Abstracts

AB-4609-78

The use of physiotherapy, occupational therapy, and speech therapy for patients with stroke was investigated, and the three treatments were compared. Out of 135 patients with stroke surviving at two weeks, 107 received physiotherapy, but only 35 received occupational therapy and 19 speech therapy. Those who received most physiotherapy were the most severely disabled and had the worst prognosis, and, although almost no recovery occurred after six months, 30 patients continued with treatment beyond this time. Stiff and painful shoulders were present in 21 of the patients by two weeks and had developed in a further 37 by one year. Physiotherapy did not prevent this.

The objectives of physiotherapy for patients with stroke need careful definition, with emphasis on treatment in the early months. Alternative treatment, possibly carried out by volunteers or more simply trained personnel, merits further consideration.

AB-4610-78
Subarachnoid Haemorrhage: Long-Term Follow-Up Results of Late Surgical Versus Conservative Treatment — Kaste M (University Department of Neurology, SF-00290 Helsinki 29, Finland), Troupp H — Br Med J 1: 1310-1311 (May 20) 1978*

During 1964-9, 178 patients with subarachnoid haemorrhage from a single intracranial arterial aneurysm were allocated at random to receive operative or conservative treatment at an average of seven weeks after bleeding. During the follow-up fatal rebleeding episodes occurred in six of the 86 patients treated surgically and 16 of the 92 treated conservatively. This difference was significant. Fatal rebleeding occurred an average 40 months after the first episode. Of the 86 patients all causes occurred in 17 of the 86 patients treated surgically and 22 of the 92 treated conservatively. Life-table analysis of the chances of surviving 1, 5, and 11 years gave probabilities of 95% and 91%, 87 and 86%, and 76 and 75% in the two treatment groups respectively. Of the 139 patients alive after a mean follow-up of nine years, 130 (94%) were fully independent in their daily lives, and only 43 (31%) were unable to work. The method of treatment did not affect the quality of survival.

The results show that fatal rebleeding may occur even many years after the first episode. Nevertheless, if the patient is in good condition seven weeks after a haemorrhage from a single intracranial arterial aneurysm the outcome is good irrespective of whether operation is performed at this late stage.

AB-4611-78
Cerebral Arterial Revascularization: The Value of Repeated Angiography in Selection of Patients for Operation — Fox JL (Division of Neurosurgery, West Virginia University Medical Center, Morgantown, West Virginia 26506) — Neurosurgery 2: 205-209 (May-Jun) 1978*

Three patients with occlusive cerebrovascular disease were evaluated for possible extracranial-intracranial arterial anastomosis. Cerebral angiography repeated at a later date revealed disappearance of the initial vascular stenosis or occlusion and development of extensive collateral circulation. It was concluded in these cases that surgical revascularization would not improve upon natural revascularization. Repeated angiography provides information of value to the physician who must make a decision about such surgical treatment.

AB-4612-78
Infrequent Aneurysm Surgery — Helme WB (Department of Neurosurgery, Barrow Neurological Institute, Phoenix, Arizona 85004) — Neurosurgery 2: 210-212 (May-Jun) 1978*

A study of 18 consecutive surgically treated intracranial aneurysms, with no mortality, is presented. The study extended over a period of 6 years, and this relatively infrequent surgery with acceptable results is the main feature of the study.

AB-4613-78
Scintigraphic Detection of Atherosclerotic Lesions and Venous Thrombi in Man by Indium-111-Labelled Autologous Platelets — Davis HH, Heaton WA, Siegel BA (510 South Kingshighway Boulevard, St. Louis, Missouri 63110), Mathias CJ, Joist JH, Sherman LA, Welch MJ — Lancet 1: 1185-1187 (Jun 3) 1978*

Accumulation of autologous platelets labelled with indium-111 at sites of atherosclerosis or venous thrombosis was demonstrated by scintigraphy in three patients. The lesions detected were bilateral ulcerated carotid-artery plaques, iliofemoral venous thrombosis, and renal-vein thrombosis. This technique shows promise as a non-invasive means of diagnosing focal atherosclerotic and thrombotic lesions.
ABSTRACTS

AB-4614-78
Normal and Abnormal Patterns of Cerebrovascular Reserve Tested by 133Xe Inhalation — Meyer JS (Cerebrovascular Research, Houston Veterans Administration Hospital, Houston, Texas 77211), Sakai F, Naritomi H, Grant P — Arch Neurol 35: 350-359 (Jun) 1978*

Cerebrovascular functional reserve was tested by noninvasive measurement of regional cerebral blood flow (nrCBF) at rest in quiet darkness and when repeated during standard multiple psychophysiologic activation. The test was applied to normal volunteers and patients with different neurologic disorders. The test included counting, conversation, music, and observing movements, while rCBF was measured over both cerebral hemispheres, brain stem, and cerebellum. In normal persons at rest, mean gray matter flow (Fg) values were the same for each hemisphere, both cerebral hemispheres, brain stem, and cerebellum. In normal persons at rest, mean gray matter flow (Fg) values were the same for each hemisphere, Highest Fg values were observed in brain stem and both frontal regions. During activation in normal persons, there was a significant increase in Fg values over both hemispheres and in brain stem. During activation, three types of abnormal rCBF responses were seen: demented patients showed no change, patients with vascular occlusion showed little or no increase over the ischemic hemisphere, and some patients with epilepsy showed excessive increases.

AB-4615-78

Motor nerve conduction velocities of the ulnar and common peroneal but not the median nerves were substantially reduced in the affected limbs in a series of hemiplegic patients. Slowing of conduction velocity of the common peroneal nerve was related to the reduction of skin temperature in the hemiplegic limbs. Brachial plexus latencies to biceps and deltoid muscles were longer in the affected than in the unaffected sides in five of 12 hemiplegic patients. Electromyograms (EMGs) of limb muscles showed absence of spontaneous activity in 83% of patients. Spontaneous EMG activities in 12 of the 13 patients were related to an associated subclinical neuropathy or plexopathy in the involved limbs. Entrapment and traction causing subclinical or clinical neuropathy or radiculopathy may be present in some hemiplegic patients.

AB-4616-78
Treatment of Acute Central Retinal Artery Occlusion — Younger BR (Department of Ophthalmology, Mayo Clinic, Rochester, Minnesota 55901), Rosenbaum TJ — Mayo Clin Proc 53: 408-410 (Jun) 1978*

Central retinal artery occlusion very often leads to irreversible visual loss and seldom responds to treatment. Retrograde cannulation of the supraorbital artery followed by irrigation with anticoagulants and vasodilators may be of value in the early management of this problem. A case in point is described.

AB-4617-78
Strokes and Ulcerative Colitis — Mayeux R (710 West 168th Street, New York, New York 10032), Fahn S — Neurology (Minneap) 28: 571-574 (Jun) 1978*

One adolescent and two young adults had ulcerative colitis and cerebral thrombosis. All survived with neurologic deficit. These patients had no other predisposing factor for cerebrovascular disease. Systemic arterial and venous thromboembolic complications occur often in ulcerative colitis, but stroke is uncommon. Abnormalities in the early stages of clotting may be responsible, and the risk of thromboembolic phenomena in young patients seems to increase with exacerbations of this form of chronic inflammatory bowel disease, and possibly with regional enteritis as well.

AB-4618-78
Basilar Migraine, Seizures, and Severe Epileptiform EEG Abnormalities. A Relatively Benign Syndrome in Adolescents — Camfield PR, Metrakos K, Anderson F (Montreal Neurological Hospital, Montreal, Quebec H3A 2B4, Canada) — Neurology (Minneap) 28: 584-588 (Jun) 1978*

Four adolescents had basilar migraine, infrequent cerebral seizures, and severe EEG abnormalities. The clinical course was benign, with normal personality, mentation, and neurologic examination. Almost continuous EEG abnormalities, consisting of rhythmic temporo-occipital sharp and slow wave discharges, or generalized spike and wave complexes, were seen in serial recordings. The rare seizures, either focal or generalized, usually followed a migrainous aura and seemed to be readily controlled with anticonvulsant medication. The complex relationship between classical migraine and epilepsy is illustrated by this syndrome; recognition of its relatively benign course may prevent unnecessary investigation and undue alarm.

AB-4619-78
Regional Cortical Blood Flow at Craniotomy — Carter LP (Neurosurgical Research Laboratory, Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona 85013), White WL, Atkinson JR — Neurosurgery 2: 223-229 (May-Jun) 1978*

Regional cortical blood flow was monitored at craniotomy in 32 patients with a thermal diffusion flow probe in an attempt to assess the effects of surgical conditions on flow. Changes in flow due to vascular manipulation, retraction, hypotension, and
hyperventilation were readily apparent. Eleven patients with supratentorial tumors had intermittent measurements of cerebral blood flow; the expected differences in blood flow with halothane anesthesia and hyperventilation were observed. Fourteen patients with aneurysms were monitored continuously and demonstrated a reduction in flow during hypotension; in two of these cases, the reduction was to disastrously low levels. Flow reduction occurred secondary to branch occlusion by the aneurysm clip in a patient with three middle cerebral artery aneurysms and was corrected by changing the clip position. Direct measurement of regional flow may be of value in estimating the safety of temporary clips and the degree of hypotension that can be tolerated.

**AB-4620-78**

Eight-Year Follow-Up of Experimental Carotid-Middle Cerebral and Carotid-Basilar Arterial Bypass Grafts and Anastomoses — Khodadad G (University of Cincinnati College of Medicine, Cincinnati, Ohio 45267) — *Neurosurgery* 2: 246-251 (May-Jun) 1978*

Fifty-one dogs were operated upon, and various microvascular bypass grafts and anastomoses were completed. Seventeen of these dogs were followed for 5 to 8 years. Of these, three had a carotid-middle cerebral arterial bypass graft, five had a carotid-basilar arterial bypass graft, five had a lingual-basilar anastomosis, and four had a sublingual-basilar anastomosis. Postoperative carotid angiograms showed patent grafts and anastomoses in all of the dogs. Except for slight to moderate enlargement of the donor artery in the lingual and sublingual-basilar anastomoses or minor irregularities in the carotid-middle cerebral and carotid-basilar arterial bypass grafts, no significant changes were noted. In five dogs with lingual-basilar anastomoses in which both internal carotid arteries were ligated, the mean blood flow of the lingual artery was increased to 1.1 to 2.4 times normal. This study shows that, when experimental arterial bypass grafts and anastomoses remain patent for a few weeks after the operation, they stay patent for years, and, depending on the need, the blood flow through the anastomosis may increase.

**AB-4621-78**

Emission Computed Tomography — Grubb RL Jr (Department of Neurology and Neurological Surgery, Washington University School of Medicine, St. Louis, Missouri 63110) — *Neurosurgery* 2: 273-280 (May-Jun) 1978*

Emission computed tomography (CT) is a nuclear medicine visualization technique that yields an image of the distribution of a previously administered radionuclide in any desired transverse section of the body. Emission CT allows the safe, quantitative, three-dimensional measurement of regional radionuclide distribution in tissue. This approach is analogous to quantitative radioautography, with the added advantage of allowing in vivo studies.

**AB-4622-78**


Phonoangiography, quantitative analysis of arterial bruits, has been shown to provide accurate noninvasive diagnosis of uncomplicated carotid arterial stenosis, but had not been tested where cervical bruits from other sources were present. In this study, 27 carotid bruits in 15 consecutive patients with carotid bruits and basal heart murmurs were analyzed by phonoangiography. Tape recordings were made over the base of the heart and along the course of the carotid arteries in the neck; spectral analysis was performed as previously described. The spectral shape of the basal heart murmurs was recognizable and amplitude decreased with distance from the heart, although a secondary, lower amplitude, maximum often occurred over the carotid bifurcation. Intrinsinc carotid bruits, by contrast, were always maximal over the bifurcation, and although they radiated both proximally and distally, were not detectable over the chest wall. In quantitative terms, the correct diagnosis as to the presence and extent of carotid stenosis was made in 25 of 27 cases (92%) despite the presence of a radiated murmur. Phonoangiography is capable of accurate differentiation of radiated murmurs from intrinsic carotid bruits and of quantitation of the latter even in the presence of radiated sounds.

**AB-4623-78**


Among 52 cases of prosthetic valve endocarditis, adequate anticoagulant therapy was administered in 38 and discontinued or given in subtherapeutic dosage in 14. Our data suggest that anticoagulant therapy does not appreciably increase morbidity or mortality in patients with prosthetic valve endocarditis. On the contrary, in our patients the incidence of major clinical CNS (central nervous system) complications was increased and the mortality was higher if anticoagulant therapy was discontinued. CNS complications occurred in 10 of the 14 patients without adequate anticoagulant therapy and in three of the 38 with adequate anticoagulant therapy. Mortality was 57% among those treated without adequate anticoagulation and 47% among those with adequate anticoagulation. At autopsy, CNS complications were
thought to be the primary cause of five of the eight deaths in cases without adequate anticoagulation.

AB-4624-78
Les indications et les conditions opératoires des anévrismes chez les gens âgés. Indications and Operative Conditions of Aneurysms in Old Patients — Noternan J (Service de Neurochirurgie, Institut J. Bordet, B-1000 Bruxelles, Belgium), Mouawad E, D’Haens J, Dang T, Nubough Y, Telerman-Toppet N — Acta Neurol Belg 78: 80-85 (Mar-Apr) 1978*

The age factor is analysed for the operative indications in old patients. For the authors, operative indications are dependent on mental and general status, clinical grade (I or II), localization and anatomical conformation of the aneurysm.

The operation is performed only if the patient is asymptomatic or three weeks after the onset of the subarachnoid hemorrhage.

AB-4625-78
Papulosis Atrophicans Maligna (Köhleimer-Degos Disease): A Disseminated Occlusive Vasculopathy — McFarland HR (4320 Wornall Road, Kansas City, Missouri 64111), Wood WG, Drowns BV, Meneses ACO — Ann Neurol 3: 388-392 (May) 1978*

Malignant atrophic papulosis usually presents as pathognomonic skin lesions followed by acute abdominal pain, bowel perforation, peritonitis, and death. Rare patients who may lack gastrointestinal symptoms present with central nervous system manifestations, including headache, paresthesias, weakness, and rapid deterioration to death. The patient reported here was a 47-year-old man whose neurological symptoms apparently preceded his cutaneous lesions. His course consisted of a disseminated neurological disease and exacerbated following a herpes zoster infection. His condition rapidly deteriorated despite corticotropin, glucocorticoids, and low-molecular-weight dextran. Necropsy revealed a disseminated occlusive vasculopathy and diffuse encephalomyelomalacia of the brain and spinal cord. A review of autopsied patients with central nervous system involvement is provided.

AB-4626-78
Transient Cerebral Dysfunction Following Chemotherapy for Osteogenic Sarcoma — Allen JC (Department of Pediatrics, Memorial Hospital, 1275 York Avenue, New York, New York 10021), Rosen G — Ann Neurol 3: 441-444 (May) 1978*

An unusual neurological syndrome occurred in 4 of 158 patients treated for osteogenic sarcoma with combination chemotherapy. There was an abrupt onset of focal cerebral deficits approximately ten days after chemotherapy with vincristine and high-dose methotrexate plus citrovorum factor rescue. The syndrome was short lived and always occurred early in the course of treatment. Prolonged neurological deficits remained in 2 patients. When similar chemotherapy was reinstituted in the 4 patients, no further neurological complications ensued. Possible causes include a leukoencephalopathy related to methotrexate or an embolic cerebral vasculopathy related to necrotic tumor microemboli emanating from the lungs.

AB-4627-78
Resolving Intracerebral Hematoma: Alteration of the "Ring Sign" With Steroids — Laster DW (Department of Radiology, Bowman Gray School of Medicine, Winston-Salem, North Carolina 27103), Moody DM, Ball MR — Am J Roentgenol 130: 935-939 (May) 1978*

A ring of contrast enhancement is seen on CT scans of resolving intracerebral hematomas. This ring can be modified with steroid administration in the early stages; however, enhancement seen in the later stages is not affected. Evidence suggests that the early ring is due to blood-brain barrier breakdown, and the later enhancement is due to vascular granulation tissue. The following six stages of hematoma resorption were identified depending on the hematoma density, the presence or absence of a ring of enhancement, and the response of the ring to steroid administration: I = dense hematoma without enhancement; II = decreasing density, enhancement, modification of enhancement with steroid; III = isodense hematoma, enhancement, modification with steroid; IV = lucent hematoma, enhancement, modification with steroid; V = lucent hematoma, enhancement, no modification with steroid; and VI = healed, no enhancement.

AB-4628-78
Complete Obliteration of a Carotid Cavernous Fistula With Sparing of the Carotid Blood Flow Using a Detachable Balloon Catheter — Fierstien SB (Division of Neuroradiology, University of California, Irvine, California 92668), DeFeo D, Nutkiewicz A — Surg Neurol 9: 277-280 (May) 1978*

A detachable balloon catheter system is described which has several distinct advantages over pre-existing methods of "intervention radiology". It is anticipated that further refinements in this technique will continue to expand the uses for this procedure.

AB-4629-78
Posterior Fossa Revascularization: Anastomosis of Vertebral Artery to PICA With Interposed Radial Artery Graft — Ausman JI (Department of Neurosurgery, University of Minnesota Health Sciences Center, Minneapolis, Minnesota 55455), Nicoloff DM, Chou SN — Surg Neurol 9: 281-286 (May) 1978*

A new approach to posterior fossa revascularization is reported in which the vertebral artery is con-
Intracranial Saccular Aneurysms in the First Three Decades — Yoshimoto T (Division of Neuroradiology, Harbor General Hospital, Torrance, California 90509), Mehringer CM, Grinnell VS, Hasso AN, Siegel NH, Pribram HF — Surg Neurol 9: 293–302 (May) 1978*

To examine the characteristics of cerebral aneurysms in juvenile patients, 39 patients less than 30 years old were chosen from our 1,000 patients with saccular aneurysms who had undergone an intracranial operation on their aneurysm. The frequency, clinical features and surgical results in these young patients are discussed.

Emergency Occlusive Techniques — Hieshima GB (Division of Neuroradiology, Harbor General Hospital, Torrance, California 90509), Mehringer CM, Grinnell VS, Hasso AN, Siegel NH, Pribram HF — Surg Neurol 9: 293–302 (May) 1978*

Emergency occlusive therapy may be indicated in the management of acute arterial injury or expanding arteriovenous fistula. Intra-arterial occlusion may be performed at the time of diagnostic angiography. Selective placement of catheters permits precise diagnosis and management. We wish to report eight cases to demonstrate the efficacy of different occlusive agents. No adverse reactions were noted in this series of patients. We feel that emergency occlusive therapy is rapid and safe. It may facilitate and occasionally obviate surgical management.


The problems associated with the identification of the source of bleeding in multiple intracranial aneurysms are discussed, and the contribution towards diagnosis of each method of examination and investigation are evaluated, special emphasis is laid on the use of CAT scanning and electroencephalography as additional aids in localisation.

Late Complications of Prosthetic Heart Valves — Silver MD (Room 116, Banting Institute, Toronto, Ontario MSG 1L5, Canada) — Arch Pathol Lab Med 102: 281–284 (Jun) 1978*

Iatrogenic lesions induced during prosthetic insertion are likely to be encountered by a pathologist examining a patient who died of late complications of heart-valve prosthesis. The lesions are classified as those that may occur in any patient who has had a heart-valve prosthesis inserted, including the iatrogenic type and those that are uniquely associated with a particular prosthesis because of its structure or design.


Early proliferative coronary atherosclerosis was produced in swine by feeding them a high-fat, high-cholesterol diet for 17 months, at which time one group of animals was killed (reference group), while the remainder was transferred for 12 months to a moderate diet that resulted in serum cholesterol levels of about 190 mg/100 ml. The moderate diet only did not decrease the size of coronary lesions, but prevented their progression. The addition of clofibrate therapy caused regression that involved a significant decrease in size, gross sudanophilia, and extent of calcification and the disappearance of foam-cell lesions. Resultant serum cholesterol levels appear to be more important than the amount of dietary cholesterol in the progression, prevention, and regression of swine coronary atherosclerosis.

Biochemical Effects of Moderate Diet and Clofibrate on Swine Atherosclerosis — Augustyn JM (Atherosclerosis Research Laboratory, Veterans Administration Hospital, Albany, New York 12208), Fritz KE, Daoud AS, Jarmolych J, Lee KT — Arch Pathol Lab Med 102: 294–297 (Jun) 1978*

Aortic atherosclerotic lesions were induced in swine by feeding them an atherogenic diet for 17 months. The effect of a moderate diet (up to 8 gm of cholesterol per day), with or without added clofibrate therapy, for the subsequent 12 months was assessed by biochemical analysis of carefully dissected lesions and adjacent nonlesion areas. The moderate diet alone prevented "progression," except for accumulation of free cholesterol and enhancement of total protein and collagen synthesis, and caused regression of DNA concentration to nonlesion levels. The addition of clofibrate therapy enhanced regression, with significant decreases in DNA and esterified cholesterol concentrations and in the rate of DNA synthesis. Extrapolation of these results to man suggests that a "sensible" level of dietary lipid may be prophylactic against further progression, while addition of an effective hypolipemic drug may be therapeutically useful.

Congophilic Angiopathy and Cerebral Hemorrhage — Lee S-S (Department of Pathology, Kuakini Medical Center, Honolulu, Hawaii 96817), Stemmermann GN — Arch Pathol Lab Med 102: 317–321 (Jun) 1978*

*Author’s abstract.
All the cases of spontaneous intracerebral hemorrhage that were autopsied between 1965 and 1976 at Kuakini Hospital, Hawaii, were analyzed to determine the frequency of coexistent cerebral congophilic angiopathy. Seven of 75 cases (9.3%) were confirmed to have deposition of amyloid in the intracerebral vessels by means of polarized light microscopy and electron microscopy. The cerebral congophilic angiopathy was found to have predilection for aged patients and women (ratio of 6:1). Diabetes mellitus, hypertension, atherosclerosis, systemic amyloidosis, and paraproteinemia did not appear to be associated with this change. There is, however, a strong correlation between classic as well as compact senile plaques and this vascular lesion.

**AB-4637-78**

*Treatment of Experimental Cerebral Infarction in Rats With Levodopa or With Glycerol — Popovic P, Popovic V (Department of Physiology, Emory University School of Medicine, Atlanta, Georgia 30322), Schaffer R, Sutton CH — J Neurosurg 48: 962–969 (Jun) 1978*  

Administration of large amounts of levodopa did not improve survival rates of rats after acute cerebral infarction induced by injection of carbon microspheres. However, when 10% glycerol was used, the number of rats that survived after cerebral infarction was significantly greater than in the control or in the levodopa-treated rats. Combination of levodopa and glycerol therapy also significantly improved the survival rate of infarcted animals. It appears that glycerol alone is the main factor in eliciting this beneficial effect. Pathological findings (gross or microscopic) indicate striking changes in brain tissue after embolization. Development of brain edema of the infarcted left hemisphere corresponded to the type of treatment and to the length of animal survival. Brain-tissue histology indicates that glycerol-treated animals developed less severe edema and had less tissue disruption than control animals. The results suggest that treatment of edema should be one of the primary steps in therapy after acute cerebral infarction.

**AB-4638-78**

*Occipital to Posterior Inferior Cerebellar Artery Bypass Surgery — Sundt TM Jr (CV Research, St. Mary's Hospital, Rochester, Minnesota 55901), Piepgras DG — J Neurosurg 48: 916–928 (Jun) 1978*  

The results, complications, and technical aspects of occipital to posterior inferior cerebellar artery (PICA) bypass surgery are reviewed. Patients were divided into two groups: those considered to be a high risk for posterior circulation infarct but not disabled by the symptoms or deficits (eight patients), and those moderately or severely disabled at the time of admission (eight patients). Postoperative angiography revealed that 15 of the 16 grafts were patent. In 10 of the 15 patent grafts, the bypass graft served as a sole or major blood supply of the vertebral basilar system; in five patients, flow was limited to the distribution of the PICA. Eight patients achieved full employment or normal activity, six were improved but did not return to full employment, and two patients were unchanged. Ataxia was the major residual deficit in these patients.

**AB-4639-78**

*Moyamoya Syndrome as a Complication of Radiation Therapy. Case Report — Servo A (Roentgen Division, Töölö Hospital, 00260 Helsinki 26, Finland), Puranen M — J Neurosurg 48: 1026–1029 (Jun) 1978*  

A case is reported with occlusion and stenosis of the internal carotid arteries in association with basal telangiectasia. Fifteen years after postoperative irradiation for an optic glioma, radiological signs typical of the moyamoya syndrome were observed. Radiation therapy is discussed as the cause of the vascular damage in this case.

**AB-4640-78**

*Time Course of Baroreceptor Resetting in Short-Term Hypotension in the Rat — Salgado HC (Department of Physiology, Faculty of Medicine, Ribeirão Preto 14100, São Paulo, Brazil), Krieger EM — Am J Physiol 234 (5): H552–H556 (May) 1978*  

A multifiber preparation of the aortic nerve was used to analyze hypotension-induced displacement in the rat's baroreceptor firing range. A progressive downward shift was observed in the entire baroreceptor activation range during a 6-h period of hemorrhagic hypotension. However, the process of adaptation was not complete at the end of the experiment. The pressure threshold for baroreceptor activation dropped 11% after 15 min of hypotension, 16% after 1 h, and 26% after 6 h. A more marked downward displacement was observed in rats treated with phenoxybenzamine and subjected to controlled bleeding, suggesting that the sympathetic system reduced the baroreceptor activity during hypotension. The 10% fall in baroreceptor firing range produced by phenoxybenzamine in the control period cannot be attributed only to a tonic inhibition of the sympathetic since the concomitant hypotension could also affect the baroreceptor function. In 10 reserpinized rats with moderate hypotension (80–103 mmHg) and 15 reserpinized rats with severe hypotension (less than 80 mmHg) the baroreceptors were studied 48 h after the reserpine injection. The downward shift of the baroreceptor firing range was proportional to the fall in pressure and the process of adaptation was complete. The sequence followed by the baroreceptor resetting in hypotension appears to be quite similar to that observed at the onset of acute hypertension.

**AB-4641-78**

*Cerebral Blood Flow and Oxygen Consumption in the Newborn Dog — Hernández MJ (Milton S. Hershey Medical Center, Pennsylvania State University, Hershey, Pennsylvania 17033), Brennan RW, Van-
Cerebral blood flow (CBF), CBF responses to changes in arterial CO₂ tension, and cerebral metabolic rate for oxygen (CMRO₂) were measured in newborn dogs, by means of a modification of the Kety and Schmidt technique employing ¹³³Xe. Mongrel dogs of 1-7 days of age were paralyzed and passively ventilated with 70% N₂O and 30% O₂. CBF was derived by analysis of paired serial 20-μl samples of arterial and of cerebral venous blood from the superior sagittal sinus. At an arterial Pco₂ of 36.9 ± 3.7 Torr and a mean arterial blood pressure of 62 ± 10 Torr, CBF was 23 ± 8 ml/min per 100 g. The arteriovenous oxygen content difference averaged 5.6 vol%, and CMRO₂ was 1.13 ± 0.30 ml O₂/min per 100 g. CBF increased or decreased by 0.58 ml/min/100 g per Torr change in Pco₂. Our results suggest that in the newborn, basal CBF and CBF responses to CO₂ are considerably lower than in the adult and parallel the lower metabolic needs of the newborn brain.

**AB-4642-78**

The Significance of Asymptomatic Unilateral Carotid Bruits in Preoperative Patients — Evans WE (Department of Surgery, Ohio State University Hospital, Columbus, Ohio 43210), Cooperman M — Surgery 83: 521-522 (May) 1978*

The significance of asymptomatic carotid bruits was evaluated in patients undergoing major vascular operative procedures. A retrospective analysis of 588 patients was performed. Ninety-two patients (15%) had unilateral carotid bruits detected on admission examination. None had had cerebrovascular symptoms. Four postoperative strokes occurred in the total group of 588 patients. All occurred in patients without bruits. There were no permanent or transient postoperative neurological deficits in the group of patients with asymptomatic unilateral carotid bruits. We can find no data to support the necessity for preoperative carotid arteriography and endarterectomy in the patient with an asymptomatic carotid bruit prior to undergoing a major operative procedure.

**AB-4643-78**

Diet-Induced Atherosclerosis and Experimental Hypertension in Stumptail Macaques (Macaca Arctoides). Effects of Antihypertensive Drugs and a Non-Atherogenic Diet in the Evolution of Lesions — Pick R (Cardiovascular Institute, Michael Reese Medical Center, Chicago, Illinois 60616), Prabhul G, Glick G — Atherosclerosis 29: 405-429 (Apr) 1978*

This study was carried out to determine the evolution of atherosclerotic lesions during a therapeutic period during which regression might be appreciated. We produced aortic and coronary atherosclerosis in 27 young adult stumptail macaques (Macaca arctoides) by feeding a diet supplemented with 2% cholesterol and 25% fat. Hypertension was produced by bilateral or unilateral narrowing of the renal artery. After six months of this regimen, four monkeys were killed (group 1) and 23 monkeys were divided into three groups: group 2 received unsupplemented diet; group 3 received the same diet as group 2 and drug treatment for hypertension; group 4 was continued on the atherogenic diet and received antihypertensive drug treatment. The results indicate that deleting the atherogenic diet leads to a decrease in the lipid content of the lesions and a transformation of the lipid laden atherosclerotic plaques into lipid-poor, fibro-collagenous lesions, with a decrease in the amount of coronary luminal narrowing. Partial control of systolic hypertension by antihypertensive drugs did not accelerate the involution of the atherosclerotic lesions over the relatively short period of this study. No statistically significant correlation by regression analysis was observed between the level of blood pressure elevation, the plasma renin activity, or the degree of the drug response, and the severity and extent of the atherosclerotic lesions. Furthermore, severe arterial hypertension without an atherogenic diet (group 5) produced arteriosclerosis of the aorta, and intensified branch cushions in the coronary arteries, without inducing lipid deposition in either vascular bed.

**AB-4644-78**

The Value of Repeat Pan-Angiography in Cases of Unexplained Subarachnoid Hemorrhage — Forster DMC (The Royal Infirmary, Sheffield S6 3DA, England), Steiner L, Hakanson S, Bergvall U — J Neurosurg 48: 712-716 (May) 1978*

Four-vessel angiography was repeated in 56 patients with confirmed subarachnoid hemorrhage in whom the initial investigation was negative. Only one aneurysm was demonstrated. The results suggest that, with good technique, careful observation, and a complete four-vessel cerebral angiography, a false negative rate of less than 2% can be achieved. It is suggested that to repeat pan-angiography is seldom justified unless further bleeding episodes occur.

**AB-4645-78**


Carotid artery ligation, whether elective or an emergency, is an operation that most head and neck surgeons do with some trepidation because of the possible neurologic consequences. Of 440 major head and neck operations for cancer in which the carotid artery was exposed, 20 (4.5%) patients suffered a carotid rupture or had the vessel ligated just prior to rupture. We describe the typical patient and his management. Of these 20 patients, five
died as a direct result of rupture or ligation, ten survived rupture and/or ligation with neurologic sequelae, and five survived rupture and/or ligation without neurologic sequelae. Of the ten patients with neurologic problems, four had immediate strokes, and six had delayed strokes, ie, these occurred greater than eight hours after ligation.

Seven patients who required carotid artery ligation, separate from the previously mentioned group, received 5,000 units of heparin sodium subcutaneously every 12 hours in a prospective study. Of these seven patients, one died immediately postoperatively, and six survived without any neurologic sequelae. We discuss the cause of delayed neurologic problems and the rationale for the use of low-dose heparin.

**AB-4646-78**

**Intracranial Aneurysms. A Survey of the Results of Surgical Treatment at the Prince Henry Hospital, Sydney, 1972-1976** — Gonski A (Medical Center, 66 High Street, Randwick N.S.W. 2031, Australia), Gonski L, Selecki BR, Blum PW, Matheson JM — Med J Aust 1: 250-252 (Mar 11) 1978*

In this paper, 124 intracranial aneurysms in 114 patients operated on during a five-year period, are reviewed, and the mortality is analysed in respect to factors of age, sex, duration of preoperative interval, site, and type of operation. A comparison with an earlier comprehensive ten-year cooperative study is attempted.

**AB-4647-78**

**Cerebral Microembolization. II. Morphological Studies** — Schuier FJ, Vise WM, Hossmann KA (Max-Planck-Institute für Hirnforschung, 5000 Cologne 91, West Germany), Zülich KJ — Arch Neurol 35: 264-270 (May) 1978*

Cats underwent massive microembolization via carotid infusion of 10.5 million microspheres (15 ± 5μ in diameter), resulting in brain death within four hours; 87.4 ± 10.2% of emboli reaching the brain were in the ipsilateral hemisphere; 87.9 ± 4.4% were in the grey matter; and 12.1 ± 4.4% were in the white matter. Evans blue and sodium fluorescein dyes were given intravascularly before and at different times after embolization. Fluorescence microscopy disclosed that embolization initially provoked a hyperemic engorgement of both the embolized and nonembolized hemispheres. Multifocal, blood-brain barrier extravasations occurred throughout the ipsilateral cortex and oral basal ganglia. Severe vasogenic brain edema ensued, with migration of extravasations from cortex into the white matter, which initially showed only minimal injury. Migration and accumulation of edema in white matter, with subsequent uptake and swelling of neuroglia and axons, may be related to secondary white matter damage following cortical embolic lesions. Degenerative foci developed throughout the embolized cortex over the one- to four-hour period of this study. These sites may correspond to those areas in which hyperemia and damage to the blood-brain barrier was present shortly after embolization.

**AB-4648-78**

**Fibromuscular Dysplasia** — Paulson GW (931 Chatham Lane, Columbus, Ohio 43221), Boesel CP, Evans WE — Arch Neurol 35: 287-290 (May) 1978*

Fibromuscular dysplasia is an increasingly recognized cause of vascular disease in young or middle-aged persons and may be amenable to medical or surgical management. We report five patients, one of whom died, with emphasis on the beaded and irregular pattern of change in the carotid arteries. Neck pain, bruit, and transient ischemic attacks are the most usual clinical symptoms. The cause of fibromuscular dysplasia remains obscure, but in view of the increased incidence in young women, hormonal factors may be involved. Dilatation or resection can be considered, as in two patients reported here, and anticoagulation may benefit other patients.

**AB-4649-78**

**Intracerebral Venous Angioma. Case Report and Review** — Sarwar M (Department of Radiology, University of Texas Medical Branch, Galveston, Texas 77550), McCormick WF — Arch Neurol 35: 323-325 (May) 1978*

Only a few cases of angiographically demonstrated and pathologically proved cases of venous angiomas have been published. In contrast to the scarcity of recorded cases of angiographically studied venous angiomas, they are the most common incidentally encountered angiomatous lesions at autopsy. Their angiographic characterization, though highly suggestive, is not pathognomonic. The angiographic characteristics include small radiating veins that drain into a larger transcerebral vein that in turn empties into a dural sinus; blush and early draining veins also may be seen. The differential diagnosis includes telangiectasia, infiltrating glioma, and probably a cavernous angioma. We report an angiographically demonstrated and pathologically proved case of a venous angioma and also review the literature.

**AB-4650-78**

**Stroke Rehabilitation: A Family-Team Education Program** — Dzau RE (Massachusetts Rehabilitation Hospital, Boston, Massachusetts 02114), Boehme AR — Arch Phys Med Rehabil 59: 236-239 (May) 1978*

A stroke causes considerable anxiety and practical difficulties to the family of the patient. Additional confusion results because the difference between the acute care and the prolonged rehabilitation is poorly understood. For these reasons, a family-team conference was established at the Massachusetts Rehabilitation Hospital. Its purpose was to relieve anxiety and explain the scientific and professional aspects of the
team approach to rehabilitation. The family-team program consisted of role descriptions presented by the representatives from the various disciplines involved in the rehabilitation process and a discussion of individual family-patient problems. Results of a three-year study were used to evaluate the success of the conference. Records of family attendance were compared with the number of persons contacted. Questionnaires completed by family members at the conference showed that the anxiety level of individual families had decreased. A better understanding of the team approach was indicated in more than 75% of those participating. More than 70% of the families felt more comfortable in visits to their relatives and in approaching team members with future questions. The family-team program is a practical instrument for expanding stroke rehabilitation and for including the needs and participation of the family.

AB-4651-78

The calculation of regional cerebral blood flow requires, in addition to the measurement of the clearance, a knowledge of the regional brain-blood partition coefficient. The usual 133Xe washout techniques do not measure this latter parameter but use published values for normal brain tissue. This may lead to large errors in pathological tissue because the partition coefficient changes significantly in brain tumors. Investigations have begun into the use of CT and stable xenon to produce a cross-sectional view of the brain in terms of its brain-blood partition coefficients. Results of experiments using an iodine phantom and xenon inhalation in animals are presented.

AB-4652-78

Case histories of 140 patients who had mitral valve replacement with the Hancock xenograft were reviewed according to the incidence of thromboembolic complications. There were 16 patients with preoperative and/or postoperative low-output syndrome (Group A). Eight of these patients died, and six had autopsies which showed major thrombi on the heterograft valve. In 126 long-term survivors (followed 1 to 33 months) nine thromboembolic events occurred (thromboembolic incidence 5.3 percent per patient-year). All patients with emboli were in atrial fibrillation. Additional predisposing factors included a history of systemic embolism and the presence of atrial clots at the time of surgery. The majority (7/9) of emboli occurred during the first 3 postoperative months. Two emboli occurred immediately following the operation (before oral anticoagulants could have been begun). Five occurred in patients who were not on anticoagulation (Group B) and two occurred under warfarin treatment (Group C). There was no thromboembolic event in patients taking aspirin (Group D). It is concluded that hemodynamically stable patients have a decreased risk of thromboembolism and do not require anticoagulation. Patients with atrial fibrillation have an increased thromboembolic risk and should be on a regimen of warfarin for 3 months postoperatively and then on aspirin therapy.

AB-4653-78

10 patients suffering from intracranial aneurysm causing subarachnoid hemorrhage (SAH) have been treated during the acute pre- and postoperative phase with e-aminocaproic acid. The blood and the cerebrospinal fluid of the treated patients have been analyzed in order to study fibrin (ogen) degradation products (FDP) and fibrinolytic activity (FA). The results so obtained show only an alteration of local fibrinolytic processes either inside or around the aneurysmatic clot: there were no alterations of the systemic FA. Furthermore, monitoring of FDP and FA was a very useful tool in those patients who took advantage of the treatment with e-aminocaproic acid which protected them from rebleeding.

AB-4654-78
The Effect of Vincamine on the Regional Cerebral Blood Flow in Man — Depresseux JC (Hôpital de Bavière, Institut de Médecine, 66, Boulevard de la Constitution, B-4020 Liège, Belgium) — Eur Neurol 17: 100-107, 1978

The cerebral hemodynamic action of Vincamine is measured in 17 patients with primary or secondary cerebral circulation disorders, by use of the multi-regional 133Xe clearance technique. The statistical analysis of the results justifies the grouping of all the cases and the distinction between reference, ischemic and hyperemic zones by determining for each subject a range of + or -15% of his own mean regional cerebral blood flow.

The drug, in a single injection in the internal carotid artery, shows a significant beneficial hemodynamic effect on the ischemic regions of the brain. No steal
phenomenon is recorded in the middle cerebral artery territory. The action of the drug leads to a decrease and an equalization of the hemodynamic resistances of the cerebral vascular bed.

AB-4655-78
Diagnosis of Subdural Haematoma by Computed Axial Tomography: Use of Xenon Inhalation for Contrast Enhancement — Zilka E, Kendall BE (Lysholm Radiological Department, National Hospital, Queen Square, London WC1N 3BG, England), Loh L, Hayward R, Radue EW, Ingram GS — J Neurol Neurosurg Psychiatry 41: 370-373 (Apr) 1978*

A subdural haematoma is described in which a definite computed tomographic (CT) scan diagnosis was made only after contrast enhancement had been achieved by the inhalation of xenon. The different types of enhancement obtained with iodide containing contrast media and with xenon are discussed. The use of xenon to obtain further information in conditions which are inadequately elucidated by conventional CT must be balanced against its anaesthetic effects and relatively high cost.

AB-4656-78
Hemiplegia and the Billowing Mitral Leaflet Syndrome — Hirszowitz GS, Saffer D (Department of Neurology, Baragwanath Hospital, Johannesburg, South Africa) — J Neurol Neurosurg Psychiatry 41: 381-383 (Apr) 1978*

Four young patients presenting with major neurological episodes and with coexisting billowing mitral valve are described. An attempt at correlating the two entities is made. The neurological complications of billowing mitral valve are stressed.

AB-4657-78
Microradiographic Study of Cerebral and Ocular Aneurysms in Hypertensive Rabbits — Kido DK, Gomez DG (Department of Radiology, New York Hospital-Cornell Medical Center, New York, New York 10021), Santos-Buch ChA, Caston TV, Potts DG — Neuroradiology 15: 21-26 (Mar 29) 1978*

Cerebral and ocular microaneurysms were produced in rabbits made hypertensive by surgically induced silk-turpentine perinephritis combined with contralateral nephrectomy 7 days later. The aneurysms distributed throughout the brain and iris were studied by microradiography; a few representative aneurysms selected from the microradiographs were studied histologically. The microradiographic findings and histological sections correlated well. Intracranial microaneurysms were multiple and frequently located in the basal ganglia and near the cortex. Arterial changes in the iris paralleled intracranial arterial changes in degree and type except for the addition of hemorrhage around some microaneurysms. The results of this study show the potential of microradiography and histological sections guided by microradiography for studying the natural history of hypertensive arterial lesions and support the contention that hypertension, microaneurysms and intracerebral hemorrhages are related.

AB-4658-78

An anatomical and radioanatomical study of the intracranial branches of the occipital artery is presented and attempt to systematize the muscular branches of the occipital trunk and its vertebral anastomosis. An embryological hypothesis is presented to explain and memorize all the atrial variations of this area.

AB-4659-78

The case of a patient with a fistula between the left internal carotid artery and the cavernous sinus, and another fistula between the right external carotid artery and the cavernous sinus, is reported. The clinical symptomatology, which was of spontaneous onset, was unilateral and consisted of exophthalmos and injection of the conjunctiva on the left side. Almost complete remission occurred after angiography.

AB-4660-78

In 47 patients with systemic lupus erythematosus seen during fifty-one clinical episodes, oxygen-15, a short-lived gamma-emitting isotope, has been employed in a scanning technique to study cerebral oxygen utilisation and blood-flow. Abnormalities in regional distribution of oxygen utilisation and blood-flow were seen in twenty-three out of twenty-four instances of definite central-nervous-system disease, in fourteen out of fifteen instances of suspected C.N.S. lupus, and in ten out of twelve instances in which C.N.S. disease was not clinically apparent. The technique reflected remissions and relapses. It may prove valuable in diagnosis of subclinical cerebral dis-
AB-4661-78
Clinical Testing of Amipaque for Cerebral Angiography — Amundsen P (Neuroradiology Department, Ullevål Hospital, Oslo 1, Norway), Dugstad G, Slettedal M — Neuroradiology 15: 89-93 (Apr 27) 1978*

Amipaque 280 mg I/ml was compared to Isopaque Cerebral 280 mg I/ml for common carotid injection in twenty patients in a double blind trial. Simple comparison was also performed in examinations with selective external carotid injections. The reaction of the patients to the common carotid injection was mild on the whole but Amipaque caused significantly less discomfort than Isopaque. Selective external carotid injection of Amipaque caused very little discomfort while most patients complained of severe pain when Isopaque was used. No serious side-effect was observed.

AB-4662-78

Spontaneous disappearance of a cerebral arteriovenous malformation, presumably secondary to thrombosis, was demonstrated in a young female patient by angiography and computed tomography 11 and 13 years respectively after the initial radiographic demonstration of the lesion.

AB-4663-78
Relevance of Duration of Transient Ischaemic Attacks in Carotid Territory — Harrison MJG, Marshall J (Institute of Neurology, National Hospital, Queen Square, London WC1N 3BG, England), Thomas DJ — Brit Med J 1: 1578-1579 (Jun 17) 1978*

A retrospective review of the clinical and angiographic features of 116 patients who had had one or more transient ischaemic attacks in the carotid territory showed that stenosis of the cervical portion of the internal carotid artery was significantly more prevalent among patients whose attacks had been brief, with full recovery in under one hour. This information may be helpful in selecting patients for angiography.

AB-4664-78
Crossed External Carotid Ligation for Giant Aneurysms — O’Connor PS, Smith JL (P.O. Box 520009, Miami, Florida 33152), Yates BM — Surg Neurol 9: 382-385 (Jun) 1978*

Giant aneurysms of the carotid artery commonly produce a visual loss as their main or only clinical manifestation. On occasion they do not respond favorably to ligation of the carotid artery in the neck or even to direct surgical attack on the related carotid artery intracranially. In such cases additional ligation of the contralateral external carotid artery should be considered. Such a case is presented and the rationale for such treatment discussed.

AB-4665-78
Carbon Monoxide-Induced Arterial Wall Hypoxia and Atherosclerosis — Schneiderman G (Chemical Engineering Department and Arteriosclerosis Center, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139), Goldstick TK — Atherosclerosis 30: 1-15 (May) 1978*

The elevated carbon monoxide level found in tobacco smokers has been suggested as one etiologic factor linking it with arteriosclerosis. Unquestionably carbon monoxide does induce some arterial wall hypoxia, which has been established as an atherogenic factor, but without knowing the extent and location of this hypoxia the importance of this mechanism could not previously be assessed. Carbon monoxide acts both by inducing hypoxemia and shifting the oxyhemoglobin equilibrium curve, with these effects acting on the oxygen transport system from both the luminal blood and the vasa vasorum. We have studied this system using a computer simulation of the human arterial wall and found significant, mid-medial hypoxia with blood carbon monoxide levels routinely found in smokers. Because these levels fluctuate, the hypoxia they induce would be expected to be uncompensated by increased vascularization and therefore potentially represent a much more significant factor in atherogenesis than chronic hypoxia alone.

AB-4666-78
Cigarette Smoking and HDL Cholesterol. The Framingham Offspring Study — Garrison RJ (Epidemiology Branch, Division of Heart and Vascular Diseases, National Heart, Lung, and Blood Institute, N.I.H., Bethesda, Maryland 20014), Kannel WB, Feinleib M, Castelli WP, McNamara PM Padgett SJ — Atherosclerosis 30: 17-25 (May) 1978*

High density lipoproteins were measured on fasting blood samples from 4107 men and women. Control for reported alcohol consumption and subcapsular skinfold thickness using multiple regression analysis allowed an examination of the relationship between cigarette smoking and HDL cholesterol. Cigarette smoking was found to be associated with an average difference in HDL cholesterol of about 4 mg/dl in men and 6 mg/dl in women. Furthermore, when heavy alcohol drinkers were eliminated a significant negative association between number of cigarettes smoked and HDL cholesterol was demonstrable in both men and women. There was no evidence that former cigarette smokers, with the exception of those who switched to...
ABSTRACTS

615

cigars or pipes or had quit less than one year, had lower HDL levels. Cigar or pipe smokers who had never smoked cigarettes had alcohol- and skinfold-adjusted HDL cholesterol comparable to the non-smoker. These observations indicate another possible link between inhaled tobacco smoke and the atherosclerotic process and suggest the need for further studies and experiments that might clarify the mutual relationship of HDL cholesterol, cigarette smoking and the atherosclerotic process.

AB-4667-78
Cerebral Ischemia. I. Current Angiographic Techniques, Complications, and Safety — Kerber CW (Department of Radiology, Presbyterian-University Hospital, Pittsburgh, Pennsylvania 15261), Cromwell LD, Drayer BP, Bank WO — Am J Roentgenol 130: 1097–1103 (Jun) 1978*

The angiographic evaluation of the transient ischemic attack has been technically difficult, time consuming, and complication prone because of underlying arteriosclerosis and other medical diseases. The examination described depends upon small soft catheters, dynamic fluoroscopy for positioning, and selective magnified views of the arteries needed for surgical planning. Five basic views are exposed. On the side of clinical interest, a lateral view of the head, and neck, a frontal view of the head, and a fluoroscopically positioned view of the carotid bifurcation are obtained; on the other side the frontal view is omitted. A total of 662 consecutive studies were performed on 603 patients without death or permanent strokes. The only permanent complication was a partial radial nerve palsy.

AB-4668-78

10 cases of posterior fossa extra-dural hematoma are reported and 100 other published cases reviewed.

It appears that the sole clinical evaluation frequently leads to wrong or delayed diagnosis. In only one out of five cases the cerebellar signs and the palsy of one or several cranial nerves (VII, IX, X, XI, XII) are prominent. In contrast, all other cases do not present specific signs. Furthermore, the presence of a concomitant supratentorial traumatic lesion may contribute to prevent the finding of evidences for cerebellar extradural hematoma. The possibility for such hematoma must always be kept in mind when an occipital fracture is shown by radiography.

Venous phases in carotid arteriography permit ascertaining the extradural hematoma if there is a dis-placement of the torcular Herophili or of the transverse sinus. Data from carotid arteriography may be normal and the lesion may be ascertained by vertebral arteriography which will demonstrate: anterior displacement of the basilar artery against the clivus — anterior displacement of posterior inferior cerebellar and posterior meningeal arteries — crescentic displacement of brain substance from the inner table — displacement of the venous sinuses.

AB-4669-78
Diffuse Cerebral Ischemia in the Cat: I. Local Blood Flow During Severe Ischemia and Recirculation — Ginsberg MD (Department of Neurology, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania 19104), Budd WW, Welsh FA — Ann Neurol 3: 482-492 (Jun) 1978*

The effects of severe cerebral ischemia on post-ischemic brain perfusion were examined in a series of pentobarbital-anesthetized cats. Ischemia of 15 or 30 minutes’ duration was produced by occlusion of both common carotid arteries and the basilar artery and was coupled with mild systemic hypotension. A 90-minute period of normotensive postischemic recirculation was permitted in some animals. In 9 of 10 animals studied at the end of the ischemic insult and not allowed to recover, blood flow in the cerebral hemispheres was greatly reduced, with minimal flow (0.01 to 0.11 ml gm”1 min”1) persisting only in scattered perisulcal regions in 4 animals. Following 15 minutes of ischemia, blood flow was restored uniformly during recirculation, though at subnormal levels (31 to 35% of control). In contrast, 30 minutes of prior ischemia led to marked heterogeneities of local cerebral perfusion during recirculation, with multiple zones of persistent severe ischemia. Thus, while recirculation was suboptimal following both 15 and 30 minutes of ischemia, the 30-minute insult led to focal postischemic perfusion abnormalities that were sufficiently severe to make the possibility of functional recovery appear unlikely.

AB-4670-78
Diffuse Cerebral Ischemia in the Cat: II. Regional Metabolites During Severe Ischemia and Recirculation — Welsh FA, Ginsberg MD (Department of Neurology, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania 19104), Rieder W, Budd WW — Ann Neurol 3: 493-501 (Jun) 1978*

Metabolite levels were measured in seven brain regions in cats after 15 or 30 minutes of a severe ischemic insult and after a 90-minute period of recirculation following 15 or 30 minutes of ischemia. Brain levels of phosphocreatine were depleted after a 15- or 30-minute insult, and lactate levels were extremely high at both times. The adenosine triphosphate (ATP) content in many brain areas and the presence of microregions of low reduced nicotinamine-adenine dinucleotide in the brains of the animals that had 15
minutes of ischemia suggested that the ischemia, though severe, was not complete.

Recirculation following a 15-minute insult restored brain levels of ATP and phosphocreatine to 70 to 100% of control values in all regions analyzed. In contrast, metabolic recovery from a 30-minute insult was regionally heterogeneous. Thus, there was persistent depression of ATP and phosphocreatine and elevation of lactate, which was localized in discrete cortical foci near the longitudinal midline. The factors governing the localization of metabolic failure must have become manifest during the recirculation period since the ischemic insult itself caused similar metabolic perturbations in all cortical regions.

**AB-4671-78**

Treatment of Subarachnoid Hemorrhage From Ruptured Intracranial Aneurysm With Tranexamic Acid: A Double-Blind Clinical Trial — Chandra B (Department of Neurology, University of Airlangga School of Medicine, Surabaya, Indonesia) — *Ann Neurol* 3: 502–504 (Jun 1978)*

A double-blind clinical trial of tranexamic acid was carried out on 39 patients with fresh subarachnoid hemorrhage from a ruptured aneurysm. Twenty patients received tranexamic acid, 6 gm daily for 14 to 21 days, while 19 patients received conventional therapy of bedrest and dexamethasone when cerebral edema developed, plus isotonic saline. Rebleeding and mortality were reduced by one-fourth and one-fifth, respectively (p < 0.001). No side-effects were observed. Tranexamic acid is valuable in the treatment of subarachnoid hemorrhage caused by ruptured intracranial aneurysms.

**AB-4672-78**


The author reviews the physiological parameters that may be present in subarachnoid hemorrhage secondary to aneurysmal rupture, leading to a reduction of perfusion to the brain. Cerebral blood flow, vasospasm, and the concept of autoregulation are discussed. Evidence is given that basic flow levels of 20 ml/100 g/min may be tolerated without impairment of cortical function. Issues of hypotensive anesthesia, rational use of steroids, induction of hypertension to supra normal levels during transient ischemic complication, blood brain barrier permeability, reduced blood volume with increased hematocrit in the pre- and postoperative state of patients, and avoidance of platelet stickiness are examined.

Evacuation of blood from the basal cisterns is considered as a possible means of preventing transient ischemic deficits since loss of autoregulation following subarachnoid hemorrhage has been confirmed.

**AB-4673-78**

The Significance for Diagnosis and for Surgical Technique of Multiple Aneurysms of the Same Internal Carotid Artery — Jefferson A (Department of Neurological Surgery, The Royal Infirmary, Sheffield S6 3DA, England) — *Acta Neurochir (Wien)* 41: 23–37, 1978

The author reports five cases of more than one aneurysm on the same internal carotid artery. The technical problems posed by such aneurysms are discussed and the possibility of obliterating the neck of contiguous aneurysms by placing a clip parallel to the internal carotid artery is considered. The danger of interpreting the double aneurysm as a multifoculated single lesion is emphasized. The author encourages reporting of more case reports in the literature in order to determine the relative frequency of these aneurysms and improve their management.

**AB-4674-78**

Cerebral Arterial Flow Dynamics During Aneurysm Haemorrhage — Nornes H (Department of Neurosurgery, National Hospital of Norway, Rikshospitalet, Oslo, Norway) — *Acta Neurochir (Wien)* 41: 39–48, 1978*

A case of intraoperative early rupture of an infracarotid aneurysm is reported with data showing the specific dynamics of cerebral arterial flow during aneurysm haemorrhage. Internal carotid artery flow and arterial blood pressure were recorded throughout the surgical procedure. The rupture took place during preparations for dural opening at a mean blood pressure of 160 mmHg and at a low intracranial pressure of 5 to 6 mmHg. The dura became instantly tight, and was non-pulsatile within 10 seconds. The parietal epidural pressure rose rapidly to 110 mmHg. There was a brief initial increase in flow as the haemorrhage started, followed by a marked reduction within seconds. End-diastolic blood flow arrest was observed at this stage, demonstrating the self-limiting effect of a subarachnoid haemorrhage. This impaired cerebral perfusion pressure, or transmural pressure, is discussed with regard to the risk of cerebral damage as well as the beneficial effect in the staunching of haemorrhage.

Carotid artery flow showed a moderately impaired autoregulation and an increased vascular resistance suggesting a no-reflow phenomenon subsequent to these events.

**AB-4675-78**

Timing and Indication of Surgery for Ruptured Intracranial Aneurysms With Regard to Cerebral Vasospasm — Sano K (Department of Neurosurgery, University of Tokyo, Tokyo, Japan), Saito I — *Acta Neurochir (Wien)* 41: 49–60, 1978

The authors survey 443 cases of intracranial
aneurysms in which an operative mortality of 5.4% is present. Good operative results without postoperative vasospasm is found in cases operated upon the first three days after rupture and after one week from subarachnoid hemorrhage. If operation occurred between the fourth and seventh day, then the incidence of postoperative vasospasm was increased.

In 68 cases vasospasm occurred preoperatively. Eight of these patients died before surgery from vasospasm: 30 underwent surgery during vasospasm of which 15 deteriorated, probably as a result of vasospasm; 22 underwent surgery after vasospasm had subsided and developed permanent neurological deficit; and eight cases rebled when vasospasm began to subside.

Drainage of the basal cisterns is recommended for operations within three days of SAH in order to prevent cerebral arteries from being exposed to vasoconstricting substances released from clots before they undergo lysis. This helps prevent vasospasm.

Vasospasm which was extensive and diffuse carried a poor prognosis while vasospasm that was multisegmental carried a moderate prognosis. A good prognosis was seen in vasospasm which was limited to the arteries in the neighborhood of the aneurysm (local). Prognosis was worse in patients with preoperative vasospasm rather than postoperative vasospasm.

In summary, surgery of aneurysms is indicated during the first three days after the acute stage of SAH except cases in grade V. Surgery should be postponed between the fourth and eighth day after SAH until improvement is shown with conservative management. Patients who exhibit neurological deterioration after the eighth day should have repeat angiograms to detect vasospasm. If vasospasm is present, then operation is postponed until vasospasm subsides and neurological condition improves.

**ABSTRACTS 617**

**AB-4676-78**

Microsurgical Treatment of Cerebral Aneurysms at the Bifurcation of the Internal Carotid Artery — Yasargil MG (Neurosurgical Clinic, University Hospital, Rämistrasse 100, CH-8091 Zürich, Switzerland), Boehm WB, Ho REM — *Acta Neurochir (Wien)* 41: 61-72, 1978*

With microtechnique, meticulous dissection and identification of critical anatomical structures become realities, contributing substantially to the improved results in the treatment of internal carotid artery bifurcation aneurysms.

**AB-4677-78**

Transitory Block of the Arachnoid Granulations Following Subarachnoid Haemorrhage. A Postmortem Study — Torvik A (Laboratory of Neuropathology, Ullevål Hospital, Oslo I, Norway), Bhatia R, Murthy VS — *Acta Neurochir (Wien)* 41: 137-146, 1978*

The arachnoid granulations of the superior sagittal sinus were examined for blockage by erythrocytes in 43 cases of subarachnoid haemorrhage. Ten cases had survived for more than two weeks after the haemorrhage.

Among 33 cases with acute haemorrhage, 17 had evidence of blocking of the granulations. The severity of the block varied from complete clogging of nearly all granulations to slight filling of a few of them. Cases with some days' survival showed evidence of phagocytosis of the entrapped erythrocytes by macrophages. Several of the cases with old haemorrhage had groups of haemosiderin macrophages in the granulations but none showed fibrosis (except for one single villus).

It is concluded that clogging of the arachnoid granulations may contribute to the raised intracranial pressure in some cases of acute subarachnoid haemorrhage. However, the observations do not support the hypothesis that the haemorrhage may lead to fibrosis or scarring of the granulations with chronic impairment of the cerebrospinal fluid resorption and subsequent hydrocephalus.

**AB-4678-78**

Extradural Haematoma. Report of 132 Cases — Kvarnes TL (Neurosurgical Department, Ullevål Hospital, Oslo 1, Norway), Trumpy JH — *Acta Neurochir (Wien)* 41: 223-231, 1978*

In a consecutive unselected series of 132 cases of acute extradural haematoma among 9,600 patients who sustained a head injury and were admitted without delay to a regional neurosurgical department during the years 1964 to 1975 the overall mortality was 23 per cent. Associated intradural lesions, the relative infrequency of the lucid interval, sustained loss of consciousness from the time of admission, lack of the classical pupillary changes, and the rapid rise in intracranial pressure in some patients are factors of importance for the prognosis. It should be possible to improve the results and lower the mortality if due consideration is taken of these factors.

**AB-4679-78**


Eighteen patients who had been receiving warfarin for at least one year for transient ischemic attacks (TIAs) were divided into two groups. Warfarin was withdrawn in both groups but one group received aspirin, 300 mg twice per day. The attack rate while taking warfarin was 0.02 attacks per patient-month. Attack rate for the period off warfarin was 0.16 attacks per patient-month. No difference was found between the groups receiving aspirin and placebo. In summary it is shown that there is an increase in ischemic events after anticoagulants are withdrawn.
and that aspirin does not protect against TIA's in patients being weaned from warfarin.

**AB-4680-78**  
Failure of Aspirin to Prevent Postoperative Deep Vein Thrombosis in Patients Undergoing Total Hip Replacement — Stamatakis JD (Thrombosis Research Unit, King's College Medical School, London SE5 8RX, England), Kakkar VV, Lawrence D, Bentley PG, Nairn D, Ward V — *Br Med J* 1: 1031 (Apr 22) 1978

Thirty consecutive patients undergoing total hip replacement were studied for postoperative deep venous thrombi using 125I-fibrinogen uptake test and ascending venography. All patients received 600 mg of aspirin twice per day starting the day of operation and continuing until discharge. Deep venous thrombosis was present by venography in 24 patients (80%). Aspirin was discontinued at the development of deep venous thrombosis requiring anticoagulant therapy. In conclusion, prophylaxis with aspirin is ineffective in preventing deep venous thrombosis for patients undergoing total hip replacement.

**AB-4681-78**  
Cooperative Study of Hospital Frequency and Character of Transient Ischemic Attacks. VII. Initial Diagnostic Evaluation — Gotshall RA, Price TR, Haerer AF, Swanson PD, Calanchini PR, Conneally PM, Dyken ML (Department of Neurology, Indiana University School of Medicine, Indianapolis, Indiana 46202), Futty DE, Poskanzer DC — *JAMA* 239: 2001-2003 (May 12) 1978

Six contributing centers collected information on 1,328 patients whose complaints suggested transient ischemic attacks (TIA's). Frequency of performance and percentage of abnormality of 30 diagnostic tests were documented. Studies performed frequently as part of a routine work-up regardless of diagnosis showed abnormalities in a high percentage of patients with TIA's. Tests thought to have specificity for vascular disease or carotid occlusive disease were used more frequently on patients in the TIA or possible TIA groups. In summary, although the diagnosis of TIA is made by history and physical examination, diagnostic tests led to a diagnosis other than TIA and to other disorders frequently associated with TIA's. Abnormal tests included ECG, anemia, positive serology, and elevated blood sugar. CSF was abnormal in over 25%, and 70% of the abnormal fluids contained an elevated value of protein.

**AB-4682-78**  
Surgery of Ruptured Intracranial Aneurysm. Timing and Grading — Suzuki J (Division of Neurosurgery, Institute of Brain Diseases, Tohoku University School of Medicine, Sendai, Japan) — *Neurul Surg (Tokyo)* 6: 459-470 (May) 1978

1,400 cases were examined regarding optimal timing of surgery following subarachnoid hemorrhage (SAH) secondary to ruptured intracranial aneurysm. Mortality rate in patients on the first or second day after SAH was low in comparison to mortality from the third through the seventh day following SAH. Aneurysm rerupture associated with unconsciousness and with vasospasm. Rerupture occurred four to 14 days after SAH. Rerupture of the aneurysm with only unconsciousness occurred within the first three days or after the 15th day. However rerupture of aneurysm without unconsciousness or spasm occurred at random intervals.

The author recommends that patients with minor bleeding be operated immediately; patients with moderate bleeding be operated with the first 24 hours or after ten days following the initial rupture; patients with major bleeding be operated after 13 days following initial rupture. Patients in vegetative states should be treated conservatively until there is an improvement in the state of consciousness.

**AB-4683-78**  
Further Evidence for the Role of Thrombin in the Platelet Release Reaction Caused by Various Agents, and the Nature of Biphasic Platelet Aggregation — Huzoor-Akbar, Ardlie NG (Department of Clinical Science, John Curtin School of Medical Research, Australian National University, Canberra, A.C.T. 2601, Australia) — *Br J Haematol* 38: 381-390 (Mar) 1978

The authors provide evidence for the involvement of coagulation factors and thrombin in the platelet release reaction induced by ADP. Platelets washed free of loosely adsorbed clotting factors responded poorly to ADP without second phase aggregation or release of [3H]HT. However, platelets suspended in dialysed plasma responded to ADP with second phase aggregation and release of [3H]HT. The reaction was dependent on the optimal concentration of calcium and the amount of plasma. Plasma deficient in factors XII or II did not restore second phase aggregation, implying that ADP may initiate clotting by activating factor XII in the presence of platelets. Heparin and Hirudin were found to be inhibitory if citrate was not present. The addition of the chelating agent EGTA prevented the inhibitory action of heparin, suggesting that citrate is working by reducing the cation concentration.

In summary, the observations give support to the thesis that thrombin serves as the stimulus to the release of platelet contents and second phase aggregation.

**AB-4684-78**  

Twenty-two patients with suspected arterial or venous clots were studied with In-111-labeled...
autologous platelets using the In-111 oxine method. In the first 12 patients studied the labeling was carried out in saline; in such prepared platelets the 15-minute recovery and biologic half-life were unsatisfactory. In ten patients the labeling was performed in plasma and the platelets showed values corresponding to previously reported CR-51-labeled platelets. In these ten patients, studies were abnormal in six, normal in three, and indeterminate in one. One of the abnormal scans showed a focal platelet accumulation in the right carotid in a patient with amaurosis fugax involving the right eye. Positive scans were documented by lung scan, venogram and arteriogram. The method provides a useful approach to examine platelet activity in vivo in arterial and venous thrombosis.

ABSTRACTS 619

AB-4685-78

Bow Hunter's Stroke — Sorensen BF (508 East South Temple, Suite 323, Salt Lake City, Utah 84102) — Neurosurgery 2: 259–261 (May-Jun) 1978

A 39-year-old man suddenly felt "sick" and became diaphoretic during archery practice. In the ensuing minutes he developed numbness and tingling in the left side of his body, weakness of his right arm and leg, and an enlarged left pupil. On examination he was in distress from vertigo, nausea and vomiting. In addition his neurological examination revealed a small right pupil, absence of sweating and decreased pin-prick sensation of the right side of the face, weakness in the right upper and lower extremities, decreased pin-prick sensation in the left limbs, ataxia of the right limbs, and nystagmus when looking to the left. Vertebral angiogram revealed spasm in a segment of the right vertebral artery with suggestion of small "bleb" on the artery distal to the spasm. Wallenberg syndrome secondary to brain stem infarction was diagnosed. The compromised lumen of the right vertebral artery at the arch from the acutely turned head to the left during archery is suggested as the etiology for the infarction.

AB-4686-78


Seventy-four vascular reconstructive procedures in 53 patients performed following coronary artery bypass (CAB) surgery were reviewed. Twenty-nine carotid endarterectomies, 20 femoral-popliteal bypasses, 12 aorto-femoral bypasses, nine abdominal aortic aneurysm resections, two axillo-femoral bypasses, one renal artery bypass and one femoral-femoral bypass were performed. Two deaths caused by arrhythmias occurred during the postoperative period. Postoperative complications occurred in six patients, and included supraventricular arrhythmia, pneumonia, and wound infection. Three deaths occurred in a follow-up period. Comparison with normal patients, by actuarial methods, of length of survival of the reported group from the time of their CAB falls within 95% of the confidence limits and thus indicates an insignificant added risk from this second vascular procedure. The data suggest that patients who have undergone CAB are acceptable risks for subsequent vascular reconstructive surgery.

AB-4687-78

Intracranial Venous Sinus Thrombosis: Diagnosis Suggested by Computed Tomography — Wendling LR (Department of Radiology, Sacred Heart Medical Center, Spokane, Washington 99204) — Am J Roentgenol 130: 978–980 (May) 1978

A case of an 18-month-old white female with a thrombosis of the great vein of Galen and straight sinus is presented. The patient had a two-week history of vomiting, low-grade fever, lethargy, tremulousness, and motor deficit on the right side. Neurological examination showed her to be irritable, nonresponsive to visual threats, hemiplegic on the right side with right central facial weakness, and hyperreflexia on the right side with right-sided Babinski. CSF contained 157 RBCs and a protein of 115 mg/100 ml. CT scan showed an area of increased attenuation in the distribution of straight sinus with a small area of increased density in the region of the great vein of Galen. Bilateral carotid angiography demonstrated nonfilling of the deep venous system on the right and filling of only the internal cerebral vein on the left, consistent with a diagnosis of thrombosis of great vein of galen and straight sinus.

The paper illustrates that the CT scan can be used to diagnose intracranial venous sinus thrombosis and that further invasive diagnostic procedures may not be necessary if venous sinus thrombosis is suspected clinically.

AB-4688-78

Cerebral Arteriovenous Malformations in Children — Sing Cho So (University Department of Surgery, Queen Mary Hospital, Hong Kong, China) — Child's Brain 4: 242–250, 1978

Cerebral arteriovenous malformations in 36 children under the age of 13 are reviewed retrospectively. Sixty-nine percent of the children presented with hemorrhage while 39% presented with seizures. Eight of these children admitted because of hemorrhage also had seizures prior to bleeding. Parietal lesions in the distribution of the middle cerebral artery predominated.

Surgery was performed in all children presenting with hemorrhage and in one child with a progressive neurological deficit. An operative mortality of 8.5% is reported. Seizures were not considered an indication for surgery. Six patients had radiotherapy. Ten deaths occurred in the follow-up period averaging 6.2 years. Eight out of the ten deaths were in the group that did not have surgery. The effect of radiotherapy was inconclusive.
The author concludes that AVM manifested by hemorrhage should be totally excised in children. The question of prophylactic resection in children presenting with seizures is discussed but no firm conclusions are made. The need for a controlled prospective study involving a large number of patients is reaffirmed.

**AB-4689-78**

An Improved Technique for Measurement of Spinal Cord Blood Flow — Senter HJ (Department of Surgery, Yale University School of Medicine, New Haven, Connecticut 06510), Burgess DH, Metzler J — Brain Res 149: 197-203 (Jun 23) 1978

A method of measuring normal spinal cord blood flow is described using the hydrogen clearance technique. Reproducibility over time and from animal to animal is achieved by employing major modifications. These are: a) modification in amplifier design, b) use of insulated platinum micro-electrodes, c) standardization of electrode parameters, d) verification and atraumatic placement of electrodes, and e) stabilization of spinal cord. Spinal cord blood flow in the dorsolateral funiculus of the cat thoracic cord was found to be 10.99 ml/100 g/min ± 0.89 with good consistency and reproducibility.

**AB-4690-78**

Polyvinyl Alcohol Foam: Prepackaged Emboli for Therapeutic Embolization — Kerber CW (Department of Radiology, University of Pittsburgh School of Medicine, Presbyterian-University Hospital, Pittsburgh, Pennsylvania 15261), Bank WO, Horton JA — Am J Roentgenol 130: 1193-1194 (Jun) 1978

The authors describe a technique for preprocedural preparation of polyvinyl alcohol foam (Ivalon) suitable for therapeutic particulate embolization. The advantages of using polyvinyl alcohol over silicone or gelfoam are that polyvinyl alcohol excites an inflammatory reaction causing permanent vessel occlusion, is less expensive, and can be rendered radiopaque with barium sulfate. The disadvantage is its high coefficient of friction. Through the preparation discussed in this paper the particles are uniform, small in size and instantly ready for use. Therefore the therapist can concentrate on the patient's clinical condition rather than the mechanics of the process.

**AB-4691-78**


*Author's abstract.

Young male rabbits were fed a diet containing 0.2% cholesterol for 4, 6, 12 and 20 weeks. At death the aortas of each animal were prepared for scanning electron microscopy (SEM) and the size of the atherosclerotic lesions surrounding the aortic ostia was measured by planimetry. Under SEM the early fatty lesions appeared as small discrete swelling of the endothelial cells. These cells were often larger than normal endothelial cells and their cell boundaries stained poorly with silver salts. Large confluent lesions were observed distal to the aortic ostia both 12 and 20 weeks after commencement of the diet but were still found to be endothelialized. No lesions however were observed immediately proximal to the entrance of an aortic branch. Haemodynamic forces, such as a high shear force, were presumably responsible for the localisation of these lesions.

**AB-4692-78**

The Role of Hemodynamic Factors in Arterial Wall Thickening in the Rat — Matsuda I (Department of Neurosurgery, Kyoto University Medical School, Kyoto, Japan), Niimi H, Moritake K, Okumura A, Handa H — Atherosclerosis 29: 363-371 (Mar) 1978*

In a study on the pathogenesis of arterial wall thickening, hemodynamic factors in the common carotid artery of the rat were experimentally altered with an autograft. The relationship between flow pattern and wall-thickening was examined in a half-ring bypass model with an induced stenosis, using both flow-visualization in a corresponding in vitro model circuit and observation of the wall by microscopy. Wall-thickening was found in the neighborhood of bifurcations, junctions and curved segments, which corresponded to regions of low-shear in the flow-field. Marked histologic changes in the wall were observed in the post-stenotic segments where the flow field was very disturbed. Histologic changes in the arterial wall correlated well with flow patterns.

**AB-4693-78**


Various straight-jawed aneurysm clips were tested for occluding capabilities on a vascular tissue model. Occluding pressures varied markedly among the clip styles and were altered by changes in the lumen and tissue composition of the model. Mechanical characteristics are highly variable between clip styles, but fall within a narrow range for clips of a similar style. The complex interplay of the unique aspects of clip design and force generated by the spring in conjunction with tissue characteristics and precise clip placement upon the tissue are major variables in the apparent ability of a particular clip to occlude the neck of an aneurysm.
Role of Tissue Hypoxia in Local Regulation of Cerebral Microcirculation — Kontos HA (Department of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia 23298), Wei EP, Raper AJ, Rosenblum WI, Navari RM, Patterson JL Jr — *Am J Physiol* 234(5): H582–H591 (May) 1978*

The mechanism of action of hypoxia on cerebral blood vessels and its role in the regulation of the cerebral circulation were investigated in anesthetized cats. Arterial hypoxia produced marked cerebral arteriolar vasodilation, which was partially reversed by perfusing the space under the cranial window with artificial cerebrospinal fluid (CSF) containing 6–94% oxygen. More marked increase in the local supply of oxygen, via perfusion of the space under the cranial window with fluorocarbon FC-80 equilibrated with 100% oxygen, completely eliminated the vasodilation induced by arterial hypoxia. Fluorocarbon equilibrated with 100% N₂, had no effect on the vasodilation. The vasodilation associated with hypotension was completely reversed by perfusion with fluorocarbon equilibrated with 100% oxygen and was unaffected by perfusion with fluorocarbon or CSF equilibrated with gas not containing oxygen. The vasodilation associated with Metrazole-induced seizures was partially reversed by perfusion with fluorocarbon containing oxygen. The results show that hypoxia dilated cerebral blood vessels entirely via a local mechanism, that hypoxia is the dominant mechanism involved in the vasodilation associated with hypotension, and that it is, at least partially, responsible for the vasodilation associated with seizures.

Cerebral Circulatory Responses to Arterial Hypoxia in Normal and Chemodenervated Dogs — Traystman RJ (Department of Environmental Health Sciences, Johns Hopkins University, Baltimore, Maryland 21205), Fitzgerald RS, Loscutoff SC — *Circulation Research* 42: 649–657 (May) 1978*

Cerebral hemodynamic responses to arterial hypoxia were studied in 13 normal and 9 chemodenervated anesthetized, paralyzed dogs. Arterial O₂ content was lowered from control (18.0 vol%) to 14.0, 8.0, and 4.0 vol%, respectively, by either decreasing arterial P O₂ (hypoxic hypoxia) or increasing carboxyhemoglobin saturation (CO hypoxia) at normal P O₂. Both hypoxic hypoxia and CO hypoxia at each value of the lowered arterial O₂ content resulted in progressive significant increases in cerebral blood flow (134, 169, 276, and 146, 206, 244% of control, respectively). Before chemoreceptor denervation, arterial blood pressure increased with hypoxic hypoxia but decreased with CO hypoxia. After chemodenervation, hypoxic hypoxia and CO hypoxia at each value of lowered arterial O₂ content resulted in similar significant increases in cerebral blood flow. These increases were not significantly different from those observed prior to chemodenervation. After chemodenervation, hypoxic hypoxia and CO hypoxia both resulted in similar decreases in arterial blood pressure and cerebral vascular resistance, whereas, before chemodenervation, cerebral vascular resistance decreased more with CO hypoxia than with hypoxic hypoxia. These data show that cerebral vasodilation induced by both forms of hypoxia in chemodenervated dogs resembles that in animals with CO hypoxia and intact chemoreceptors in which P O₂ is high and the carotid chemoreceptors may not be activated. We also have shown that the transient responses to both types of hypoxia are not altered by carotid chemodenervation, and conclude that the carotid chemoreceptors do not play a role in the mechanism by which cerebral blood flow increases during decreased blood O₂ content.

Responses of Cerebral Arteries and Arterioles to Acute Hypotension and Hypertension — Kontos HA (Department of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia 23298), Wei EP, Navari RM, Levasseur JE, Rosenblum WI, Patterson JL Jr — *Am J Physiol* 234(4): H371–H383 (Apr) 1978*

The responses of cerebral precapillary vessels to changes in arterial blood pressure were studied in anesthetized cats equipped with cranial windows for the direct observation of the pial microcirculation of the parietal cortex. Vessel responses were found to be size dependent. Between mean arterial pressures of 110 and 160 mmHg autoregulatory adjustments in caliber, e.g., constriction when the pressure rose and dilation when the pressure decreased, occurred only in vessels larger than 200 μm in diameter. Small arterioles, less than 100 μm in diameter, dilated only at pressures equal to or less than 90 mmHg; below 70 mmHg their dilation exceeded that of the larger vessels. When pressure rose to 170–200 mmHg, small vessels dilated while the larger vessels remained constricted. At very high pressures (> 200 mmHg) forced dilation was frequently irreversible and was accompanied by loss of responsiveness to hypocapnia. Measurement of the pressure differences across various segments of the cerebral vascular bed showed that the larger surface cerebral vessels, extending from the circle of Willis to pial arteries 200 μm in diameter, were primarily responsible for the adjustments in flow over most of the pressure range.


*Author's abstract.*
Arterial thrombus formation was induced in male and female Wistar rats (3 mo) by inserting a loop-shaped polyethylene cannula into the abdominal aorta. Thrombogenesis was also induced in mature male and female New Zealand rabbits by constriction of the femoral artery and injection of ellagic acid. The criteria for thrombus development in the cannulated rats were: incidence of thrombosis (IT), obstruction time (OT), and thrombus weight (TW). We observed a significant sex difference in all these criteria of thrombogenesis in both rats and rabbits. Pretreatment of either sex with Depo-testosterone shortened OT, increased TW about fivefold in males and threefold in females, and increased mortality rate (MR) more than fourfold in both sexes. Prolonged pretreatment with Depo-testosterone increased in all aspects of thrombogenesis. Depo-estradiol had marginal ameliorating effects in male rats only. Both the antiandrogen Flutamide, and aspirin, significantly decreased the thrombogenic effects of testosterone. Thus, testosterone may be a significant risk factor in experimentally induced thrombogenesis in rats and rabbits.

AB-4698-78

Large Decompressive Craniotomy in the Treatment of Acute Subdural Hematoma — Britt RH (Division of Neurosurgery, R-155, Stanford University School of Medicine, Stanford, California 94305), Hamilton RD — Neurosurgery 2: 195–200 (May-Jun) 1978

A series of 42 patients who had large decompressive craniotomies for acute subdural hematoma has been reviewed with regard to long term results. Postoperative mortality (within 30 days of surgery) was 36%. Delayed but related deaths accounted for an additional 19% mortality, for a total mortality of 55%. Fourteen patients (33%) were able to return home, but there was a significant morbidity in terms of intellectual impairment, hemiparesis, and dysphasia. Recommended management includes establishment of an adequate airway, intravenous administration of mannitol, and performance of an emergency computerized tomographic (CT) scan before operation. A large decompressive craniotomy is performed, with removal of the blood clot, establishment of hemostasis, patch-grafting of the dura, and removal of the bone flap to allow the edematous, swollen brain to expand away from the brain stem. The mortality and morbidity will probably always remain high because in the majority of the cases significant structural damage to the cortical and brain stem structures occurs at the time of the injury.

Items of Interest

Review Articles

Cerebral Angiitis — Solé-Llenas J (Department of Radiology, Hospital General de Nta. Sra. del Mar, Instituto Neurologico, Barcelona 3, Spain), Pons-Tortella E — Neuroradiology 15: 1-11 (Mar 29) 1978


Cerebrovascular Aspects of Headache — Appenzeller O (Department of Neurology, University of New Mexico School of Medicine, Albuquerque, New Mexico 87131) — Med Clin North Am 62: 467-480 (May) 1978

Antiplatelet Therapy. Part I and II — Weiss HJ (Department of Medicine, Roosevelt Hospital, New York, New York 10019) — N Engl J Med 298: 1344–1347 (Jun 15); 1403–1406 (Jun 22) 1978

*Author's abstract.
Abstracts

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