were operated on.

The successful excision of the malformation in a 2 1/2-year-old child is outlined, and some hemodynamic mechanisms which may be responsible for the development of cardiac failure in association with cerebral arteriovenous malformations are briefly discussed.

AB-1811-74
Spontaneous Spinal Epidural Hematoma — Karvounas PC, Singounas EG, Krassanakis CC (Neurosurgical Department, Evangelismos Medical Center, Athens, Greece) — Neurochirurgia 17:69-71 (Mar) 1974 (Georg Thieme Verlag, publisher)*

*Authors' abstract.

A case of spontaneous spinal epidural hematoma is described. The patient had an additional midline disk at L3-L4. He was operated upon five days after the onset. Four months postoperatively he was able to walk with the help of a cane. We do think that operation should be attempted, even in neglected cases, like ours.

AB-1812-74

In a retrospective survey we found that five (8.5%) out of 59 women with giant-cell arteritis had a history of thyrotoxicosis. This was significantly higher than in a control group of patients. Giant-cell arteritis and thyrotoxicosis occurred simultaneously in two cases. Knowledge of this association is of clinical use and is further evidence for an immunological basis for giant-cell arteritis.

AB-1813-74
The Effects of Isoflurane on Canine Cerebral Metabolism and Blood Flow — Cucchiaro RF, Theye RA (Department of Anesthesiology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota 55901), Michenfelder JD — Anesthesiology 40:571-574 (June) 1974

The cerebral metabolic and vascular effects of isoflurane (Forane) were investigated in six unmedicated ventilated dogs. At the MAC of this anesthetic (1.4%, end-expired) there was a 23% decrease in the rate of cerebral oxygen consumption (CMR02) (compared with values at end-expired concentrations of <0.1%). At a higher concentration of isoflurane (2.4%, end-expired), a 30% reduction in CMR02 was observed. Cerebral blood flow (CBF) increased by 33% and 63% at the 1.4% and 2.4% concentrations, respectively. The increase in CBF was due entirely to a decrease in cerebral vascular resistance (CVR) and occurred despite an accompanying significant decrease in arterial blood pressure. The response of CBF to change in Paco2 was appropriate during isoflurane anesthesia and was not different from that previously observed during halothane and methoxyflurane anesthesia.

AB-1814-74
Canine Cerebral Oxygen Consumption During Enflurane Anesthesia and Its Modification During Induced Seizures — Michenfelder JD (Department of Anesthesiology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota 55901), Cucchiaro RF — Anesthesiology 40:575-580 (June) 1974

The effects of enflurane at <0.1%, 2.2%, and 4.2% (end-expired) concentrations on cerebral metabolism and circulation were studied in six dogs. A 34% decrease in cerebral oxygen consumption (CMR02) occurred at 2.2% (approximately MAC), and no further decrease was observed at 4.2%. Cerebral blood flow (CBF) was increased at each of the higher concentrations despite progressive significant decreases in arterial pressure. In four additional dogs, anesthesia was maintained at 1.5 MAC enflurane (3.4% end-expired) and seizures were induced by hyperventilation (Paco2, 20 mm Hg) and intermittent hand clapping. Typical electroencephalographic (EEG) seizure patterns were accompanied by a 48% increase in CMR02 (mean) and gross skeletal muscle activity. Control conditions were re-
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established and seizures were again induced by pentylendetrazol (30 mg/kg). These seizures could not be differentiated from those previously induced by hypoxcapnia and hand clapping. We conclude that enfurane generally resembles other halogenated anesthetics in its effects on CMR0, and CBF but differs in producing seizures similar to those produced by a known convulsant.

**AB-1815-74**

**Physiologic and Pathophysiologic Relationship Between the Electroencephalogram and the Regional Cerebral Blood Flow** — Paulson OB (Department of Psychochemistry, Rigshospitalet, Blegdamsvej, DK-2100 Copenhagen, Denmark), Sharbrough FW — Acta Neurol Scand 50:194-220, 1974

This is a review of the relationship between the electroencephalogram (EEG) and the regional cerebral blood flow (rCBF) with special emphasis on physiologic and pathophysiologic mechanisms. Hyperventilation results in slowing of the EEG and decreased rCBF. It is concluded that decreased cerebral Po2 caused by decreased rCBF is the main factor responsible for EEG slowing and that increased cerebral pH only is of less importance in the EEG changes. This does not mean that the EEG slowing is caused by “classic hypoxia” since EEG slowing can occur without loss of consciousness and without changes in the aerobic-anaerobic cerebral glucose metabolism. Other mechanisms influenced by the cerebral Po2 also seem to be involved. The “cerebral activity” and the cerebral metabolic rate of oxygen (CMR0) normally are related and result primarily in an EEG-CMR0, coupling that is reflected in an EEG-rCBF coupling; when such coupling exists there is a positive correlation between EEG frequency, CMR0, and rCBF. These couplings are illustrated by the changes in the EEG and in the CMR0, or rCBF occurring during pharmacologic activation or depression of the central nervous system, during mental activity, during grand mal seizure, during dementia, and during various cerebral diseases. Several other factors than the CMR0, also influence the EEG and the rCBF, as is most clearly illustrated in instances of physiologic and pathophysiologic uncoupling. Physiologic uncoupling occurs during slow wave sleep and during childhood when the EEG shows definite slowing but the rCBF and CMR0, are normal or slightly increased. Pathophysiologic uncoupling develops with various acute brain lesions (anoxic lesions, ischemic lesions, etc.). In some instances, as in the phase after an epileptic grand mal seizure, only the EEG and rCBF show uncoupling whereas the EEG and CMR0, remain coupled.

**AB-1816-74**

**The Amnesic Syndrome of Posterior Cerebral Artery Occlusion** — Benson DF (Neurology Service, Boston Veterans Administration Hospital, Boston, Massachusetts 02130), Marsden CD, Meadows JC — Acta Neurol Scand 50:133-145, 1974

Ten patients who suffered an acute onset of amnesia associated with either unilateral or bilateral visual field defects are described. Clinical evaluation pointed to infarction in the posterior cerebral artery territory in each case. The posterior cerebral artery supplies medial temporal structures (including hippocampus), and infarction in this region is presumably responsible for the amnesia. Amnesia occurring as a symptom of a stroke was thus strongly linked to posterior cerebral artery occlusion. Amnesia is usually said to require bilateral lesions but four cases in the present series appeared to have unilateral (left-sided) occlusion. There are several reports in the literature of amnesia following either left posterior cerebral artery occlusion or left temporal lobectomy. The question of unilateral versus bilateral damage in the genesis of amnesic states is discussed in relation to this left-sided preponderance and in the context of the common origin of both posterior cerebral arteries. From present evidence it is concluded that lesions confined to the left side may cause temporary amnesia, but that the evidence for permanent amnesia is inconclusive.

**AB-1817-74**

**Basal Subarachnoid Hematomas as Sole Intracranial Traumatic Lesions** — Tatsuno Y, Lindenberg R (111 Penn Street, Baltimore, Maryland 21201) — Arch Path 97:211-213 (Apr) 1974

Mild or moderately severe impacts to face or neck, such as by a fist blow, are sufficient to produce tears in otherwise healthy arteries and to cause death from basal subarachnoid hematomas as sole intracranial lesions. Thirty-four cases with such lesions were studied. Age and sex of the victims, survival time and manner of impact are listed; and site of external lesions and arterial tears as well as the histologic appearance of the latter are described. There are three possible pathogenetic mechanisms of the tears: (1) short-lasting oscillation of the brain as a result of rotational acceleration of the head; (2) stretching of the vertebral-basilar system in hyperextension of the head; and (3) momentary severe increase in intra-arterial pressure as a result of a blow to a carotid artery in the neck.

**AB-1818-74**

**The Arterial Endothelium of the Hypertensive Rat. A Scanning and Transmission Electron Microscopical Study** — Still WJS (Department of Pathology, Medical College of Virginia, Health Science Division, Virginia Commonwealth University, Richmond, Virginia 22298), Dennison S — Arch Path 97:337-342 (June) 1974

A scanning and transmission electron microscopical study of the arterial endothelium of the hypertensive rat showed multiple cytoplasmic processes that were apparently related to fibrillary elements in the endothelial cells. These latter elements often showed formations reminiscent of striated muscle. Numbers of circulating cells were seen attached to the endothelium and cross-sectional studies showed these cells to be firmly attached and also some were seen penetrating into the intima to produce intimal thickenings.

**AB-1819-74**

**Radionuclide Scanning and Microangiography of Evolving and Completed Brain Infarction. A Correlative Study in Monkeys** — Di Chiuro G (Section on Neuroradiology, Building 10, Room 2D-17, National Institutes of Health, Bethesda, Maryland 20014), Timins EL, Jones AE, Johnston GS, Hammock MK, Swann SJ — Neurology 24:418-423 (May) 1974

A correlative study between sequential radionuclide brain scanning and time-lapse microangiograms has been carried out in an experimental model of ischemic cerebral infarct in monkeys. In the majority of animals, brain scintigraphy

*Authors’ abstract.*
became positive by two weeks, then regressed toward negative by four to six weeks after ligation of the middle cerebral artery. Increased radioisotope uptake is clearly related to neovascularization around the area of infarct as shown by the microangiograms. At later stages, decreased vascularity, peripheral gliosis, and central cavity formation are the main factors determining diminution of radionuclide penetration in the involved area.

_A-B-1820-74_


Internal and external carotid blood flow was simultaneously measured in monkeys. The experimental technique, which was validated by observations on response of the intracranial and extracranial vasculature to CO₂ inhalation, hypertension, sympathetic stimulation, and the cerebral vasodilator, papaverine, appears to be an improved approach to the study of migraine mechanisms in the animal model. Intracarotid serotonin was shown by this method to constrict both the internal and external carotid arteries. This effect was prevented by intracarotid methysergide, which itself produced only a transient constriction of the same vessels.

_A-B-1821-74_

_Neurosyphilis and Diffuse Cerebral Angiopathy: A Case Report — Vatz KA, Scheibel RL, Keiffer SA, Ansari KA (Neurology Service, Veterans' Administration Hospital, Minneapolis, Minnesota 55417) — Neurology 24:472-476 (May) 1974*

On the basis of positive serum and spinal fluid serology, suggestive angiographic findings, and response to antibiotic therapy, a diagnosis of meningovascular syphilis was made in a 42-year-old man with right hemiparesis and aphasia of gradual onset. Angiography showed smooth concentric narrowing of the distal internal carotid arteries as well as narrowing and/or occlusion of the anterior and middle cerebral arteries and their branches. These angiographic findings can be differentiated from those associated with atherosclerotic vascular disease and correlate well with the usual pathologic features of meningovascular syphilis. The increasing incidence and frequent atypical presentation of syphilis underscore the importance of considering this diagnosis in patients with focal neurologic disease or suggestive angiographic findings.

_A-B-1822-74_

_Arteriectasis, Subarachnoid Hemorrhage in a Three-Month-Old Infant — Ferry PC (Department of Pediatrics, University of Oregon Medical School, Portland, Oregon 97201), Kerber C, Peterson D, Gallo AA Jr — Neurology 24:494-500 (May) 1974*

A three-month-old boy presented with multiple cutaneous vascular anomalies and acute subarachnoid hemorrhage. Cerebral angiography showed multiple ectatic cerebral vessels and a large basal artery aneurysm. An autopsy confirmed the angiographic findings of widespread arteriectasis and aneurysm formation involving the cerebral, thoracic and abdominal vasculature. Microscopic study of the vessels showed marked degeneration of the media. The cause of the generalized arterial dysplasia in the case is unknown; a metabolic defect affecting early vascular development is postulated. Prompt cerebral angiography is suggested as a safe, valuable technique by which to delineate these unusual and potentially treatable causes of subarachnoid hemorrhage in children.

_A-B-1823-74_

_Focal Seizures, Early Veins, and Increased Flow. A Clinical, Angiographic, and Radioisotopic Correlation — Yarnell PR (Division of Neurology, Denver General Hospital, Denver, Colorado 80204), Burdick D, Sanders B, Sears J — Neurology 24:512-516 (June) 1974*

Prominent early draining veins have been found in angiograms of four patients studied during an acute benign illness characterized by repetitive focal motor seizures and prominent postictal neurologic deficits. Concomitant intravenous radionuclide gamma camera flow and static images showed increased relative perfusion with a slight positive static uptake on the involved side. Follow-up studies showed no evidence of these abnormalities. These angiographic and radioisotopic findings probably correlate with the clinically observed cortical hyperemia as part of, or subsequent to, focal motor seizures. Alternatively, these findings suggest the possibility that vascular occlusions may be the underlying cause of the patients' illness.

_A-B-1824-74_

_Computerized Axial Tomography of Intracerebral and Intraventricular Hemorrhage — Scott WR, New PFJ (Department of Radiology, Massachusetts General Hospital, Boston, Massachusetts 02114), Davis KR, Schnur JA — Radiology 112:73-80 (July) 1974*

Computerized axial tomography was found to be extremely informative in evaluating intracerebral and intraventricular hemorrhage. The precise anatomical extent of the hematoma, associated cerebral edema, ventricular deformity and displacement, and hydrocephalus are all readily assessed.

_A-B-1825-74_

_Orbital Vascular Anatomy and Embryology — Vignaud J (Department of Radiology, Fondation Ophtalmologique Adolphe de Rothschild, 29, Rue Manin, Paris 19, France), Hasso AN, Lasjaunias P, Clay C — Radiology 111:617-626 (June) 1974*

Serial direct magnification angiography enhances detailed orbital vasculature apart from the surrounding vessels and aids in the diagnosis of orbital neoplasms. Selective techniques show branches of the internal and external carotid arteries supplying the orbit and their important anastomotic channels. The dual blood supply to the orbit is structured on embryological origins.

_A-B-1826-74_

_Anticoagulation Techniques for Angiography. An Experimental Study — Anderson JH, Gianturco C, Wallace S, Dodd GD, DeJongh D (University of Texas, M. D.
ABSTRACTS

Anderson Hospital and Tumor Institute, Texas Medical Center, Houston, Texas 77025 — Radiology 111:573-576 (June) 1974*

Light and scanning electron microscopy were used to show thrombus formation on an experimental model, a guide wire-catheter assembly, after intravascular placement in a dog. The experimental model was tested prior to and following systemic heparinization and/or benzalkonium chloride-heparin coating. Clot deposition occurred within ten minutes of intravascular exposure without any form of anticoagulation. Employment of benzalkonium chloride-heparin-coated guide wires or systemic heparinization greatly decreased the formation of clot. It is recommended that an anticoagulant technique be employed during clinical angiography.

AB-1827-74
A Scanning Electron Microscopic Study of Angiographic Catheters and Guide Wires — Anderson JH, Gianturco C, Wallace S, Dodd GD (University of Texas, M. D. Anderson Hospital and Tumor Institute, Texas Medical Center, Houston, Texas 77025) — Radiology 111:567-571 (June) 1974*

The scanning electron microscope was used to study the surface characteristics of angiographic catheters and guide wires. All catheter surfaces examined exhibited manufacturing imperfections such as fissures, depressions, protrusions, and scratches. The external surfaces of stainless steel and Teflon-coated guide wires vary according to the manufacturing process. Guide wires cleaned after clinical use show retention of blood elements and debris. It is recommended that a new guide wire be employed for each patient.

AB-1828-74
The Role of Lysosomes in Production of Ischemic Nerve Cell Changes — Little JL (Mayo Clinic, Rochester, Minnesota 55901), Kerr FWL, Sundt TM Jr — Arch Neurol 30:448-455 (June) 1974*

The role of lysosomes in the production of ischemic nerve cell changes was studied using ultrastructural and histochemical techniques. Cortical ischemia, ranging in duration from 45 minutes to 24 hours, was produced by occluding the right middle cerebral artery in squirrel monkeys. The lysosomes appeared to be less susceptible to ischemia than the other neuronal components, and the alterations that did develop occurred at a time when cell damage was already severe and probably irreversible. Massive extrusion of lysosomal contents into the cytoplasm was not seen.

AB-1829-74
Ischemic Cerebral Edema. Distribution of Water in Brains of Cats After Occlusion of the Middle Cerebral Artery — O’Brien MD, Waltz AG (Department of Neurology, University of Minnesota, Minneapolis, Minnesota 55455), Jordan MM — Arch Neurol 30:456-460 (June) 1974*

Water content was measured in samples of brain obtained from cats four hours to 20 days after occlusion of one middle cerebral artery. Samples were categorized as nonischemic (from hemispheres opposite occluded arteries), ischemic, or infarcted, and as predominantly gray or white matter. When compared with samples from cats with sham operations, water content of each of the six types of tissue (including those from nonischemic hemispheres) was increased at four hours to three days after occlusion. The increase was maximal at two days. At all times, water content was greatest in infarcted tissue and least in nonischemic tissue, but from four to 20 days, differences were slight. Thus, unilateral experimental cerebral ischemia causes bilateral cerebral edema that is transient and more pronounced in infarcted and ischemic regions.

AB-1830-74
Ischemic Cerebral Edema and the Blood-Brain Barrier. Distributions of Pertechnetate, Albumin, Sodium, and Antipyrine in Brains of Cats After Occlusion of the Middle Cerebral Artery — O’Brien MD, Jordan MM, Waltz AG (Department of Neurology, University of Minnesota, Minneapolis, Minnesota 55455) — Arch Neurol 30:461-465 (June) 1974*

Distributions of pertechnetate, albumin, sodium, and antipyrine in cat brains were studied four hours to 20 days after occlusion of one middle cerebral artery (MCA). Brain: blood ratios for each substance were greatest in infarcted tissue and least in nonischemic tissue. Higher ratios for pertechnetate than for albumin in nonischemic tissue indicated a normal extravascular distribution of pertechnetate. In ischemic and infarcted tissue, brain: blood ratios for pertechnetate, albumin, and sodium were increased as early as four hours after MCA occlusion, were maximal at four to seven days, and remained high (for pertechnetate) until 20 days. Distributions of water after MCA occlusion did not have the same temporal or spatial characteristics as distributions of the other substances; thus, ischemic cerebral edema is not related solely to disruptions of the blood-brain barrier or to extravascular accumulations of sodium and protein.

AB-1831-74
Encephalogenic Cardiomyopathy After Stimulation of the Brain Stem in Monkeys — Chen HI (Kohberg Medical Laboratory, Veterans General Hospital, Taipei, Taiwan 112, Republic of China), Sun SC, Chai CY, Kau SL, Kou C — Amer J Cardiol 33:845-852 (June) 1974*

Repeated electrical stimulation of the brain stem including the hypothalamus, pons and medulla in monkeys produced an increase in arterial blood pressure, cardiac arrhythmias, various degrees of S-T segment or T wave changes and structural damage to the myocardium. The following ultrastructural changes in the myocardium occurred: distension of sarcoplasmic reticulum, swelling of mitochondria, disarrangement of filamentous arrays, formation of contraction bands, dissociation of intercalated disks and focal necrosis. These changes are similar to those found in ischemic myocardial tissue and myocardial necrosis induced by catecholamines. The myocardial lesions are probably related to activation of the sympathetic mechanism in the brain stem.

AB-1832-74
Platelet Survival in Patients With Prosthetic Heart Valves — Stuart RK (Department of Medicine, University
These chromium-51 platelet survival studies in 20 patients with a prosthetic heart valve suggest that reduced platelet survival time was a result of damage to the prosthesis rather than of thrombus formation on the prosthesis. Only one of ten patients with a prosthetic mitral valve and four of ten patients with an aortic prosthesis had a significantly shortened platelet survival time.

ABSTRACTS

AB-1833-74

Cerebral Embolism and Mitral Stenosis: Survival With and Without Anticoagulants — Adams GF, Merrett JD, Hutchinson WM, Pollock AM (Queen’s University and Wakehurst House, City Hospital, Belfast, Ireland) — J Neurol Neurosurg Psychiat 37:378-383 (Apr) 1974*

Eighty-four patients with mitral stenosis and cerebral embolism have been followed for 20 years. Half of the series (those treated in the early years) had no anticoagulant treatment and half were given long-term warfarin therapy. Mortality rate and causes of death have been reviewed, and comparison of survival times of treated and untreated groups by life-table analysis bears out the immediate need for anticoagulants when a diagnosis of systemic embolism is established. It is wise to continue the treatment for six months but it may be reasonable to discontinue it after one year with patients who can be assured of regular review.

AB-1834-74

Cerebral Blood Flow and Oxygen Uptake, and Cerebrospinal Fluid Biochemistry in Severe Coma — Brodersen P (Department of Neurology, Bispebjerg Hospital, DK-2400 Copenhagen NV, Denmark), Jørgensen EO — J Neurol Neurosurg Psychiat 37:384-391 (Apr) 1974*

Thirty-eight patients in coma due to head trauma, cerebrovascular accidents, hypoxia, hypoglycemia, or barbiturate intoxication, and 15 cases of brain death were studied. Cerebral metabolic rate of oxygen (CMRO₂) was obtained from the arteriovenous oxygen difference and cerebral blood flow (CBF) measured by intra-arterial ¹³³Xenon method. If hypothermia and CNS depressants were excluded, CMRO₂ below one-third of normal was incompatible with regaining of consciousness, but this was seen in only three comatose patients. Irrespective of the clinical outcome (death, vegetative survival, or recovery), CMRO₂ values of one-third to two-thirds of normal were seen in the majority of coma patients. CMRO₂ measurements were of no practical value to predict the prognosis in coma, even when the effect of temperature and sedatives were considered. In brain death the CBF studies gave indirect evidence of cerebral circulatory arrest. The cerebrospinal fluid (CSF) was obtained for analysis of lactate, pyruvate, and bicarbonate in 29 cases. Increased CSF lactate levels were found in all groups except barbiturate intoxication. The finding of a negative correlation between CSF bicarbonate and log CBF suggests that the CSF pH determines the wide range of CBF in coma.

ABSTRACTS

AB-1835-74

Aneurysms of the Posterior Communicating Artery and Oculomotor Paresis — Soni SR (University Hospital of Wales, Cardiff, Wales) — J Neurol Neurosurg Psychiat 37:475-484 (Apr) 1974*

One hundred and seventy-four patients with a posterior communicating aneurysm were seen over a 21-year period. There was a ratio of four females to one male and women were on average five years older. Fifty-nine (34%) had an oculomotor paresis. This group had up to four attacks of localized headache, large multiloculated aneurysms, and a greater time lapse from the onset of symptoms to surgery compared with those patients without oculomotor palsy. Delay in treatment allowed further attacks to occur which increased the mortality rate and decreased the chance that the eye would recover. Eighteen people who had had a palsy before craniotomy two to 18 years previously were examined. In four (22%) the paralysis had recovered completely, 14 (78%) had greatly reduced oculomotor function, and nine (50%) showed aberrant regeneration of the nerve. Nine of 62 patients, seven of whom were seen, developed a palsy after craniotomy and in five the eye had returned to normal.

AB-1836-74

The So-Called “Moyamoya Disease” — Poór GY, Gács GY (Departments of Neurology and Psychiatry, University of Pecs Medical School, Pecs, Hungary) — J Neurol Neurosurg Psychiat 37:370-377 (Apr) 1974*

In addition to occlusion of the distal part and branches of the internal carotid artery in two adults, angiography revealed a fine vascular network on the convex surface and at the base of the brain, identical with the angiographical picture of “Moyamoya disease.” On the basis of the pathological examinations, the occlusion of the cerebral blood vessels was caused by arteriosclerosis in both cases. The causes and conditions of development of the “Moyamoya” picture are discussed. In the authors’ opinion, this is not an independent disease: under the conditions described the characteristic pattern may develop in any type of vascular occlusion as a special form of accessory circulation in the cerebral areas the blood supply of which has been impaired.

AB-1837-74

Disease With Abnormal Intracranial Vascular Network Complicated With Intracerebral Haematoma — Higashi K, Hatano M, Maza T (Department of Neurosurgery, Yamaguchi University School of Medicine, Ube, Yamaguchi-ken, Japan) — J Neurol Neurosurg Psychiat 37:365-369 (Apr) 1974*

A case of so-called Japanese cerebrovascular disease in association with intracerebral hematomata is presented. The patient had had no neurological symptoms before the onset, in spite of an extensive intracranial occlusive vascular process. Diagnosis was established preoperatively and massive hematoma was surgically evacuated from the left frontal lobe. The postoperative course was uneventful and residual neurological deficit was minimal.

AB-1838-74

Raised Intracranial Pressure and Cerebral Blood Flow. 3. Venous Outflow Tract Pressures and Vascular Resistances in Experimental Intracranial Hypertension — Johnston IH, Rowan J0 (M.R.C. Cerebral Circulation Research Group, Institute of
Neurological Sciences, Glasgow, and the Wellcome Surgical Research Institute, University of Glasgow, Scotland — J Neurol Neurosurg Psychiat 37:592-402 (Apr) 1974*

Pressure changes within the venous outflow tract from the brain were studied in anesthetized baboons. Segmental vascular resistance changes were also calculated and the results correlated with the changes in cerebral blood flow, measured by the 133Xenon clearance method. Three different methods were used to raise intracranial pressure: cisterna magna infusion, a supratentorial subdural balloon, and an infratentorial subdural balloon. A close correlation was found between the cortical vein pressure and intracranial pressure with all methods of raising intracranial pressure: the overall correlation coefficient was 0.98. In the majority of animals sagittal sinus pressure showed little change through a wide range of intracranial pressure. In three of the six animals in the cisterna magna infusion group, however, sagittal sinus pressure increased to levels approaching the intracranial pressure during the later stages of intracranial hypertension. Jugular venous pressure showed little change with increasing intracranial pressure. The relationship between cerebral perfusion pressure and cerebral blood flow differed according to the method of increasing intracranial pressure. This was due to differing patterns of change in prevenous vascular resistance as venous resistance increased progressively with increasing pressure in all three groups. The present results confirm, therefore, the validity of the current definition of cerebral perfusion pressure — that is, cerebral perfusion pressure is equal to mean arterial pressure minus mean intracranial pressure — by demonstrating that intracranial pressure does represent the effective cerebral venous outflow pressure.

AB-1839-74

Raised Intracranial Pressure and Cerebral Blood Flow. 4. Intracranial Pressure Gradients and Regional Cerebral Blood Flow — Johnston IH, Rowan JO (M.R.C. Cerebral Circulation Research Group, Institute of Neurological Sciences, and the Wellcome Surgical Research Institute, Glasgow, Scotland) — J Neurol Neurosurg Psychiat 37:585-592 (May) 1974*

Intracranial pressure was raised by expansion of a supratentorial subdural balloon in anesthetized baboons. Pressures were measured at several sites, both supratentorial and infratentorial, and cerebral blood flow was measured in each cerebral hemisphere separately. Pressures recorded from the right and left lateral ventricles corresponded closely throughout. Highly significant correlations were also obtained between the pressures in the right and left subdural spaces and the mean intraventricular pressure. Thus, there was no evidence of intracompartmental pressure gradients within the supratentorial space. Pressure gradients, however, did develop between the supratentorial and infratentorial compartments in the majority of experiments, although the level of supratentorial pressure at which this occurred varied. Despite the presence of a large mass lesion over the right cerebral hemisphere, no significant differences developed between levels of cerebral blood flow in the two hemispheres, although flow in the right hemisphere remained consistently lower than that in the left after the balloon was inserted.

*Authors' abstract.

AB-1840-74

Effect of Carotid Ligation on Cerebral Blood Flow in Baboons. 2. Response to Hypoxia and Haemorrhagic Hypertension — Sengupta D, Harper M (Wellcome Surgical Research Institute, Garscube Estate, Bearsden Road, Glasgow G61 1QH, Scotland), Jennett B — J Neurol Neurosurg Psychiat 37:578-584 (May) 1974*

Cerebral blood flow (CBF) measurements were carried out in two groups of anesthetized normocapnic baboons. In the first group of five animals the effect of hypoxia on the CBF before and after ipsilateral carotid artery ligation was studied. The results showed that, although after ipsilateral carotid ligation there was little change in the CBF at normal PaO2, at hypoxia there was only 20% rise in the CBF as compared with an 80% rise before the carotid ligation. In the second group of ten animals, effects of hemorrhagic hypotension on the CBF after ipsilateral carotid artery ligation were estimated. The results indicated impairment of autoregulatory response of the cerebral circulation.

AB-1841-74

Effects of Ergotamine and Methysergide on Blood Platelet Aggregation Responses of Migrainous Subjects — Hilton BP, Zilkha KJ (Department of Neurochemistry, Institute of Neurology, National Hospital, Queen Square, London, England) — J Neurol Neurosurg Psychiat 37:593-597 (May) 1974*

Platelet aggregation responses to 5-hydroxytryptamine (5-HT) were measured in plasma from migraine subjects taking either methysergide maleate or ergotamine tartrate and were found to be reduced. Blood 5-HT levels of subjects free of headache were not affected by these drugs. The results support the hypothesis that methysergide and ergotamine act by occupying 5-HT uptake sites in vessel walls, leaving 5-HT molecules available to occupy receptors concerned with vasoconstriction.

AB-1842-74

Pregnancy, Subarachnoid Haemorrhage, and the Intravascular Coagulation Syndrome — Heron JR, Hutchinson EC, Boyd WN, Aber GM (Department of Neurology, North Staffordshire Hospital Centre, Hartshill, Stoke-on-Trent, Staffordshire, England) — J Neurol Neurosurg Psychiat 37:521-525 (May) 1974*

Two patients are described who developed subarachnoid hemorrhage during pregnancy and the puerperium. In both patients there was clinical, hematological, histological, and renal angiographical evidence of the intravascular coagulation syndrome. No source of intracranial bleeding was demonstrated by bilateral carotid angiography in either patient. We suggest that the subarachnoid hemorrhage was a result of the intravascular coagulation syndrome in both patients.

AB-1843-74

Extrapyramidal Dysfunction With Cerebral Arteriovenous Malformations — Lobo-Antunes J, Yahr MD (Mount Sinai School of Medicine, New York, New York), Hilal SK — J Neurol Neurosurg Psychiat 37:259-268 (Mar) 1974*

Arteriovenous malformations have only rarely been implicated as a cause of basal ganglia dysfunction. In four instances where such a lesion was uncovered, abnormal involuntary movements were present. In two, tremor involving
the contralateral limbs occurred, while in others the head and neck were involved in dystonic movements and posture. The clinical and angiographical characteristics of these four patients have been assessed and are presented in detail in this report. The possible mechanism by which arteriovenous malformations may disturb the internal circuitry of the basal ganglia and induce symptoms are discussed.

**AB-1844-74**

**Disseminated Intravascular Coagulation as a Consequence of Cerebral Damage** — Preston FE, Malia RG, Sworn MJ, Timperley WR, Blackburn EK (Departments of Hematology and Neuropathology, United Sheffield Hospitals, and the Department of Pathology, University of Sheffield, Sheffield, England) — *J Neurol Neurosurg Psychiat* 37:241-248 (Mar) 1974

Three cases with intracranial lesions developed evidence of disseminated intravascular coagulation which was confirmed at necropsy. The factors engendering this state, including release of potent thromboplastin from neural tissue, are discussed and the danger of this intermediary mechanism of disease increasing the mortality of intracranial disease is demonstrated. Careful hematological investigation of all patients with intracranial disease is therefore advised, especially if they manifest evidence of a bleeding tendency.

**AB-1845-74**

**Micropuncture Evaluation of β-Receptors in Pial Arteries of Cats** — Wahl M, Kuschinsky W, Bosse O (Physiologisches Institut der Universität, D-8000 München 2, Pettenkoferstr. 12, Federal Republic of Germany), Neiss A — *Pflügers Arch* 348:293-303, 1974 (Springer-Verlag, publisher)

The existence of β-receptors and their possible contribution to the vascular tone of pial arteries was investigated using the microapplication technique combined with the measurement of vascular diameter. Concentration response curves for (+) and (−) propranolol revealed an identical course with no vascular reaction occurring between 2.5 × 10⁻¹⁰ and 2.5 × 10⁻⁹ M propranolol. Since both (+) and (−) propranolol were without effect on vascular diameter over a wide concentration range it is concluded that these experimental conditions. The increase in vascular diameter (50%) observed at 2.5 × 10⁻⁴ and 2.5 × 10⁻³ M propranolol is supposed to be due to an unspecified effect. Concentration response curves for isoproterenol revealed no vascular reaction between 2.5 × 10⁻¹⁴ and 2.5 × 10⁻⁹ M, dilutions of 4% to 5% at 2.5 × 10⁻⁴ and 2.5 × 10⁻³ M, contractions of about 5% at 2.5 × 10⁻⁴ and of 3% at 1.25 × 10⁻³ M isoproterenol. These weak vascular reactions cannot be explained by reduced biological activity of isoproterenol due to auto-oxidation during storage. It is concluded that β-receptors are of little or no physiological significance for regulation of the vascular tone of pial arteries.

**AB-1846-74**


Measurements of local microflow are made using a small probe of about 100 mg weight with a contact surface of about 1 cm². The probe consists of two platinum wires sealed in fused glass and the corresponding reference electrodes. One of the platinum wires is used to generate, and the other to measure hydrogen. The probe allows a qualitative continuous registration of microflow. When a simple model for hydrogen transport is assumed in blood perfused tissue, a quantitative evaluation of microflow is made by comparing H₂ clearances with and without flow. For a single measurement of local microflow 15 seconds are needed. Measurements can be repeated at intervals of about four minutes. The described method for hydrogen clearance permits the determination of local microflow within a tissue volume of about 2 mm³. The method has been tested with measurements of local blood flow in the cerebral cortex.

**AB-1847-74**

** Fibromuscular Hyperplasia of the Internal Carotid Artery** — Nunn DB (Department of Surgery, University Hospital of Jacksonville, Jacksonville, Florida) — *Amer Surg* 40:309-314, 1974

A 66-year-old woman with episodes of syncope, decreased vision, weakness of all extremities, and occasionally dysphasia, associated with positional changes of her head and neck, was found to have changes typical of fibromuscular hyperplasia involving both the carotid and left vertebral arteries. She was treated by graded intraluminal dilatation and segmental resection with end-to-end anastomosis of her left carotid artery. She has done well since surgery, but because of mild increased blood pressure, renal arteriography was performed three months after surgery. The study revealed early changes of fibromuscular hyperplasia, but no further surgery has been required. The author reviews the literature regarding this unusual lesion of the cerebrovascular system.

**AB-1848-74**

**De la fréquence des anévrismes artériels intra-craniens et de leur rupture, d’après une série d’autopsies de routine (About the Frequency of Intra-Cranial Arterial Aneurysms and About Their Rupture on the Base of a Series of Routine Autopsies)** — Rony M, Werner A, Wildi E (Clinique de Neuro-chirurgie, Département Universitaire de Neurologie, Division de Neuropathologie, Institut Universitaire de Pathologie, Hôpital cantonal, 1211 Genève 4, Switzerland) — *Neurochir (Paris)* 19:611-626 (Dec) 1973

In a series of 11,696 autopsies 145 intracranial arterial aneurysms were found on major vessels. Of these aneurysms 50% had ruptured. The rupture rate of anterior communicating artery aneurysms was 70%, compared to only 30% for aneurysms of the internal carotid and posterior communicating arteries. The rate of rupture was 72% in patients less than 65 years old and less than 20% for those more than 65. Systemic hypertension seemed to increase the risk of rupture of the aneurysms.

**AB-1849-74**

**Electroretinal Responses in Ocular Vascular Occlusions Due to Temporal Arteritis** — McLeod D
Electroretinograms (ERG) and electro-oculograms (EOG) were studied in 12 patients with temporal arteritis and resultant vascular lesions documented by intravenous fluorescein angiography. Both chorioidal and retinal circulations were examined in some cases. The ERGs and EOGs in these patients correlated with those studied in experimental occlusions of central retinal or posterior ciliary arteries in animals. Significantly decreased retinal perfusion was associated with selective loss of the b-wave and a resulting negative waveform with a large a-wave in the ERG. Decreased perfusion of the posterior ciliary arteries, even with blindness caused by infarction of the optic nerve head, did not produce any significant ERG or EOG changes. Both the a-wave and the b-wave were diminished in the ERG when the posterior ciliary arterial circulation was severely decreased. The interpretation of the electrophysiological changes produced by ocular vascular occlusive disease is discussed.

**AB-1850-74**

Two groups of patients with subarachnoid hemorrhages are compared: those with definite vasospasm and those without spasms, as shown by angiography. There were 80 patients (from two hospitals) in the former group and 70 in the latter. No statistically significant correlation between spasm and recurrent hemorrhage was found. The authors concluded that vasospasm, demonstrated at angiography, does not protect the patient against rebleeding.

**AB-1851-74**

Red blood cells tagged with Cr⁵¹ were injected systemically into 15 patients who had subarachnoid hemorrhage. Lumbar punctures were performed 24 hours and at variable further intervals after injection. In four of the 15 patients, tagged cells were found in the CSF. The positive four cases are discussed.

**AB-1852-74**

The effect of both locally and systemically administered papaverine was studied in 17 young pigs and three rhesus monkeys. An average retinal arterial dilatation of 33% was produced when the drug was given either intra-arterially or intravenously. The volume of flow was increased by an average of 118%, although the retinal perfusion pressure decreased by an average of 21% during the infusion. In contrast, direct retrobulbar injections of the drug had no effect on the retinal circulation. Possible mechanisms of action and pharmacological uses of papaverine are discussed.

**AB-1853-74**
Carotid-Cavernous Sinus Fistulae and Dural Arteriovenous Shunts — Katsiotis P (Roentgen Diagnosis Department, Athens Anti-Cancer Institute Hospital St. Savas, Athens, Greece), Kiriakopoulos C, Taptas J — Vasc Surg 8:60-69 (Jan-Feb) 1974

Angiographical findings in 12 cases of carotid-cavernous fistulas (CCF) are reported. Of seven posttraumatic cases of CCF six were men; of five spontaneous cases two were men. The traumatic cases seemed to have more severe signs and symptoms than did the spontaneous ones. The onset of findings varied from minutes to four years after trauma. In three patients bilateral proptosis occurred. Bilateral carotid angiography was done with each patient. Subtraction techniques were considered very helpful. In one patient an unsuspected CCF was found in addition to a clinically expected one on the opposite side. Meningo-hypophyseal branches of the opposite internal carotid artery were found to supply the CCF in three patients with spontaneous exophthalmus. Bilateral CCFs were demonstrated in two patients, both in the traumatic group. The authors suggest that both traumatic and spontaneous CCFs originate from pre-existing arteriovenous shunts in the extradural region lateral to the sella (cavernous sinus).

**AB-1854-74**
Anti-oedema Treatment of Completed Stroke (correspondence) — Candelese L, Colombo A, Spinnler H (Clinic for Nervous and Mental Diseases, University of Milan, 20122 Milan, Italy) — Lancet 1:806 (Apr 27) 1974

Survival rates ten days after a stroke were compared in three groups of patients: those untreated, those treated with daily dexamethasone, and those treated with both mannitol and dexamethasone. The patients also were separated as to whether they were conscious or not on admission. The unconscious group had a significantly lower survival rate, for which the treatments did not seem to have a significant effect. Because of the small sample size, the authors suggest these data be interpreted with caution.

**AB-1855-74**
Further Experience With the Diagnosis and Microsurgical Treatment of Spinal Cord Vascular Malformations — Ley A (Servicio de Neurocirugia de la Ciudad Sanitaria de la Seguridad Social de Barcelona, Spain), Rovira M, Ley A Jr, Bacci F — Vase Surg 8:6-8 (Jan-Feb) 1974

Using microsurgical techniques and bipolar coagulation, the authors have removed five spinal cord vascular malformations and partially removed four others. Except for two deaths, one five days postoperatively from septicaemia and one three weeks postoperatively from intestinal volvulus, all the treated patients improved; in contrast, of 11 patients treated surgically by older (standard) neurosurgical techniques, only three showed improvement. The diagnostic value of selective radicular artery angiography also is discussed.

**AB-1856-74**
Corotid Endarterectomy With a New Shunt — Fadhli HA (Department of Thoracic and Cardiovascular Surgery,
University of Baghdad College of Medicine, Baghdad, Iraq) — Vasc Surg 8:71-73 (Mar-Apr) 1974

The advantages of a specially designed, carotid artery internal-bypass shunt for carotid endarterectomy procedures are discussed.

AB-1857-74

Carotid Cavernous Fistula — Love L (Department of Radiology, Loyola University Medical Center, Maywood, Illinois 60153), Marsan RE — Angiology 25:231-236 (Apr) 1974

After a Fogarty catheter was used in a patient to treat an occlusion of a right internal carotid artery, a loud bruit developed, but no proptosis or ocular muscle weakness. The bruit disappeared after the right internal carotid artery was ligated. The risks of using a Fogarty catheter in the internal carotid arteries are discussed.

AB-1858-74

The Operative Treatment of Spinal Angiomas — Pia HW (Department of Neurosurgery, University of Giessen, Giessen, West Germany) — Vasc Surg 8:9-17 (Jan-Feb) 1974

A series of 87 patients with spinal angiomas is presented; 55 had “solitary” lesions and 38 had “complex” lesions. The most common intradural angioma was the subarachnoid arteriovenous cirsoid angioma fed by dorsal radicular arteries. A predilection for the posterior part of the lower thoracic cord was noted. Increased CSF protein and partial or complete block was evident in about 50% of this series. Unsuspected subarachnoid hemorrhage was the most important cause of adhesional arachnoiditis. Common misdiagnoses were multiple sclerosis and disk lesions. An acute apoplectic course occurred in 60% to 70% of the cases. In 30% of this series of patients myelography revealed filling defects, loops of tortuous vessels, and/or arachnoiditis. In recent years spinal cord angiography via radicular arteries has been helpful. With epidural angiomas spinal ossosvenography often confirms the diagnosis. The treatment of choice is total surgical extirpation of the lesion, which is impractical for ventral angiomas. Of 34 patients with total extirpation of intradural angiomas, 14 recovered and returned to work, 13 made some improvement at least to ambulatory status, five remained about the same, and two deteriorated.

AB-1859-74

Ga Localization in Acute Cerebral Infarction — Wallner RJ (Department of Radiation Therapy and Nuclear Medicine, Hahnemann Medical College and Hospital, Philadelphia, Pennsylvania 19102), Croll MN, Brady LW — J Nucl Med 15:308-309 (Apr) 1974

A gallium-67 brain scan gave a similar picture to that of a scan done with pertechnetate in a man who had clinical and angiographical evidence of a right middle cerebral arterial occlusion. The gallium-scan may be less specific for neoplasms than some authors had previously supposed.

AB-1860-74

Detection of Cerebral Arterial Stenosis During Routine Eye Examinations — Wright ES (10614 Riverside Drive, North Hollywood, California 91602) — Amer J Ophthal 77:484-490 (Apr) 1974

Systematic cervical auscultation was performed on each of 3,800 patients who were having routine eye examinations. In this study 112 patients (2.9%), ranging from 43 to 90 years of age, were found to have arterial cerebral bruits. Of these 112 only 19 underwent angiography, and of these only 12 (all asymptomatic) eventually had vascular surgery. In 21 of the 112 the bruit was related to an aortic murmur.

AB-1861-74

Massive Basilar Artery Aneurysms — Slade WR Jr (Departments of Neurology and Radiology, Brooklyn VA Hospital and Kingsbrook Jewish Medical Center, Brooklyn, New York) — Vasc Surg 8:74-81 (Mar-Apr) 1974

Giant basilar artery aneurysms were found in two patients with histories of transient ischemic attacks. In one case the diagnosis was made at autopsy. In the other a pneumoencephalogram suggested a pontine tumor, which on vertebral arteriography was shown instead to be a giant mid-basilar aneurysm.

AB-1862-74

Computer Analysis of Rabbit EEG After Cerebral Ischemia — Sainio K (Institute of Physiology, University of Helsinki, Helsinki, Finland) — Electroencephalogr Clin Neurophysiol 36:471-479 (May) 1974

Cerebral ischemia was produced in 14 rabbits by a cerebral pressure cuff. Analysis of EEG findings from motor, visual, and cerebellar cortices, plus dorsal hippocampal and pontine reticular formation depth electrodes, was done by a u-Line laboratory computer. Correlations between the duration of ischemia and EEG changes were done at four hours and 24 hours after the ischemic episode. The alpha plus theta to delta ratio was most useful. The average amplitude did not correlate with the duration of ischemia. Significant linear correlation was found between theta density and the duration of ischemia in cortical and hippocampal leads four hours after ischemia. The hippocampal theta activity had a higher negative linear correlation at 24 hours than at four hours after ischemia, whereas at 24 hours the cortical activity did not correlate with the duration of ischemia.

AB-1863-74

Post-Traumatic Thrombosis of Cerebral and Neck Blood Vessels — Cohn D (Department of Neurology, Municipal-Governmental Medical Center, Ichilov Hospital, Tel-Aviv University Medical School, Tel-Aviv, Israel), Streiffer M — Bull LA Neurol Soc 39:60-70 (Apr) 1974

Several hours to days after head or neck injuries four patients presented with neurological symptoms. Angiography demonstrated thrombotic occlusion of an internal carotid artery in two cases, a middle cerebral artery in one case, and the superior sagittal sinus in another case. The two patients with internal carotid artery occlusion died; no vascular surgery was attempted in either case. The man with left middle cerebral artery occlusion had a mild right hemiparesis and very mild dysphasia after 13 months of anticoagulant therapy. The fourth patient recovered completely. The authors suggest that traumatic vessel wall tears can induce thrombus formation.

AB-1864-74

Horner’s Syndrome Caused by Occlusion of the Vascular Supply to Sympathetic Ganglia — Sears ML

ABSTRACTS

Stoke, Vol. 5, November-December 1974
ABSTRACTS

(Deartment of Ophthalmology and Visual Science, Yale University School of Medicine, New Haven, Connecticut 06510; Kier EL, Chavis RM — Amer J Ophthal 77:717-724 (May) 1974

An experimentally induced Horner’s syndrome was produced in rabbits by ligation and cautery of the superior cervical sympathetic ganglion. Pharmacological tests indicated that the sympathetic denervation was post-ganglionic, and histological examination revealed extensive loss of ganglionic cell bodies. The authors suggest that some patients with Horner’s syndrome of unknown etiology may have vascular lesions involving the superior cervical ganglion.

AB-1865-74

Cerebral Vascular Hemorrhage, A New Surgical Approach — Winter A (377 South Harrison Street, East Orange, New Jersey 07018), Yeager H, Bastidas J — Vasc Surg 8:95-106 (Mar-Apr) 1974

A 49-year-old woman with evidence of a subarachnoid hemorrhage was found to have an arteriovenous malformation fed from both anterior and both posterior ethmoidal arteries. A surgical approach through the orbits was successfully performed. A large subdural hematoma also was removed.

AB-1866-74

Exposure of the Anterior Part of the Circle of Willis in the Dog. Technical Note — Hori S, Himwich WA (Nebraska Psychiatric Institute, University of Nebraska College of Medicine, Omaha, Nebraska 68105) — J Neurosurg 41:107-112 (July) 1974

A technique for exposing the vessels in the anterior part of the circle of Willis in the dog is described. Some of the physiological and anatomical characteristics of the anterior communicating and the anterior cerebral arteries are discussed.

AB-1867-74

Transient Midbrain Syndromes as a Complication of Vertebral Angiography, Relationship to Antecedent Structural Disease — Brillman J (Yale University School of Medicine, New Haven, Connecticut 06510), Howieson J — J Neurosurg 41:71-74 (July) 1974

Two cases of “Weber’s syndrome” and one of “Benedikt’s syndrome” resulting from complications of vertebral angiography are presented. The neurological deficits were transient. Comparable reports are reviewed. The possible role of previously existing vascular anomalies or disease is discussed.

AB-1868-74

Sequential Changes of Vascular Ultrastructure in Experimental Cerebral Vasospasm. Myonecrosis of Subarachnoid Arteries — Fein JM (Department of Neurological Surgery, Albert Einstein College of Medicine, Bronx, New York 10461), Flor WJ, Cohan SL, Parkhurst J — J Neurosurg 41:49-58 (July) 1974

The authors describe the striking ultrastructural evolution of vascular degeneration of the media in subarachnoid arteries that have been in spasm following subarachnoid hemorrhage.

AB-1869-74

Experimental Inhibition of Serotonin by Antibiotic: Prevention of Cerebral Vasospasm — Zervas NT (Beth Israel Hospital, 330 Brookline Avenue, Boston, Massachusetts 02215), Hori H, Rosoff CB — J Neurosurg 41:59-62 (July) 1974

Cerebral arterial spasm was induced in four groups of monkeys by transorbital puncture of the middle cerebral artery. Oral administration of kanamycin was found to inhibit the spasm, and reserpine also interfered with its development. Desoxyxypyrdoxine, a pyridoxine antagonist, did not. Protection from vasospasm occurred only when blood serotonin levels were reduced more than 75%.

AB-1870-74

Intracranial Hemorrhage in Infants Due to Acquired Prothrombin Complex Deficiency — Visudhiphan P (Department of Pediatrics, Faculty of Medicine, Ramathibodi Hospital, Rama VI Road, Bangkok 4, Thailand), Bhanchet P, Lakanapichanchat C, Chiemananya S — J Neurosurg 41:14-19 (July) 1974

The authors report eight infants who had acute intracranial bleeding after the third week of life, in the absence of known trauma. When first seen each was moribund, pale, and had a tense anterior fontanel; half of the cases had associated ecchymoses. Spinal and subdural taps yielded large amounts of bloody fluid. Coagulation studies indicated a severe lack of factors involved in prothrombin complex formation. The clotting indices were sufficiently low to account for spontaneous bleeding. Satisfactory clinical and laboratory results were demonstrated after subdural and spinal taps combined with intravenous vitamin K and fresh blood transfusion to correct the coagulation defect and anemia.

AB-1871-74


The quality of survival was analyzed retrospectively by four factors in 527 consecutive stroke victims. All suitable patients had regular physical and occupational therapy. One hundred twenty-one (39%) of the 311 survivors had a good functional outcome, 102 (33%) a fair one, and 36 (12%) a poor one. Fifty-two (16%) became long stay cases. Neither initial sensorium nor the type of lesion could be well correlated with survival quality. Age did have prognostic value. For younger (≤64 years old) survivors the proportion of good outcomes was much higher than in older (≥65 years old) ones. Blood pressure grouping alone (normal versus high) could not discriminate among functional outcomes. Considering blood pressure and age group combined showed that the older hypertensive subjects had a good outcome significantly (P < 0.02) more often than older normotensive subjects. Among the younger patients there was no difference in outcome distribution between blood pressure groups. Hypertension, at least in New York City blacks, may have different relationships to the severity of stroke in different age groups.
Socioeconomic Factors Affecting the Vocational Success of Stroke Patients — Smolikin, Cohen BS (Department of Rehabilitation Medicine, Sinai Hospital, Baltimore, Maryland) — Arch Phys Med Rehab 55:269-271 (June) 1974*

Seventy-four hemiplegic persons were evaluated for vocational outcome after services rendered as part of a vocational rehabilitation project. The subjects were distinguished by side of paralysis, educational level, sex, level of prior occupation, and by whether or not they returned to work. Study of educational background and vocational attainment prior to illness revealed that a lack of education below high school level played a significant role in inhibiting vocational rehabilitation. Women had less potential for vocational rehabilitation among the less educated group. Prior occupation exerted a major influence on successful vocational rehabilitation with the professional, technical and managerial area having the most positive effect.

Relation of Amyloid Deposits in the Human Aorta to Aortic Atherosclerosis. A Postmortem Study of 100 Individuals Over 60 Years of Age — Wright JR (Departments of Pathology, Baltimore City Hospitals and the Johns Hopkins University School of Medicine, Baltimore, Maryland 21205), Calkins E — Lab Invest 30:767-773 (June) 1974*

Elderly humans often exhibit amyloid deposits at autopsy, most commonly localized in the heart, aorta, pancreatic islets, cerebral cortex, or meningeal vasculature. In an attempt to explore the possible relationship between aortic amyloid deposition and atherosclerosis, thoracic and abdominal aortas from 100 autopsied individuals over 60 years old were assessed for atheromatous lesions, using a grid counting method, and multiple histological sections from normal and atheromatous areas were examined for the presence of amyloid. Although atherosclerosis was clearly more extensive in the abdominal, compared with the thoracic, aorta, amyloid deposits occurred with equal frequency in the two aortic segments. Furthermore, although the pattern and severity of atherosclerosis in the 50 patients over 80 was no different from that observed in the 50 younger patients, amyloid deposition was much more extensive in the older group. Amyloid did tend to deposit in areas of intimal abnormality, but there was no clear relationship to the atherosclerotic process. Aortic amyloid deposition was often associated with cardiac amyloidosis (P < 0.005), but no such relationship was observed for either cerebrovascular or pancreatic islet amyloid. This apparent disparity of organ involvement in senile amyloid accumulation requires further investigation.

Cerebral Metabolic State Following Complete Compression Ischemia — Ljunggren B, Ratcheson RA, Siesjö BK (Brain Research Laboratory, E-blocket, University Hospital of Lund, and Department of Neurosurgery, University of Lund, Lund, Sweden) — Brain Res 73:291-307 (June 20) 1974

Complete cerebral ischemia was produced in rats by means of induced increased CSF pressure. Perfusion of the brain was restored at varying intervals from one to 15 minutes after ischemia, the tissue was frozen in situ, then analyzed at various intervals from one to 180 minutes postischemia for carbohydrate substrates, organic phosphates, ammonia, and amino acids. Reperfusion, even after 15 minutes of ischemia, produced rapid rephosphorylation of ATP and PCR, indicative of recovery of mitochondrial function. Also, AMP levels returned to normal and excess lactate disappeared. If ischemia lasted longer than five minutes, gross neurological function and EEG activity did not return to normal during the up to 180-minute period studied. Decreased levels of adenylate energy were observed if ischemia was maintained for greater than 7.5 minutes. Reperfusion produced increased citric acid cycle intermediates and decreased ammonia levels, but α-ketoglutarate and malate levels remained slightly decreased even up to 180 minutes postischemia. Glutamate levels also remained persistently low.

ABSTRACTS


Carotid-ophthalmic artery aneurysms, because of their location, are difficult to treat despite technical advances in microsurgery. In some patients, especially those with isolated visual dysfunction, ligation of the carotid artery seems to be the best surgical treatment.

Sleep Patterns in a Patient With a Brain Stem Infarction Involving the Raphe Nucleus — Freeman FR, Salinas-Garcia RF, Ward JW (Neurolsoy Service, Nashville Veterans Administration Hospital and Department of Neurology and Anatomy, Vanderbilt University School of Medicine, Nashville, Tennessee 37203) — Electroencephalogr Clin Neurophysiol 36:657-660 (June) 1974

A 53-year-old man had the sudden onset of quadriplegia plus the inability to speak or swallow. During his hospital course he was noted to sleep very little; an EEG taken overnight on the thirty-fifth hospital day revealed decreased total sleep time (one hour), but a normal percentage of REM sleep (24.6%). At autopsy a well-defined infarct involving the basis pontis, portions of the pontine tegmentum, the pontine and mesencephalic raphe nuclei, but sparing the locus coeruleus was demonstrated. The sleep pattern of this patient is similar to those of experimental animals with raphe lesions.

Maintenance of Tonic Vasomotor Activity by Alpha and Beta Adrenergic Mechanisms in Medullary Cardiovascular Centers — Ito A, Schanberg SM (Department of Physiology and Pharmacology, Duke University Medical Center, Durham, North Carolina 27710) — J Pharmacol Exp Therap 189:392-404, 1974

Using intracisternal injections into vagotomized rats of various alpha adrenergic antagonists and agonists and beta antagonists and agonists, the authors present data which indicate that alpha (adrenergic) pressor and beta depressor mechanisms act reciprocally in the medulla of rats to regulate tonic blood pressure. A simple adrenergic control
mechanism for heart rate was not apparent. The receptor mechanisms in the central nervous system for heart rate control seem to be different from those for regulation of blood pressure.

A B-1878-74
Changes in Energy State and Acid-Base Parameters of the Rat Brain During Complete Compression Ischemia — Ljunggren B, Schutz H, Siesjö BK (Brain Research Laboratory, E-blocket, University Hospital of Lund, and Department of Neurosurgery, University of Lund, Lund, Sweden) — Brain Res 73:277-289 (June 20) 1974

The cerebral circulation of rats was interrupted by the infusion of artificial CSF into the cisterna magna until the CSF pressure exceeded the systolic arterial pressure by 20 to 70 mm Hg. Cerebral metabolites were analyzed in frozen tissue one to 15 minutes after the induction of ischemia. Glucose depletion was apparent after one minute and lactate accumulation was maximal after three minutes. No usable energy in the form of phosphocreatine, ATP, ADP, and AMP remained after five minutes. Tissue PO2 increased to over 100 mm Hg, and cell pH decreased by 0.5 unit by ten minutes. Within one minute of ischemia ammonia increased and α-ketoglutarate decreased. After prolonged ischemia no change in glutamate levels occurred, but moderate decrease in glutamine and complete depletion of pyruvate resulted. Decreases in citrate, malate, and oxaloacetate suggested that the citric acid cycle was diverted to amino acid formation or the accumulation of other unmeasured metabolites.

A B-1879-74
Analysis of the Recovery of Third Nerve Function After Direct Surgical Intervention for Posterior Communicating Aneurysms — Grayson MC (c/o Dr. G. MacNaughian, 2 Ravelston Place, Edinburgh EH4 3DT, Scotland), Soni SR, Spooner VA — Brit J Ophthal 58:118-125 (Feb) 1974

A series of 100 patients had intracranial surgical procedures for internal carotid aneurysms arising near the junction of the posterior communicating artery. Of these 38 had preoperative third nerve lesions and nine others had third nerve signs immediately after surgery. Full recovery of third nerve function took up to three years and only occurred if surgery was performed within ten days of the onset of third nerve signs. All patients who did not recover fully in three years had evidence of aberrant regeneration, manifested most commonly by adduction on attempted upward gaze (91%, whereas the pseudo-Graefe sign occurred in only 27%).

A B-1880-74
Energy Metabolites and Water Content in Rat Brain During the Early Stage of Development of Cerebral Infarction — Kogure K, Busto R, Scheinberg P, Reinmuth OM (Cerebral Vascular Disease Research Center, Department of Neurology, University of Miami School of Medicine, Miami, Florida) — Brain 97:103-114 (Mar) 1974

Experimental cerebral infarction was produced in rats by embolization of carbon microspheres (35 ± 5 μ in diameter) via the right internal carotid artery. Metabolites in arterial blood, cisternal CSF, and brain tissue were analyzed at varying intervals from five minutes to 24 hours after embolization. A transient decrease of cerebral energy metabolism was found throughout the cerebral mass, including noninfarcted tissue, soon after the ischemic episode. Lactate seemed to be used as the immediate substrate for cellular oxidation during the recovery period. Two types of cerebral edema were noted: an early, reversible type and a later, more generalized type, perhaps related to vessel injury and other "remote" factors. Analyses of the CSF did not correlate well with changes in tissue metabolism during the intervals studied.

A B-1881-74
Suprastriate Hemianopia (correspondence) — Feinsod M, Hoyt WF, Wilson WB (Neuro-ophthalmology Unit, Department of Neurosurgery, University of California Medical Center, San Francisco, California 94143) — Lancet 1:1225-1226 (June 15) 1974

Using computer-averaged, visually evoked potential recordings from the scalp overlying the parastriate region of a 52-year-old woman with dense right homonymous hemianopia, alexia, object anomia, and subarachnoid hemorrhage, the authors demonstrated decreased responses over the left hemisphere during the late components (> 120 msec) of the recordings. After the surgical removal of a superficial arteriovenous malformation in the convexity of the left inferior parietal lobe the patient's vision and alexia improved and the late-wave, flash-evoked potential response returned over the left parastriate region. Flash-evoked potential recordings now make it possible to distinguish suprastriate from infrastriate hemianopia.

A B-1882-74
Approach to Assessment of Risk Factors in Mild Hypertension — Stuart KL (Department of Medicine, University of the West Indies, Kingston, Jamaica), Desai P, Lalsingh A — Brit Med J 2:195-198 (Apr 27) 1974

A series of patients with initial diastolic blood pressures between 95 and 114 mm Hg were followed for five years. A group of 22 patients had serious medical complications during the test period, viz., death from cardiovascular disease, clinical or electrocardiographic deterioration, an increase in diastolic pressure of at least 10 mm Hg, or a diastolic pressure of 115 mm Hg. A group of 22 patients without these complications but with similar initial diastolic pressures was used as the control. Two or more of the following associated “risk factors” were found to occur significantly more frequently in the problem group: x-ray evidence of cardiac enlargement, high serum cholesterol levels, effort pain, ECG abnormalities, and high systolic blood pressure.

A B-1883-74

The prognostic value of serial WBC and neutrophil counts was studied in a series of 40 patients with subarachnoid hemorrhage. Increased counts were significantly correlated with deteriorating levels of consciousness, imminent cerebral arterial spasm (as shown by angiography), and death. The increased WBC was useful in predicting in which patients who were alert and did not have arterial spasm on the initial angiogram cerebral arterial spasm would subsequently develop. A significant association between increased
Clinical Features of Spinal Vascular Malformations — Malformations may suggest a spinal vascular malformation. Typically, those of cord compression, but the progression of symptoms may not be related temporally to the leg symptoms. Of 12 patients with the acute onset of initial symptoms five became progressively worse, whereas the other seven, followed for a mean of ten years, had no further neurological deficits. The authors suggest that those patients with rapidly progressive courses should have early surgical treatment. Subarachnoid hemorrhage occurred in six patients, in three as the initial manifestation, in one as the terminal event, and in another on a recurrent basis. Of the 20 patients who had died in this follow-up, nine died from complications of chronic paraplegia (uremia in seven), one from spinal subarachnoid hemorrhage, and three from causes unrelated to spinal cord lesions; in seven cases the cause of death was unknown.

ABSTRACTS


Between January 1, 1971, and November 30, 1972, 527 patients were admitted to Harlem Hospital Center with a diagnosis of a new stroke. The mean age was 65 years; 55% were women; the in-hospital fatality rate was 41%; 98% were black. Systemic hypertension, diabetes mellitus, previous stroke, and organic heart disease in these patients were analyzed. Hypertension was an associated factor in 57% of these patients, but was less frequent in the patients older than 65 years than those less than 65 years of age. Diabetes mellitus in 28% of all the patients, advanced heart disease in 24%, and previous stroke in 22% were all more common in the older patients (those greater than 65 years old). In this population hypertension in the patients older than 65 years did not seem to be associated with the increased risk of stroke noted in younger patients.

Recovery of Neuronal Activity and High-Energy Compound Level After Complete and Prolonged Brain Ischemia — Okada Y (Department of Neurochemistry, Tokyo Metropolitan Institute for Neurosciences, 2-6, Musashidai, Fuchu-shi, Tokyo, Japan) — Brain Res 72:346-349 (June 7) 1974

Guinea pigs were decapitated, and then their brains were sectioned at various intervals from zero to 60 minutes after decapitation. Slices from the olfactory tract were electrically stimulated and "N-waves" (manifestations of postsynaptic potentials) were recorded. Slices were also analyzed for ATP, P-creatine, lactate, and glucose levels. The N-waves were observed only if the slices were incubated in an oxygenated glucose medium. That these neurons showed recovery of neurotransmission, ATP, and P-creatine suggests that they were surprisingly resistant to ischemia of up to 45 minutes.


A series of 60 patients with spinal vascular malformations is presented; 48 were men. Initial symptoms were similar to those of cord compression, but the progression of symptoms may suggest a spinal vascular malformation. Typically, symptoms are gradual in onset, progress steadily, and suggest a thoracolumbar region cord lesion (pain, weakness, sensory loss or paresthesias in the legs, plus disturbances of micturition). Bladder disturbances occur earlier in the course of illness than would be expected with compressive neoplasms or intrinsic cord tumors. Aggravation of symptoms by exercise or postural changes suggests spinal angioma also. In about half the patients evidence of upper and lower motor neuron lesions plus sensory deficits were found on examination. The CSF protein was frequently increased. In 90% of these patients myelography helped to establish the diagnosis.

Follow-up of a mean duration of eight years of these 60 patients revealed that severe gait disturbance developed in 19% of the patients within six months of the onset of leg symptoms and in 50% by three years; female and young patients tended to have more severe disability of gait. Sphincter dysfunction was common and often disabling, but was not related temporally to the leg symptoms. Of 12 patients with the acute onset of initial symptoms five became progressively worse, whereas the other seven, followed for a mean of ten years, had no further neurological deficits. The authors suggest that those patients with rapidly progressive courses should have early surgical treatment. Subarachnoid hemorrhage occurred in six patients, in three as the initial manifestation, in one as the terminal event, and in another on a recurrent basis. Of the 20 patients who had died in this follow-up, nine died from complications of chronic paraplegia (uremia in seven), one from spinal subarachnoid hemorrhage, and three from causes unrelated to spinal cord lesions; in seven cases the cause of death was unknown.

Pial Vessels Transport of Substances From Cerebrospinal Fluid to Blood — Levin E, Sepulveda FV, Yudilevich DL (Departamento de Biologia, Facultad de Ciencias, Universidad de Chile, Santiago, Chile) — Nature 249:266-268 (May 17) 1974

Using a plastic ring implanted on the pial surface of dog brain and rapidly collecting samples of sagittal sinus blood, the authors attempted to distinguish whether absorption of CSF and selective transfer of substances from CSF to blood were mediated by pial vessels or parenchymal capillaries. Their data suggest that pial vessels participate in the transfer of some substances, e.g., water and L-phenylalanine, from subarachnoid CSF to blood, but not for others, e.g., sodium. This transport system is susceptible to saturation — in these experiments by L-phenylalanine. The authors suggest that the endothelial cells of both the pial vessels and the tissue capillaries can maintain the differential composition between CSF and blood.

The Adequacy of the Cerebral Collateral Circulation: Tolerance of Awake Experimental Animals to Acute Bilateral Common Carotid Artery Occlusion — Moss G (Biomedical Engineering Laboratory, Rensselaer Polytechnic Institute, Troy, New York 12181, and Department of Biochemistry, Albany Medical College, Albany, New York) — J Surg Res 16:337-338 (Apr) 1974

Acute bilateral, common carotid artery occlusion in young dogs, pigs, goats, and calves did not produce any apparent neurological deficit nor cause any change in jugular venous Po.
ABSTRACTS

ITEMS OF INTEREST

**Symposium on Hypertension** — *Arch Int Med* 133:911-1066 (June) 1974

Includes articles on effects on brain.

**Essential Hypertension in Children and Youth: A Pediatric Perspective** — Lieberman E (Childrens Hospital of Los Angeles, P.O. Box 54700, Los Angeles, California 90054) — *J Pediatrics* 85:1-11 (July) 1974

**Control of Cerebral Circulation in Health and Disease** — Lassen NA (Department of Clinical Physiology, Bispebjerg Hospital, DK-2400 Copenhagen NV, Denmark) — *Circulation Research* 34:749-760 (June) 1974

**Computerized X-Ray Scanning of the Brain** — Ambrose J (Atkinson Morley's Hospital, Wimbledon, England) — *J Neurosurg* 40:679-695 (June) 1974

**Computerized Axial Tomography With the EMI Scanner** — New PFJ (Department of Radiology, Massachusetts General Hospital, Boston, Massachusetts 02114), Scott WR, Schnur KR, Traversas JM — *Radiology* 110:109-123 (Jan) 1974


Three reviews of this new technique, which offers promise in the diagnosis of cerebral infarcts and hemorrhages.


The authors conclude, after a discussion of blood flow in carotid artery surgery, that stump pressure is the easiest to perform and interpret and that when pressure is below 50 mm Hg temporary bypass should be used.
Abstracts

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