Abstracts

AB-4265-78
Cerebral Granulomatous Angiitis: Case Report and Literature Review — Faer MJ, Mead JH, Lynch RD (reprint request: Technical Publications Editor, Letterman Army Medical Center, Presidio of San Francisco, California 94129) — Am J Roentgenol 129: 463-467 (Sep) 1977*

Granulomatous angiitis is a pathologically distinct central nervous system segmental vasculitis of unknown etiology and pathogenesis which may be indirectly related to herpes zoster infections. The condition primarily affects adults and presents with nonspecific, unexplained progressive neurological dysfunction. The cerebrospinal fluid is often under increased pressure and contains excess protein and white cells, mostly lymphocytes. The necrotizing vasculitis primarily affects the small intracranial arteries and veins and alters vascular permeability, inducing cerebral edema. Angiography demonstrates segmental, diffuse, distal vascular irregularity and narrowing; while computed tomography shows poorly defined, diffuse, non-contrast-enhancing low density areas with or without mass effect. In the appropriate clinical setting, the angiographic and CT findings should be highly suggestive. The possibility of efficacious therapeutic intervention makes early diagnosis important. CT can also be used to monitor therapeutic response.

AB-4266-78
Distribution of Cerebral Blood Flow in the Dominant Hemisphere During Motor Ideation and Motor Performance — Ingvart DH (Department of Clinical Neurophysiology, University Hospital, S-221 85 Lund, Sweden), Philipson L — Ann Neurol 2: 230-237 (Sep) 1977*

Distribution of activity in the dominant (left) hemisphere was studied with a multidetector instrument during diagnostic measurements of regional cerebral blood flow in 6 patients, 4 of them neurologically normal. Computer-calculated charts, in color, of the flow/activity distribution — "cerebral ideograms" — were obtained in three situations: at rest, during motor ideation (attempts to conceive of rhythmic clenching movements of the right hand), and during actual movements of the right hand. Motor ideation changed the normal "hyperfrontal" resting flow distribution, and an increase of the hemisphere mean flow was recorded. The increase was especially marked in frontal and temporal structures. This pattern differed from the one during actual hand movements, when a rolandic flow increase was seen. The result suggests that centers for motor ideation have a different cerebral location than those which control the actual hand movement.

AB-4267-78
Effect of Tranexamic Acid on Rebleeding After Subarachnoid Hemorrhage: A Double-Blind Controlled Clinical Trial — van Rossum J (Department of Neurology, University Hospital, Leyden, The Netherlands), Wintzen AR, Endtz LJ, Schoen JHR, de Jonge H — Ann Neurol 2: 238-242 (Sep) 1977*

In a double-blind controlled clinical trial on 51 patients with subarachnoid hemorrhage, tranexamic acid, 4 gm per day for ten consecutive days, did not favorably affect the outcome. Neither mortality nor rebleeding rates were improved after a follow-up of three months.

AB-4268-78

CT scans have been made on 39 of 41 patients who presented with subarachnoid hemorrhage. Blood could be visualized in the cisterns of 18 of 32 examinations performed within five days of the hemorrhage all having aneurysms. Among the other 14 there were three in whom no aneurysm was found on angiography. The distribution of blood in those that showed it was useful in pointing to the position of the aneurysm. Much other information was obtained, for instance about rebleeding and infarction. CT should routinely be the primary examination, followed by selective angiography.

AB-4269-78

Changes in the size and density of intracerebral hematomas were investigated by analyzing the sequential CT studies of 40 patients. Intracerebral hematomas decrease in density by an average of 0.7 EMI units per day. The dense portion of the hematoma decreases in size by an average of 0.65 mm per day. Mass effect does not decrease in proportion to the decrease in size of the dense portion of the hematoma but is delayed. The only instances of increasing mass effect occurred in patients undergoing surgical evacuation of the hematoma and in those who sustained trauma. Posthematoma residua include decreased parenchymal density, focal atrophy, and ventricular enlargement.

AB-4270-78
Computed Tomography of Intracerebral Hematomas. II. Radionuclide and Transmission CT Studies of the Perihematoma Region — Dolinskas CA (Department of Radiology,
ABSTRACTS


Transmission CT studies of 40 patients with intracerebral hematomas were used for an analysis of the perihematoma region. Nineteen of these patients had radionuclide studies. In the brain adjacent to an intracerebral hematoma, the patterns of pertechnetate uptake on scintillation scans and contrast enhancement on transmission CT resemble those observed in cerebral infarctions. The healing of the perihematoma region proceeds similarly to that of infarcts. The brain about the hematoma is ischemic tissue which behaves much like cerebral infarction not related to hematomas.

AB-4271-78
Diagnosis of Isodense Subdural Hematomas by Computed Tomography — Amendola MA, Ostrum BJ (Division of Radiology, Albert Einstein Medical Center, Philadelphia, Pennsylvania 19141) — Am J Roentgenol 129: 693–697 (Oct) 1977*

Subdural hematomas, whose absorption values approximate those of adjacent brain, are not visualized in routine computed tomography. Two clues indicating the presence of such “isodense” subdural hematomas are: (1) unilateral effacement of cerebral sulci on the convexities, and (2) midline shift or mass effect on the ventricles in the absence of abnormal areas of diminished or increased density in the brain. Nine cases were detected on pre- and postcontrast studies in 2,500 CT scans of the brain over a 10 month period. Delayed CT scanning 4–6 hr after intravenous contrast injection showed enhancement of the subdural hematoma in three of seven cases.

AB-4272-78
Computed Angiotomography — Weinstein MA (Department of Radiology, Cleveland Clinic Foundation, Cleveland, Ohio 44106), Duchesneau PM, Weinstein CE — Am J Roentgenol 129: 699–701 (Oct) 1977*

Branches of the anterior and middle cerebral arteries and thalamostriate, septal, and internal cerebral veins can be clearly defined with computed tomography during contrast enhancement with the Ohio Nuclear Delta 25 scanner. Pathologic vessels can also be recognized. Visualization of vessels smaller than 1.5 mm belongs in the province of angiography.

AB-4273-78
Critical Cerebral Blood Flow for Production of Hemiparesis After Unilateral Carotid Occlusion in the Gerbil — Nakai K (Department of Neurology, Baylor College of Medicine, Houston, Texas), Welch KMA, Meyer JS — J Neurol Neurosurg Psychiatry 40: 595–599 (Jun) 1977*

Transient cerebral ischaemia, produced by temporary unilateral common carotid artery (CCA) occlusion, was studied in the gerbil by means of chronically implanted hydrogen electrodes. Unilateral CCA occlusion produced behavioural signs of neurological deficit only when regional cerebral blood flow values in the ipsilateral cerebral hemisphere fell below a critical range of 0.20–0.22 ml/gm brain/min. Postischemic poor perfusion (no reflow) was an infrequent observation after removal of CCA occlusion.

AB-4274-78
Neurologic Status and Prognosis After Cardiopulmonary Arrest: I. A. Retrospective Study — Snyder BD (St. Paul-Ramsey Hospital, St. Paul, Minnesota), Ramirez-Lassepas M, Lippert DM — Neurology (Minnep) 27: 807–811 (Sep) 1977*

A retrospective survey of survivors of cardiorespiratory arrest included 34 patients. Twenty-one had a good outcome neurologically and 13 were seriously impaired. Depth and duration of postarrest coma correlated significantly with poor neurologic function. Seventy percent of the seriously impaired patients never regained consciousness and none emerged from coma within 5 days; 90 percent of patients with good outcome were alert within 18 hours after resuscitation. Coma, motor unresponsiveness, absent pupillary light reflexes, and absent oculocephalic responses were closely associated with dismal prognosis for neurologic functioning. This retrospective study cannot provide a basis for discontinuation of life support at any specific time.

AB-4275-78
Phenylethylamine and Cerebral Blood Flow. Possible Involvement of Phenylethylamine in Migraine — McCulloch J (Wellcome Surgical Research Institute, University of Glasgow, Glasgow G61 1QH, Scotland), Harper AM — Neurology (Minnep) 27: 817–821 (Sep) 1977*

Phenylethylamine can initiate migraine-type headaches in susceptible individuals. Migraine sufferers have a reduced ability to deaminate all monoamines, but particularly phenylethylamine. Phenylethylamine readily crosses the blood-brain barrier and thus could be a mediator of the cerebrovascular disturbances seen in migraine attacks. Cerebral blood flow was measured in 15 anesthetized baboons by the intracarotid 133Xe clearance technique. Phenylethylamine (4 × 10⁻³ moles.kg⁻¹.min⁻¹) produced significant increases in cerebral blood flow (36 percent) and cerebral oxygen consumption (45 percent) during the first 40 minutes of infusion. In contrast, an increased phenylethylamine concentration (2 × 10⁻³ moles.kg⁻¹.min⁻¹) constricted the cerebral bed (cerebral blood flow reduced by 28 percent). The response of the cerebral circulation to hypercapnia was preserved during the infusion. Phenylethylamine thus is capable of producing in an experimental animal a pattern of cerebrovascular events similar to those seen in migraine.

AB-4276-78
Arteriovenous Malformations of the Brain Stem in Childhood — Russo RH (Department of Surgery, Section of Neurosurgery, University of Michigan Hospital, Ann Arbor, Michigan 48109), Dicks RE III — Surg Neurol 8: 167–170 (Sep) 1977*

Two children are presented with arteriovenous malformations of the upper brain stem, emphasizing the clinical
presentation, diagnosis, and surgical therapy. The lesions were located on the pia mater, facilitating total surgical removal. The importance of detailed angiography with subtraction technique is discussed.

**AB-4277-78**

**Intracranial Arteriovenous Malformations: Conservative or Surgical Treatment?** — Trumpy JH (Ullevaal Hospital, Oslo 1, Norway), Eldevik P — *Surg Neurol* 8: 171-175 (Sep) 1977*

Of 89 patients with arteriovenous malformations of the brain, 47 were conservatively treated, nine of these died (19%), four with the first bleed, five of recurrent bleeding. Of 42 surgically treated patients, five died, a mortality of 12%. Four of these deaths occurred with patients in a deteriorating clinical condition caused by large intracerebral haematomas. The fifth death occurred with a recurrent bleeding where a ligation of feeding artery was the only treatment. There were no deaths in those patients in good clinical condition who underwent an excision of the malformation. Total excision of arteriovenous malformations should be performed whenever possible.

**AB-4278-78**

**Prolonged Induced Hypertension in the Management of Incipient Cerebral Infarction** — van Dellen JR (Neurosurgery, Baragwanath Hospital, P.O. Berchem, 2013 R.S. Africa), Buchanan N — *Surg Neurol* 8: 185-186 (Sep) 1977*

A patient operated upon for a carotico-cavernous fistula developed incipient cerebral infarction. Metaraminol was used for a period of eight days to produce a therapeutic elevation in blood pressure to prevent this complication. Its possible role in the management of similar complications in the post-operative period of intracranial aneurysms and post angiography is discussed.

**AB-4279-78**

**Increased Sensitivity of the Basilar Artery to Norepinephrine and 5-Hydroxytryptamine Following Experimental Subarachnoid Hemorrhage** — Svendgaard N-Aa (Department of Neurosurgery, University Hospital, Lund, Sweden), Edvinsson L, Owman Ch, Sahlin Ch — *Surg Neurol* 8: 191-194 (Sep) 1977*

The reactivity of rabbit basilar artery to norepinephrine and 5-hydroxytryptamine was tested in vitro three days following cisternal injection of 1.0 ml autologous blood to simulate subarachnoid hemorrhage. Following this treatment the artery became three to five times more sensitive to norepinephrine compared with vessels from untreated animals. This was reflected in a parallel shift of the log dose-response curve towards lower concentrations of norepinephrine in a way resembling that seen after cocaine treatment or sympathectomy and interpreted as a prejunctional supersensitivity of the vascular alpha-receptors. The injection of blood also increased the amount of vasoconstriction with 5-hydroxytryptamine to a level which was three times higher than that obtained in untreated vessels. The results suggest one type of mechanism whereby monoamines might be involved in cerebral vasospasm following subarachnoid hemorrhage.

**AB-4280-78**

**Evidence of Silent Cerebral Embolism in Patients With Amaurosis Fugax** — Harrison MJG (Department of Neurological Studies, The Middlesex Hospital Medical School, London W1N 8AA, England), Marshall J — *J Neurol Neurosurg Psychiatry* 40: 651-654 (Jul) 1977*

In 34 patients who presented with attacks of amaurosis fugax with no evidence of cerebral involvement, EEG, angiographic, and regional cerebral blood flow studies were carried out. Six of 23 EEGs, one of 21 angiograms, and five of six regional blood flow studies were thought to provide evidence of silent cerebral embolism. The implications for the management of patients who present with isolated amaurosis fugax are discussed.

**AB-4281-78**

**Herpes Zoster Ophthalmicus With Contralateral Hemiplegia** — Pratesi R (Departamento de Pediatria, Primeiro Hospital Distrital de Brasilia, D.F. 70.000, Brazil), Freeborn FR, Lowry JL — *Arch Neurol* 34: 640-641 (Oct) 1977*

A 48-year-old man developed left hemiparesis nine weeks after herpes zoster skin lesions had appeared over the right forehead. Cerebral angiography showed bilateral changes consistent with cerebral arteritis. The patient's condition worsened after the angiographic procedure. Reports from the literature as well as the present case suggest that arteritis and ischemia best explain contralateral neurological symptoms that occur suddenly following herpes zoster ophthalmicus.

**AB-4282-78**

**Experimental Extracranial-Intracranial Anastomosis** — Nishikawa M (Neurochirurgie Universitätsklinik, Kantonsspital Zürich, 8091 Zürich, Switzerland), Yasargil MG, Yagi N, Fisch U — *Surg Neurol* 8: 249-253 (Oct) 1977*

A new experimental model for the study of extracranial-intracranial anastomosis has been developed. Canine external ethmoidal arteries have been anastomosed to the middle cerebral arteries. A 100% patency rate has been achieved ten days after operation. The surgical techniques are described. Using this model, we studied the changes of cortical intraarterial pressure and tissue O<sub>2</sub> tension under a variety of conditions. From the results of this experiment, it is concluded that the restoration of the cortical intra-arterial pressure may be expected after anastomosis, that tissue O<sub>2</sub> tension value depends upon restoration of the cortical intra-arterial pressure in the acute stage, and that O<sub>2</sub> and CO<sub>2</sub> inhalations have little effect on the brain ten days after middle cerebral arterial occlusion in spite of recovery of intra-arterial pressure with anastomosis. The experimental results suggest that the restoration of the intra-arterial pressure after anastomosis may be of no use in supplying oxygen to ischemic cortex in the chronic stage because of dysfunction of the cortical microvasculature.

*Author's abstract
**AB-4283-78**

**Diagnosis and Treatment of Postoperative Cerebral Vasospasm** — Giannotta SL (Section of Neurosurgery, University of Michigan Medical Center, Ann Arbor, Michigan 48109), McGillicuddy JE, Kindt GW — Surg Neurol 8: 286-290 (Oct) 1977*

A series of 17 patients who developed severe neurologic deficit due to postoperative cerebral vasospasm is presented. All underwent confirmatory postoperative cerebral angiography. Treatment included controlled hypertension, hyperventilation, over-transfusion of whole blood and colloids, and infusion of low molecular weight dextran. Neurologic deficits were reversed promptly and completely in 12 patients and partially in three patients. The authors propose that methods designed to increase cerebral blood flow can reverse the ischemic deficits of vasospasm.

**AB-4284-78**

**Electronic Stethoscope for Detection of Cerebral Aneurysm, Vasospasm and Arterial Disease** — Olinger CP (Stroke Research Laboratory, 4303 Medical Sciences Building, Cincinnati, Ohio 45267), Wasserman JF — Surg Neurol 8: 298-312 (Oct) 1977*

A specially designed acoustic stethoscope electronic-computer-analysis system has repeatedly detected and identified angiographically demonstrated anteriorly located intracranial aneurysms by their characteristic signals. The system has detected and measured clinically significant disease in the carotid siphon and bifurcation, even in cases with normal angiograms, and has recorded the onset and disappearance of cerebral vasospasm. Our data suggests that an aneurysm may act as a flexible Helmholtz resonator, possibly being driven by vortex shed or turbulence. Our goal is the development of a safe, non-invasive method by which the physician could investigate warning symptoms of aneurysms, cerebral vasospasm, and arterial disease in order to recommend preventive surgery or medical treatment early before the patient's condition might deteriorate. Individual cases, falsely positive and negative results are discussed.

**AB-4285-78**

**Cerebral Circulation: Effect of Stimulation and Blockade of Dopamine Receptors** — McCulloch J (Wellcome Surgical Research Institute, University of Glasgow, Glasgow G61 1QH, Scotland), Harper AM — Am J Physiol 233(2): H222-H227 (Aug) 1977*

The effects of stimulation and blockade of dopaminergic receptors on cerebral blood flow and metabolism were investigated in 15 anesthetized baboons. The intravenous administration of apomorphine resulted in immediate, dose-dependent increases in cerebral blood flow (increased by 58% following 0.1 mg/kg apomorphine) which were always accompanied by increases in cerebral oxygen consumption (increased by 36% with 0.1 mg/kg) and glucose uptake (increased by 72% with 0.1 mg/kg). It is suggested that the primary action of apomorphine is on cerebral metabolism and secondarily on cerebral blood flow rather than directly on cerebral vascular smooth muscle. Pimozide, at doses that totally blocked apomorphine-induced increases, was without effect on cerebral blood flow and metabolism. The dilatory response of the cerebral circulation to hypercapnia was preserved during dopamine-receptor blockade. The basal level of overall cerebral metabolism and hemispheric cerebral blood flow does not appear to be dependent to any large extent on the activity of the dopaminergic pathways in the central nervous system.

**AB-4286-78**

**Transient Cerebral Ischemia and Brain Serotonin: Relevance to Migraine** — Welch KMA (Department of Neurology, Baylor College of Medicine, Houston, Texas 77030), Gaudet R, Wang TPF, Chabi E — Headache 17: 145-147 (Sep) 1977*

Central pain supersensitivity related to depletion of serotonin in the central nervous system has been postulated as a mechanism for migraine. In the present study, transient cerebral ischemia in an animal preparation caused depletion of central nervous system serotonin. Ischemia associated with the prodromal phase of migraine must, therefore, be considered as a possible cause of altered central nervous system serotonin metabolism, possibly leading to increased pain sensitivity.

**AB-4287-78**

**Cerebral Blood Flow in Migraine** — Edmeads J (Department of Neurologic Sciences, Sunnybrook Medical Center, Toronto, Ontario M4N 3M5, Canada) — Headache 17: 148-152 (Sep) 1977*

Cerebral blood flow has seldom been measured during attacks of migraine and cluster headache. The literature is reviewed and five cases studied in our laboratory are described. The results of these studies confirm Wolff’s hypothesis that cerebral blood flow is decreased during auras and increased during headaches. However, the distribution in time and space of the blood flow changes do not always correlate with the clinical features of the attack. Autoregulation of cerebral blood vessels may be impaired in aura and headache, and this may be a factor in intensifying and prolonging attacks.

**AB-4288-78**

**Brief Therapeutic Report: Papaverine Prophylaxis of Complicated Migraine** — Vijayan N (Department of Neurology, School of Medicine, University of California, Davis, California 95616) — Headache 17: 159-162 (Sep) 1977*

Use of vasoconstrictor agents for treatment of migraine associated with prolonged neurologic manifestations has been controversial because permanent sequelae, though rare, occur most commonly in these patients. A slowly released form of Papaverine, 150 mg twice a day, prevented the premonitory neurologic symptoms in seven patients with complicated migraine. Four of these patients also became headache-free and the remaining three were considerably improved. Papaverine therapy was effective in patients in whom the use of ergotamine or other potent vasoconstrictor agents might be hazardous.
AB-4289-78
Arterial Embolism in Thyrotoxicosis With Atrial Fibrillation — Staffurth JS (Lewisham Hospital, London SE13 6LH, England), Gibberd MC, Ng Tang Fui S — Br Med J 2: 688–690 (Sep 10) 1977*

In 262 patients with thyrotoxicosis and atrial fibrillation, there were 26 episodes of arterial embolism (17 cerebral and nine elsewhere) in 21 patients. Twelve incidents occurred with active thyrotoxicosis, three on reversion to sinus rhythm, and 11 after the patients were euthyroid.

This important complication is more common than is realised, and most patients should be put on prophylactic anticoagulants when first seen with atrial fibrillation.

AB-4290-78

We studied the effects of removal of the superior cervical sympathetic ganglion on cerebral blood flow and vascular reactivity to adrenergic agonists and antagonists in 11 unanesthetized goats. Cerebral blood flow was measured by an electromagnetic flow transducer previously implanted on the internal maxillary artery. Ganglionectomy produced an increase of 66 ± 8.26% (SEM) in cerebral blood flow; this increment decreased gradually, and 15–25 days later values for cerebral blood flow were similar to those obtained before ganglionectomy. The administration of norepinephrine (0.03–9 μg) and tyramine (50–500 μg) into the internal maxillary artery in normal goats produced dose-dependent reductions in cerebral blood flow. At 6–8 days after ganglionectomy the reduction of cerebral blood flow produced by norepinephrine was markedly increased, whereas the effects of tyramine were diminished. Before ganglionectomy the administration of phenolamine (1 mg) into the internal maxillary artery produced a 31% increase in cerebral blood flow, whereas the injections of propranolol (1 mg) into the same site reduced cerebral blood flow by 14%. After removal of the superior cervical ganglion the effects of the same doses of the adrenergic blocking drugs were considerably lessened. These results support the view that the perivascular sympathetic nerve endings play an active role in the overall regulation of cerebrovascular resistance in the goat and indicate that both α- and β-receptors display a tonic adrenergic activity in the cerebral blood vessels.

AB-4291-78
Effect of Sympathetic Nerve Stimulation on Cerebral Blood Flow and on Large Cerebral Arteries of Dogs — Heistad DD (Department of Internal Medicine, University of Iowa Hospitals and Clinics, Iowa City, Iowa 52242), Marcus ML, Sandberg S, Abboud FM — Circulation Research 41: 342–350 (Sep) 1977*

This study was performed to determine whether acute or chronic sympathetic denervation increases or redistributes cerebral blood flow (CBF) during hypotension or during the action of vasoconstrictor stimuli (hypocapnia and hypertension). Left superior cervical and stellate ganglionectomy was performed in anesthetized dogs. Total and regional CBF were measured by using microspheres. In acute experiments, hemorrhagic hypotension produced a redistribution of CBF which tended to preserve blood flow to the brainstem and to cerebral grey matter. Hypertension and hypocapnia did not redistribute CBF. Blood flows were similar in the acutely denervated and nondenervated half of the brain during control conditions, hypotension, hypertension, and hypocapnia. Completeness of sympathetic denervation was demonstrated by large increases in blood flow to the masseter muscle on the denervated side. Similar studies were undertaken 6–7 days after sympathetic ganglionectomy, at which time cerebral vascular catecholamines were depleted on the denervated side: norepinephrine content in innervated and denervated middle cerebral arteries was 3.1 ± 0.5 and 0.1 ± 0.02 ng/g, respectively. Blood flows in the chronically denervated and nondenervated half of the brain were similar during control conditions and during interventions. The major new findings in this study are, first, that hypotension...
produces a redistribution of CBF which tends to preserve blood flow to brainstem and to cerebral gray matter, and second, that acute or chronic sympathetic denervation does not alter distribution of CBF over a wide range of arterial pressure or during hypocapnia.

AB-4293-78
Cerebral Blood Flow and Metabolic Changes From Induction to Onset of Anesthesia With Halothane or Pentobarbital — Albrecht RF, Miletich DJ (Department of Anesthesiology, Pritzker School of Medicine, University of Chicago, Chicago, Illinois), Rosenberg R, Zahed B — Anesthesiology 47: 252-256 (Sep) 1977*

The effects of inhalation of halothane (2 per cent) and infusion of sodium pentobarbital (1.43 mg/kg/min) on cerebral blood flow (CBF) and metabolic rate (CMR oxygen) were evaluated in goats from induction to the onset of anesthesia (loss of response to pain) and upon emergence from anesthesia (regaining response to pain). Halothane doubled CBF (79 ± 16 to 152 ± 20 ml/100 g/min) within the first 4 minutes of inhalation without causing anesthesia or any significant change in CMR oxygen. Anesthesia occurred after 7-8 minutes of inhalation, at which time CMR oxygen was decreased by 12 ± 3 per cent (mean ± SD) of the awake value. After 20 minutes of inhalation, CMR oxygen was further decreased to 32 ± 6 per cent of the awake value, whereupon halothane administration was terminated. Emergence from halothane anesthesia occurred while CMR oxygen was still decreased 20 ± 4 per cent.

Pentobarbital infusion produced a progressive decrease in CBF that paralleled the decrease in CMR oxygen. Anesthesia occurred when CMR oxygen was decreased by 31 ± 4 per cent and emergence from anesthesia occurred while CMR oxygen was still depressed by 21 ± 5 per cent.

The data from this study indicate that halothane causes cerebral vasodilatation in a way unrelated to CMR oxygen, and that loss of response to pain during halothane or pentobarbital anesthesia occurs independent of changes in CMR oxygen.

AB-4294-78
Retinal Arterial Occlusive Disease in Systemic Lupus Erythematosus — Gold D (Retina Service, Department of Ophthalmology, Montefiore Hospital and Medical Center, Bronx, New York 10467), Feiner L, Henkind P — Arch Ophthalmol 95: 1580-1585 (Sep) 1977*

Four patients with systemic lupus erythematosus (SLE) developed an unusual form of occlusive retinal arterial disease. The most prominent clinical features of this disorder were deposition of yellow-white material in retinal arterial walls and evidence of multifocal retinal arterial occlusion. Fluorescein angiographic findings included nonperfusion of the obstructed arteries and the retinal capillary beds fed by them, and fluorescein leakage at the sites of involvement of the retinal arteries. This ocular complication of SLE is presumably a manifestation of the widespread systemic vascular problems seen in this disorder. It may be more common in patients with lupus involving the CNS.

AB-4295-78
Experimental Cerebrovascular Disorders: Effects of Papaverine and Theophylline — Heikkinen ER (Department of Pharmacology, University of Oulu, SF-90220 Oulu 22, Finland) — Exp Neurol 56: 469-479 (Sep) 1977 (Academic Press, Inc, publisher)*

This study investigated the role of endogenous adenosine in eliciting the increases in cerebrospinal fluid cyclic adenosine 3',5'-monophosphate concentrations induced by experimental cerebrovascular disorders in rabbits. One group of animals received theophylline, an adenosine antagonist, and another group papaverine, an inhibitor of adenosine uptake, for 7 successive days before the operations. Control animals were similarly pretreated with physiologic saline. Papaverine significantly augmented the acute increase in cyclic cAMP concentration of cerebrospinal fluid whereas theophylline leveled off this elevation response. The present findings apparently imply an important role of adenosine in leading to accumulation of cyclic AMP in the cerebrospinal fluid after the experimental cerebrovascular impairment. A further assessment of various adenosine antagonists in the treatment of such disorders seems to be indicated.

AB-4296-78
Hereditary Multi-Infarct Dementia. Morphological and Clinical Studies of a New Disease — Sourander P (Neuropathological Laboratory, Institute of Pathology, University of Göteborg, Sahlgren Hospital, S-41345 Göteborg, Sweden), Wäldner J — Acta Neuropathol (Berl) 39: 247-254, 1977 (Springer-Verlag, publishers)*

A family is described in which for three subsequent generations numerous individuals were affected with a progressive neuropsychiatric disease with pyramidal, bulbar and cerebellar symptoms, relapsing course and gradually evolving severe dementia.

Post-mortem studies performed on three siblings afflicted with the disease suggest that the remarkably uniform macroscopic picture of the cerebral changes consisting of multiple small cystic infarctions, particularly localized to the central grey and white matter and pons as well as the cortical and central brain atrophy, is caused by an occlusive disease of small intracerebral and leptomeningeal arteries and arterioles. Collected pertinent information concerning the affected family members shows that the illness begins in early adulthood (at 29-38 years of age), affects both sexes and generally lasts for 10-15 years. The only exception so far noticed was a second generation descendant of one of the siblings. This patient died about 5 months after clinical onset of the disease in massive cerebral haemorrhage and showed similar vascular changes as the older members of the family. The disease is considered to be genetically caused and transmitted as a dominant autosomal character. For this apparently new nosological entity the eponym "hereditary multi-infarct dementia" is suggested.

AB-4297-78
Cerebral Angiography With Non-Ionic (Metrizamide) and Ionic (Meglumine Metrizoate) Watersoluble Contrast Media. A Comparative Study With Double Blind Technic —
AB-4298-78

The development of spasm with the introduction of catheters into very small calibered arteries has tended to interfere with routine superselective catheterization. To overcome this problem the vasodilating drug Iskedyl, which contains raubasine 6.25 mg and dihydroergosistine 0.3125 mg in an ampule of 2.5 ml, has been injected into the artery being manipulated. The study was conducted on 112 patients undergoing hyperselective explorations of intracranial, thoracic, abdominal and peripheral arteries of small caliber and the results have been most gratifying and encouraging.

AB-4299-78
Effects of Electrical Stimulation of Superior Cervical Ganglion on the Regional Cerebral Blood Flow — Uchida K (Division of Neurosurgery, Institute of Brain Diseases, Tohoku University School of Medicine, 5-13-1, Nagamachi, Sendai, Japan), Ogawa A, Sakurai Y, Hori S, Suzuki J — Brain and Nerve (Tokyo) 29: 857-863 (Aug) 1977*

The abundant autonomic nervous supply to cerebral vessels has been clarified recently by morphological studies. Yet, the specific physiological effects of this nervous system on cerebral blood flow (CBF) are not well known. Our experiments were carried out in order to make clear the influence of the superior cervical ganglion (SCG) in controlling CBF at the ipsilateral internal capsule. The SCG in dogs were completely separated from the vagal ganglion and stimulated electrically. Measurements of regional cerebral blood flow (rCBF) were continuously made by the heat clearance method using thermocouples. Furthermore, the unilateral carotid and vertebral flow were determined simultaneously at the neck by electromagnetic flow meter. When an initial drop of systemic arterial pressure was observed by stimulation of the SCG, we omitted such data from the experiments, because it was possible that the vagal nerve was stimulated concurrently by the SCG stimulation that also interfered with CBF changes. In nine of ten dogs, unilateral stimulation of the SCG markedly reduced the ipsilateral carotid flow and rCBF at the internal capsule which is fed by the internal carotid artery. On the other hand, rCBF at the contralateral internal capsule changed at random.

From the results obtained, it was emphasized that the superior cervical ganglion definitely plays an important role in controlling ipsilateral regional cerebral blood flow at the internal capsule and that complete separation of the SCG from vagal ganglion is essential to seize pure effects of the SCG on rCBF.

AB-4300-78
Results of Microsurgical Extra-Intracranial Arterial Bypass in the Treatment of Cerebral Ischemia — Yasargil MG, Yonekawa Y (Department of Neurosurgery, Kyoto University Hospital, Kyoto, Japan) — Neurosurgery 1: 22-24 (Jul-Aug) 1977*

The authors report the operative and follow-up results (3 months to 9 years) of 86 consecutive extra-intracranial bypass operations on 84 patients with cerebral ischemia, emphasizing both the prophylactic role of the operation in preventing further catastrophic cerebral ischemia, and the low morbidity and mortality of the operation.

AB-4301-78
The Treatment of Intracranial Aneurysms by Injection With a Tissue Adhesive — Sheptak PE (3600 Forbes Avenue, Pittsburgh, Pennsylvania 15213), Zanetti PH, Susen AF — Neurosurgery 1: 25-29 (Jul-Aug) 1977*

The authors have developed a technique of occluding intracranial aneurysms by direct injection of a tissue adhesive. Previous work in our laboratory had revealed the unusual intravascular characteristics and physiological properties of isobutyl-2-cyanoacrylate (IBC). These findings had indicated the feasibility of utilizing IBC in the treatment of intracranial aneurysms by its direct injection. We have now treated twenty patients by this method. Eighteen aneurysms were injected during open craniotomy and two were treated by closed stereotactic injection utilizing electronic radiography. Follow-up data, ranging from 1 to 6 years after operation, are available on these patients. Sixteen patients (80% of the series) have had good to excellent results. Our experience and the application of this technique as a potential tool in the treatment of intracranial aneurysms are discussed.

AB-4302-78
Anatomical Grading of Supratentorial Arteriovenous Malformations for Determining Operability — Luessenhop AJ (3800 Reservoir Road, NW, Washington, D.C. 20007), Gennarelli TA — Neurosurgery 1: 30-35 (Jul-Aug) 1977*

After the study of over 300 angiograms of supratentorial cerebral arteriovenous malformations (AVM's), the au-
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AB-4303-78
The Microsurgical Anatomy of the Basilar Artery Bifurcation — Grand W (Dent Neurologic Institute, Department of Neurosurgery, Millard Fillmore Hospital, Buffalo, New York 14209), Hopkins LN — Neurosurgery 1: 128-131 (Sep-Oct) 1977

The vascular microsurgical anatomy in the area of the basilar artery bifurcation is described in 30 autopsy dissections. Particular emphasis is placed on variations of the posterior thalamoperforators and their relation to the proximal posterior cerebral artery and basilar bifurcation.

AB-4304-78

Two patients had the initial complaint of fluctuating paraparesis, which was most evident at menstruation. One patient had a semimonthly fluctuating deficit. Spinal cord compression and ischemia, secondary to the vascular mass, were considered the most likely mechanisms. Blood levels of estrogen and progesterone during the menstrual cycle may have had a contributory effect. Fluctuating spinal cord deficits associated with a consistent portion of the menstrual cycle should alert the physician to the possibility of an arteriovenous malformation of the spinal cord.

AB-4305-78

Fifty-two patients underwent arteriography and endarterectomy following transient ischemic attacks (TIAs). Of those patients with angiographic evidence of stenosis, 71% had a bruit; of those with only ulceration or irregularity, 15% had a bruit. When surgery was within four weeks of the TIA, the surgeon found thrombus or friable material 66% of the time. When surgery was performed later, it was found 21% of the time. This suggests that thrombus formation is phasic and that the danger period is one or two months' long.

AB-4306-78
Prognostic Value of the Stress Response Following Stroke — Feibel JH (University of Rochester Medical Center, Rochester, New York 14642), Hardy PM, Campbell RG, Goldstein MN, Joynt RJ — JAMA 238: 1374-1376 (Sep 26) 1977

Urinary epinephrine and norepinephrine, and plasma cortisol were studied in 56 patients with cerebral infarction and nine with subarachnoid hemorrhage. Those with elevated cortisols and an epinephrine and norepinephrine excretion of more than 200 mg daily in the first few days after the stroke had a higher mortality and greater eventual disability. The stress response after stroke may provoke cardiac arrhythmias and perhaps myocardial infarction.

AB-4307-78
Improved Results With Carotid Endarterectomy — Connolly JE (Department of Surgery, University of California, Irvine, California 92717), Kwaan JHM, Stemmer EA — Ann Surg 186: 334-342 (Sep) 1977

From 1968 to 1972, 188 carotid endarterectomies were performed on a teaching vascular service. General anesthesia, hypercarbia, heparin, and an internal shunt were employed. Stump pressure was not measured. Three patients died, three became hemiplegic, and two had transient limb weakness.

From 1973 to 1975, 102 carotid endarterectomies were performed under Xylocaine local anesthesia after the administration of Innovar. Normocarbia, heparin, and the measurement of stump pressure were routine, but internal shunting was reserved for those 20 cases with a stump pressure of below 25 mm Hg or the loss of consciousness or motor ability after five minutes of carotid clamping. Five patients became unconscious in spite of stump pressures between 30 and 70 mm Hg and received shunts. There was one death. None had hemiplegia or limb weakness. Stump pressure alone is inadequate to determine which patients need shunts.

AB-4308-78
Functional Responses of the Human Brain Studied by Regional Cerebral Blood Flow Techniques — Ingvar DH (Department of Clinical Neurophysiology, University Hospital, S-22185 Lund, Sweden) — Acta Clin Belg 32: 68-83, 1977

Cerebral blood flow normally is controlled by the activity of the neurons. Regional cerebral blood flow (rCBF), as measured by the 133Xenon clearance technique, changes during different kinds of mental activity and after brain damage. In the resting brain, the highest rCBF is in the frontal and premotor regions. Voluntary motor activity is characterized by increased activity over the rolandic and postrolandic areas. Speech, sensory stimulation, and problem-solving have their own characteristic flow patterns. Focal and diffuse brain lesions markedly derange flow patterns. Dementia is characterized by reduced flow levels. Chronic schizophrenia is associated with low frontal blood flow and high postcentral flow.

AB-4309-78
Regional Cerebral Blood Flow in Stroke Patients — Kohlmeier K (Abteilung für Neuroradiologie, Klinikum der

*Author's abstract
Regional cerebral blood flow was measured by the intracarotid Xenon-133 clearance method in 494 patients with stroke. Carotid angiography was performed as well. Focal disorders of flow were present where the clinical findings would have predicted them whether or not the corresponding vascular occlusion was present angiographically. Fifty percent of patients with transient ischemic attacks had focal disorders of flow. Regional cerebral blood flow was measured before and after giving 15 presumably vasoactive drugs.

**AB-4310-78**

**Mortality Among Oral-Contraceptive Users** — Royal College of General Practitioners’ Oral Contraception Study (reprint request: Kay CR, Manchester Research Unit, 8 Barlow Moor Road, Manchester M20 OTR, England) — *Lancet* 2: 727–731 (Oct 8) 1977*

In a large prospective study carried out in the United Kingdom, the death-rate from diseases of the circulatory system in women who had used oral contraceptives was five times that of controls who had never used them; and the death-rate in those who had taken the pill continuously for 5 years or more was ten times that of the controls. The excess deaths in oral-contraceptive users were due to a wide range of vascular conditions. The total mortality-rate in women who had ever used the pill was increased by 40%, and this was due to an increase in deaths from circulatory diseases of 1 per 5000 ever-users per year. The excess was substantially greater than the death-rate from complications of pregnancy in the controls, and was double the death-rate from accidents. The excess mortality-rate increased with age, cigarette smoking, and duration of oral contraceptive use.

**AB-4311-78**


43 deaths are known to have occurred among the 17,032 participants in the Oxford/Family Planning Association contraceptive study up to the end of April, 1977. 9 deaths from cardiovascular diseases have been observed among the women in the oral-contraceptive entry group (49,681 woman-years of observation) while no such deaths have been observed among the women who entered the study while using a diaphragm or an intrauterine device (39,146 woman-years of observation). These findings are consistent with the results presented in the accompanying report from the Royal College of General Practitioners Oral Contraception Study.

**AB-4312-78**

**Retinal Stroke. Is the Patient at Risk?** — Savino PJ, Glaser JS (Department of Ophthalmology, PO Box 520009, Biscayne Annex, Miami, Florida 33152), Cassady J — *Arch Ophthalmol* 95: 1185–1189 (Jul) 1977*

A follow-up study was performed to determine the general prognosis for health and life in 86 patients with retinal artery occlusion or ophthalmoscopically observed retinal cholesterol emboli, not subjected to surgery. Survivorship rates and incidence of subsequent cerebrovascular disease were calculated and compared to expected survivorship rate of an age- and sex-matched population. Results were as follows: the patient group with retinal stroke as a whole showed a statistically significant diminished survivorship rate from the third year onward; patients with retinal occlusions without visible emboli had a survivorship rate comparable to the matched control; but patients with visible emboli demonstrated a strikingly diminished survivorship rate.

In the study group, the combined time-corrected annual stroke mortality was 1.695 per 100,000 (four to five times greater than expected), but the largest single cause of death was cardiovascular disease.

**AB-4313-78**


Cerebral blood flow (CBF) was measured before and after intravenous injection of the cerebral vasodilator nicergoline in 13 patients with cerebrovascular disease. CBF increased in seven. The possibility that the effect of the drug in the remainder may have been masked by a fall of CBF which occurs during sequential measurement of patients at rest is discussed.

**AB-4314-78**

**Myocardial Creatine Kinase Isoenzyme in Serum After Subarachnoid Haemorrhage** — Fabinyi G, Hunt D (Department of Cardiology, The Royal Melbourne Hospital, Victoria 3050, Australia), McKinley L — *J Neurol Neurosurg Psychiatry* 40: 818–820 (Aug) 1977*

The myocardial isoenzyme of creatine kinase (MB CK) has been demonstrated in the serum of seven of 16 patients presenting with acute subarachnoid haemorrhage. All patients with elevated MB CK levels exhibited at some stage either intracranial arterial spasm as demonstrated by cerebral angiography, or a focal reversible neurological deficit not due to direct pressure by either intracranial haematoma or aneurysm. The presence of MB CK isoenzymes in sera of patients with subarachnoid haemorrhage may be an index of cerebral ischaemia, and may thus be of value in determining optimal timing of surgery or, ultimately, the long-term prognosis. Changes in the sympathetic nervous system may be a common factor producing both MB isoenzyme release from the myocardium and intracranial arterial spasm.

**AB-4315-78**

**Hypothalamic and Myocardial Lesions After Subarachnoid Haemorrhage** — Doshi R (Department of Neuropathology,

The hypothalamus and myocardium of 12 patients who had died after a subarachnoid haemorrhage, and of six patients who had died from other intracranial pathology were examined. Only in the patients who had died from subarachnoid haemorrhage were histological lesions found in both the hypothalamus and myocardium. The possible significance of these findings is discussed with particular reference to the sympathetic nervous system.

AB-4316-78
Sequential Cerebral Biochemical and Physiological Events in Controlled Hypoxemia — Kogure K (Department of Neurology, PO Box 520875, Biscayne Annex, Miami, Florida 33152), Scheinberg P, Utsunomiya Y, Kishikawa H, Busto R — Ann Neurol 2: 304–310 (Oct) 1977*

Effects of controlled hypoxemia on cerebral functional activity were studied in rats using cyclic adenosine monophosphate (cAMP) and amine neurotransmitters in the brain tissue as special references. Evidence is presented that: (1) mild hypoxic stress (PaO₂ 60 to 40 torr) may activate cerebral glycolysis with no evidence of anaerobic metabolism but that further reduction of PaO₂ im-pairs cellular respiration, as evidenced by accumulation of glycolytic products; (2) glycolenolysis in the brain tissue, leakage of potassium ions from the brain cell, increase in brain water, and suppression of neural functional activity occur concomitantly with accumulation of cAMP and prior to the fall of adenosine triphosphate; (3) the diminution of cerebral high-energy phosphates during hypoxia is associated with and may be caused by hypoxemia-induced neuroglycopenia and occurs at PaO₂ 15 torr; (4) induced hypoxemia per se does not affect the level of aminegeric neurotransmitter substances in brain tissue.

AB-4317-78
The Human Thalamocortical Sensory Path in the Internal Capsule: Evidence From a Small Capsular Hemorrhage Causing a Pure Sensory Stroke — Groothuis DR, Duncan GW (Department of Neurology, Veterans Administration Hospital, Nashville, Tennessee 37203), Fisher CM — Ann Neurol 2: 328–331 (Aug) 1977*

A patient is presented who suffered a stroke-like event during life that resulted in a hemisensory deficit for some modalities. On pathological examination of the brain, the lesion responsible for the deficit was found to be a small slit hemorrhage located in the posterior limb of the internal capsule adjacent to and minimally involving the thalamus. Clinico-pathological correlation suggests that the sensory thalamocortical radiations must lie farther posterior in the posterior limb of the internal capsule than the corticospinal motor fibers, and that they probably lie adjacent to the thalamus. The case emphasizes that small slit hemorrhages deep in the brain, although rare, must be considered in the differential diagnosis of sudden hemisensory deficits.

AB-4318-78

The cerebral circulatory effect of 5-hydroxytryptamine (serotonin) was investigated in thiopentone-anesthetized baboons. Intracarotid infusion of 5-hydroxytryptamine caused marked constriction of that vessel, as demonstrated angiographically, but did not alter cerebral blood flow as measured by the intracarotid ¹³³Xe technique. Cerebral O₂ uptake, glucose utilization, and electroencephalogram were unchanged. After infusion of hypertonic urea to disrupt the blood-brain barrier, 5-hydroxytryptamine infusion markedly decreased cerebral blood flow, O₂ consumption, and glucose utilization; and the electroencephalogram showed an exaggerated burst-suppression pattern. The major activity of 5-hydroxytryptamine, once it crosses the blood-brain barrier, is on neuronal activity.

AB-4319-78

Direct cerebral effects of 5-hydroxytryptamine (serotonin) were investigated by the topical application of the amine to exposed pial vessels of anaesthetized cats. A television image-splitting technique was used to measure the resulting change in arteriolar diameter. The effects of 5-hydroxytryptamine were tone-dependent. Arterioles with a greater resting tone (those < 70 μm) all dilated, while those ≥ 200 μm tended to constrict. Dilatation of the high-tone arterioles (< 70 μm) was dependent on mean arterial blood pressure; no such relation was noted in larger vessels. The effects of 5-hydroxytryptamine on cerebral metabolism are distinct from and more cominant than its vascular effects.

AB-4320-78
Combined Effects of Acute Cerebrovascular Ischemia and Myocardial Infarction in Arteriosclerotic, Male Sprague-Dawley Rats — Wexler BC (May Institute for Medical Research, 421 Ridgeway Avenue, Cincinnati, Ohio 45229) — Angiology 28: 624–643 (Sep) 1977*

In male breeder rats with early arteriosclerosis, cerebral ischemia was produced by unilateral carotid ligation, and then myocardial infarction was caused by isoproterenol injection. Myocardial damage and mortality were potentiated by the cerebral ischemia. Histologically, the hearts showed extensive, confluent endocardial necrosis and finally transmural necrosis. Fatty change was produced in the liver, the adrenals were enlarged, and the pancreatic beta cells were degranulated. Corticosterone levels were elevated. It is suggested that the hypothalamic-pituitary-adrenal axis is in some way responsible for the synergistically-produced consequences of cerebral and myocardial ischemia.

AB-4321-78
Acute Cerebrovascular and Myocardial Ischemia Superim-
posed Upon Chronically Hypertensive and Arteriosclerotic Male Sprague-Dawley Rats — Wexler BC (May Institute for Medical Research, 421 Ridgeway Avenue, Cincinnati, Ohio 45229) — Angiology 28: 653-670 (Oct) 1977

Arteriosclerotic male Sprague-Dawley rats were made chronically hypertensive by means of unilateral nephrectomy, saline, and deoxycorticosterone acetate. Cerebral ischemia was produced by carotid ligation, and myocardial infarction was produced by isoproterenol injection. All of the animals died within four hours of the isoproterenol injection. Heart and adrenal weight increased markedly, while blood pressure, thymus, kidney, and testicular weights decreased. Lipids, glucose, BUN, and corticosterone rose. Myocardial thrombi and renal degenerative changes were present. Chronic hypertension exacerbates the reaction to combined cerebral and myocardial ischemia.

AB-4322-78
Carotid Cavernous Fistula in Pregnancy — Raskind R (Kern Medical Center, Bakersfield, California 93305), Johnson N, Hance D — Angiology 28: 671-676 (Oct) 1977

A 43-year-old hypertensive woman abruptly developed eye pain followed by unilateral proptosis and a noise in her head during the 26th week of pregnancy. A carotid-cavernous fistula was demonstrated. Arteriography showed lack of filling of the cerebral branches of the internal carotid artery from the involved carotid but good flow from the normal side. The lesion was repaired by clipping the internal carotid intracranially and by embolizing it from the common carotid with pieces of muscle. The patient spontaneously went into labor on the fifth postoperative day and was delivered of a premature infant.

AB-4323-78
One Year of Heparin Anticoagulation. An Ambulatory Subject Using a Totally Implantable Infusion Pump — Rohde TD, Blackshear PJ, Varco RL, Buchwald H (Box 290-Mayo, University of Minnesota Hospitals, Minneapolis, Minnesota 55455) — Minn Med 60: 719-722 (Oct) 1977

An ambulatory patient received continuous intravenous heparin from a totally implantable infusion pump. Heparin levels were maintained between 0.1 and 0.3 units/ml of plasma. The only side effects or complications were mild alopecia and a spontaneously-resolving effusion in the pump pocket. The pump was implanted in the subclavicular fossa under local anesthesia.

AB-4324-78

Atrial fibrillation is well known to increase greatly the risk of systemic arterial embolism in patients with mitral valve disease. In light of the clinical frequency of embolism in patients with atrial fibrillation due to other types of heart disease, a study was made of embolic occurrences in 333 autopsy patients with atrial fibrillation associated with various kinds of heart disease. Considering only symptomatic emboli with pathologic or surgical confirmation, embolism occurred in 41 percent of patients with mitral valve disease, 35 percent of those with ischemic heart disease, 35 percent of those with coexisting mitral and ischemic heart disease and 17 percent of those with "other" types of heart disease. Embolism was found in only 7 percent of a control group of 58 autopsy patients with ischemic heart disease without atrial fibrillation. These findings suggest a high risk of embolism from atrial fibrillation of any origin, but particularly from that caused by ischemic heart disease and mitral valve disease.

AB-4325-78

Bilateral carotid occlusion was studied under pentobarbital anesthesia in normal rats and in rats with acute and chronic hypothyroid lesions in which the anterior hypothalamus was disconnected from the middle hypothalamus. The effects of these lesions on hemorrhagic shock were also studied. In normal rats carotid occlusion produced an increase in arterial blood pressure involving two components. Acute hypothyroid lesions abolished only the second component. Aortic arch denervation restored and enhanced the over-all pressor response to occlusion. When denervation preceded the hypothalamic lesion, the latter did not abolish but reduced the pressor response to occlusion. Selective inactivation of carotid body chemoreceptors also reduced the overall pressor response to occlusion, which was restored and enhanced by denervation of aortic arch receptors. Chronic hypothyroid lesions produced results similar to those obtained after acute lesions. Acute and chronic lesions greatly increased the sensitivity of rats to the hypotensive effect of hemorrhage. The effects of a more rostral lesion are also discussed. The combination of various lesions defines an area in the hypothalamus, the electrical stimulation of which produces a pressor response. The results indicate that the second component of the carotid occlusion reflex in the rat is integrated at the hypothalamic level and requires intact carotid body chemoreceptors.

AB-4326-78

Media strips of hog carotid artery formed hypoxanthine and inosine during incubation under conditions of normoxia (95% O2, 5% CO2). During anoxia (95% N2, 5% CO2), hypoxanthine increased fivefold and inosine twofold. Stimulation with 124 mM K+ resulted in a twofold increase in hypoxanthine and a threefold increase in inosine. Con-
vascular platelet aggregates or mural thrombi, the aggregability may predispose to development of intraoccurrence of the actual headache. As platelet hyperaggregability with the severity of migraine or with the occurrence of migraine-associated neurologic symptoms, these studies were not useful in distinguishing patients with cerebral atrophy from patients with normal pressure hydrocephalus, as similar changes in cerebral circulation and metabolism were seen in both groups. Changes in cerebral blood flow after acute decrease in the intracranial pressure also were not helpful in differentiating patients with normal pressure hydrocephalus from patients with cerebral atrophy.

**ABSTRACTS**

Cerebral Blood Flow, Oxygen Utilization, and Blood Volume in Dementia — Grubb R.I. Jr (Department of Neurology and Neurological Surgery, Washington University School of Medicine, St. Louis, Missouri 63110), Raichle ME, Gado MH, Eichling JO, Hughes CP — *Neurology (Minneap)* 27: 905–910 (Oct) 1977*

Patients with dementia had significant decreases in cerebral blood flow and cerebral oxygen utilization and a mild, but not significant, increase in cerebral blood volume. These studies were not useful in distinguishing patients with cerebral atrophy from patients with normal pressure hydrocephalus, as similar changes in cerebral circulation and metabolism were seen in both groups. Changes in cerebral blood flow after acute decrease in the intracranial pressure also were not helpful in differentiating patients with normal pressure hydrocephalus from patients with cerebral atrophy.

**AB-4329-78**

Cerebral Blood Flow, Oxygen Utilization, and Blood Volume in Dementia — Grubb R.I. Jr (Department of Neurology and Neurological Surgery, Washington University School of Medicine, St. Louis, Missouri 63110), Raichle ME, Gado MH, Eichling JO, Hughes CP — *Neurology (Minneap)* 27: 905–910 (Oct) 1977*

**AB-4330-78**

Carotid Endarterectomy: Is an Indwelling Shunt Necessary? — Baker WH (Department of Surgery, Loyola University Medical Center, Maywood, Illinois 60153), Dorner DB, Barnes RW — *Surgery* 82: 321–326 (Sep) 1977*

Three hundred and four consecutive endarterectomies were performed with general anesthesia and without a temporary indwelling shunt. Eight patients (2.6%) awoke from anesthesia with a new neurological deficit. Eight additional patients later developed neurological symptoms, suggesting that the absence of a shunt did not contribute to their complication. Of these 16 patients, two (0.6%) died, nine (3.0%) had a temporary neurological deficit, and five (1.6%) had a permanent neurological deficit. A prolonged occlusion time, a stumps pressure of less than 50 mm Hg, or the presence of additional carotid lesions did not show a significant statistical relationship to postoperative neurological deficit.

**AB-4331-78**

Pathogenesis and Prevention of Trauma-Provoked Atheromas — DePalma RG (Department of Surgery, Case Western Reserve University School of Medicine, Cleveland, Ohio 44106), Chidi CC, Sternfeld WC, Koletsky S — *Surgery* 82: 429–437 (Oct) 1977*

Arterial trauma in the presence of hyperlipidemia produces atheromas. We studied the pathogenesis of clamp injury in dogs with and without hyperlipidemia. Six dogs were operated on prior to induction of hyperlipidemia. Three clamps and loop occlusion were applied to both femoral arteries, both carotids, and the infrarenal abdominal aorta. Clamping was performed on normolipidemic control dog, and dissection without clamping was done on another hyperlipidemic control dog. These animals were put to death after 13 months. To determine the early effects of clamping, two additional normolipidemic controls were studied by perfusion fixation and scanning electron microscopy (SEM) 1 hour and 10 days respectively, after occlusion. The severity of the lesions in the animals was assessed by gross inspection and by light and scanning elec-

The carotid sinus baroreceptor reflex was studied in 11 normotensive subjects, using a variable pressure neck chamber and correcting for imperfect pressure transmission to the carotid sinus. Decreased carotid baroreceptor stimulation caused a sustained rise in arterial pressure, and increased carotid baroreceptor stimulation caused a sustained fall. The responses were in linear relation to the stimulus, and, after reaching the steady state, greater for the reduced than for the increased baroreceptor stimulation. Thus the carotid sinus baroreceptor reflex of the normotensive man is an effective antihypotensive and antihypertensive feedback system, though the former function may have more sensitivity. The increased and decreased baroreceptor stimulation by the neck chamber also caused bradycardia and tachycardia which were modest in magnitude and often transient. In eight subjects the reflex changes in heart rate induced by the neck chamber were compared with those induced by altering transmural pressure not merely at the carotid sinus but throughout the arterial tree (injection of phenylephrine and trinitroglycerin). The slopes of these relations were 3 times as great in the latter circumstance. Thus the carotid baroreceptors play a lesser role in heart rate control than do extracarotid baroreceptors.

Complications of Cerebral Angiography and Pneumography — Miller JDR (Department of Radiology, University of Alberta Hospital, Edmonton, Alberta, Canada), Grace MG, Russell DB, Zacks DJ — Radiology 124: 741–744 (Sep) 1977*

There were incidences of 0.7% severe and 5.5% mild complications in 1,971 direct puncture carotid angiograms done over a 5-year period. In 1,035 retrograde brachial angiograms, there was a 0.6% incidence of severe, and a 4.7% incidence of mild, complications. Complications tended to increase with increasing age of the patient. Brachial angiography is virtually free of life-threatening complications, and the incidence of neurological sequelae was markedly less than that shown by a comparable analysis of catheter angiography. Of patients undergoing 1,542 fractional pneumoencephalograms, 2 had severe complications.

Transitory Platelet Monoamine Oxidase Deficit in Migraine: Some Reflections — Sandler M (Bernhard Baron Memorial Research Laboratories, Queen Charlotte’s Maternity Hospital, London W6 OXG, England) — Headache 17: 153–158 (Sep) 1977*

A transitory but highly significant decrease in platelet monoamine oxidase activity was found during headache attacks in migrainous subjects and reverted to normal during attack-free periods. This is not the result of drugs used for the treatment of migraine. It is possible that decreased platelet monoamine oxidase and 5-hydroxytryptamine occur in response to release of an unidentified substance into the circulation during headache and, perhaps, is responsible for it. Attention is drawn to the biochemical relationship of migraine and depressive illness.

Carotid Embolization Presenting as Total Monocular Blindness — Rosenthal D (New England Medical Center Hospital, Boston, Massachusetts 02111), Cossman D, Seletz J — Arch Surg 112: 1131–1133 (Sep) 1977*

Blindness suddenly developed in the right eye of a 55-year-old man. There had been no antecedent illness suggestive of cardiovascular disease. Funduscopic examination eight hours later showed findings consistent with central retinal artery thrombosis. After an arteriogram showed an ulcerated plaque at the bifurcation of the right common carotid artery, the patient underwent thromboendarterectomy. The specimen contained an ulcer, presumably the nidus of an embolus to the central retinal artery. The patient’s vision did not recover. This case demonstrates that, although it is rare, total monocular blindness may be caused by a large embolus from a carotid artery plaque.

The Effect of Norepinephrine on the Spinal Cord Circulation and Its Possible Implications in the Pathogenesis of Acute Spinal Trauma — Crawford RA (Department of Veterinary Surgery, University of Glasgow Veterinary Hospital, Glasgow G61 1QH, Scotland), Griffiths IR, McCulloch J — J Neurosurg 47: 567–576 (Oct) 1977*

The effect of intra-arterially administered norepinephrine (NE) upon spinal cord blood flow (SCBF), before and after disruption of the blood-cord barrier was studied in dogs. Barrier disruption was accomplished with an intra-arterial
bolus injection of 2.5 M urea. Multiple ligations of branches of the posterior aorta and cannula placements ensured that the urea was directed to the lumbar and sacral segments of the cord. The SCBF was measured by the hydrogen clearance method. Intra-arterial urea by itself had no significant effect on SCBF.

The intra-arterial infusion of NE (12 \( \mu \)g/min and 30 \( \mu \)g/min) was without overall effect on SCBF. However, if the blood-cord barrier had been previously disrupted with hypertonic urea, both concentrations of NE resulted in large reductions in SCBF. No such reductions in SCBF were seen with blood-cord barrier disruption and NE if the animals had been pre-treated with the \( \alpha \)-blocker, phenoxybenzamine (1.5 mg/kg). Some aspects of the possible involvement of NE in the pathophysiology of acute spinal injury are discussed.

**ABSTRACTS**

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**AB-4337-78**

**Influence of Lipid Concentrations and Age on Transfer of Plasma Lipoprotein Into Human Arterial Intima** — Niehaus CE (Department of Chemical Pathology, St. Thomas' Hospital, London SE1 7EH, England), Nicoll A, Williams B, Lewis J, Coltart DJ, Lewis B — *Lancet* 2: 469–471 (Sep 3) 1977*

Transfer of low-density lipoprotein (L.D.L.) from plasma to arterial intima was studied in 16 patients undergoing arterial surgery. Autologous labelled lipoprotein was used to demonstrate that L.D.L._4 enters the intima from plasma. Net flux of L.D.L._4 appeared to increase with age. Within each age group the net flux of L.D.L._2 showed a pronounced positive correlation with plasma-L.D.L.-cholesterol concentrations. This may account in part for the association between hypercholesterolaemia and the development of atherosclerosis.

**AB-4338-78**

**Low-Dose Heparin as a Prophylaxis Against Deep-Vein Thrombosis After Acute Stroke** — McCarthy ST (Cowley Road Hospital, Oxford OX4 1XB, England), Turner JJ, Robertson D, Hawkey CJ, Macey DJ — *Lancet* 2: 800–801 (Oct 15) 1977*

A trial of subcutaneous low-dose heparin in the prevention of deep-vein thrombosis was carried out in elderly patients admitted to hospital after an acute stroke. A statistically significant reduction was observed in deep-vein thrombosis as assessed by isotope leg scanning.

**AB-4339-78**

**Predicting Patients’ Warfarin Requirements** — Routledge PA (Department of Pharmacological Sciences, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, England), Davies DM, Bell SM, Cavanagh JS, Rawlins MD — *Lancet* 2: 854–855 (Oct 22) 1977*

In 34 patients undergoing anticoagulant therapy with warfarin a close relationship has been observed between the logarithm of the 'Thrombotest' response to a loading dose (10 mg/day for three days) and the maintenance dose required to achieve an anticoagulant response of 8–12% (thrombotest). This relationship appears to be close enough to enable maintenance dosages to be predicted.

**AB-4340-78**

**Experimental Cerebrovascular Disorders: Effects on Cardiovascular Functions and on Cerebrospinal Fluid Production and Constituents With Special Reference to Cyclic AMP** — Heikkinen ER (Department of Pharmacology, University of Oulu, SF-90220 Oulu 22, Finland) — *Exp Neurol* 56: 451–468 (Sep) 1977 (Academic Press, Inc, publisher)*

A possible significance of measuring cerebrospinal fluid cyclic adenosine 3',5'-monophosphate (cAMP) concentration to quantitate a central nervous system ischemic lesion was studied in cats and rabbits. Carotid occlusion and subsequent intracarotid liquid paraffin injection were used for producing an experimental model for cerebrovascular disorders. The manipulations adopted were found to alter markedly arterial blood pressure and heart rate of anesthetized animals, but not to cause any statistically significant changes in cerebrospinal fluid production or in its cAMP concentration. Long term study of experimental cerebrovascular disorders in rabbits revealed that ether anesthesia itself, 15 to 20 min in duration, transiently increased the cAMP concentration within the first hour (from 32.2 ± 1.8 nM (SE) to 43.4 ± 4.3 nM, \( P < 0.005 \)). Thereafter, compared to their respective basal values, cAMP concentrations in cerebrospinal fluid were elevated in animals which had undergone carotid occlusion combined with intracarotid liquid paraffin injection, at the third postoperative hour (\( P < 0.02 \)) as well as in rabbits 3 (\( P < 0.05 \)) and 24 h (\( P < 0.001 \)) after carotid occlusion alone. The alterations of protein concentration synchronized rather well with those of the cAMP concentration. On the basis of these experimental findings, measuring cerebrospinal fluid cAMP concentration in clinical practice and the quantitation of some attendant neurological changes may be anticipated to be of help.

**AB-4341-78**

**Intraventricular Hemorrhage in Adults** — Little JR (Department of Neurosurgery, Montreal Neurological Institute, Montreal, Quebec, Canada H3A 2B4), Blumquist GA Jr, Ether R — *Surg Neurol* 8: 143–149 (Sep) 1977*

A series of 54 adult patients with intraventricular hemorrhage diagnosed by computed tomography (CT scan) is described. Hypertension, arterial aneurysm, and arteriovenous malformation (AVM) accounted for 83% of the cases. Three categories of clinical presentation are defined. CT scan reliably demonstrated the presence and distribution of blood within the ventricular system, including the third and fourth ventricles. The increased density caused by intraventricular blood was seen to disappear in 12 days. An intracerebral hematoma was identified in 78% of cases. Surgical treatment was beneficial in only a small number of cases.

**AB-4342-78**

**Role of Glucose-6-Phosphate in Cerebral Dysfunction Following Hypoxia and Hypotension** — Proctor HJ (Trauma Section, Department of Surgery, University of
North Carolina, School of Medicine, Chapel Hill, North Carolina 27514, Wood JJ — Surg Neurol 8: 225-226 (Sep) 1977*

Rats were “stressed” by a 30-minute period of breathing 7.5% oxygen combined with hemorrhagic hypotension (arterial pressure = 25 mm Hg), and then “resuscitated” by restoring the inspired oxygen concentration to 30% and reinfusing the blood previously removed to produce hypotension. We have previously noted an initial return of brain adenosine-triphosphate to normal after this “stress” followed by a progressive decline during the post-resuscitation period. In this study, substrate deficiency was investigated as a possible etiology for the decreased adenosine-triphosphate. Glucose and glucose-6-phosphate concentrations in the brain were measured before “stress” and after resuscitation and were found not to change, indicating no deficiency of substrate.

*Author's abstract

AB-4344-78
Intracerebellar Hematoma Following Microsurgical STA — Cortical MCA Bypass Surgery — Eguchi T (Neurochirurgische Universitätsklinik Kantonspristal, Zürich, Switzerland), Yonekawa Y — Neurol Surg (Tokyo) 5: 1085-1088 (Sep) 1977*

Since October 1967 we have performed 76 microsurgical STA — cortical MCA bypass operations. Recently we have had two cases, who died from intracerebellar hematoma following bypass operation.

Intracerebellar hematoma is reported primarily due to hypertension (50-80%), and to comprise 10% of all spontaneous intracranial hematomas.

Diagnosis of this lesion is frequently missed but can be made by the typical clinical picture (respiratory irregularity, pinpoint pupils, absence of oculovestibular responses, loss of consciousness), and the CT-Scan.

If the correct diagnosis is made and operation promptly performed, many patients with subacute or acute intracerebellar hematoma can be saved.

The 2 cases presented here had a history of hypertension and anticoagulation (including Colfarit), but had sustained the bypass operation well and showed no neurological deficit immediately after the operation. They had received Rheomacrodex intra- and postoperatively. Quite soon postoperatively, however, the systolic blood pressure rose to 210 mmHg and the patients complained of severe headache. They were treated symptomatically with analgesics and antihypertensive drugs. A short time later they became comatose and died.

In order to prevent this complication after bypass surgery, postoperative management of hypertension is mandatory.

The combination of antithrombic agents, Colfarit and Rheomacrodex, might have played a role in inducing the hemorrhages.

Furthermore strong analgesics should be withheld to prevent their masking neurological deterioration.

Intracerebellar hematoma must always be considered in hypertensive or anticoagulated patients, especially because it can be cured with prompt diagnosis and operative treatment.

AB-4345-78
Follow-Up Results of Microsurgery of Intracranial Aneurysms — Sano K (Department of Neurosurgery, University of Tokyo, Tokyo, Japan), Saito I — Brain and Nerve (Tokyo) 29: 977-985 (Sep) 1977*

In the past 7 years, 403 cases of intracranial aneurysms were submitted to microsurgical operations. The operative mortality was 5.4%, and in the follow-up, 82.4% are working, 6.2% are caring for self and 5.9% are either bed-ridden or dead from other causes after discharge.

If 6 cases of Grade V are excluded from the statistics and the day of subarachnoid hemorrhage (SAH) is counted as the 1st day, cases submitted to microsurgery on the 1st, the 2nd and the 3rd days showed no mortality and 72.7% of them are working in the follow-up. Cases undergone microsurgery on the 4th through the 8th day showed a high mortality of 15.2% due to postoperative vasospasm, whereas in cases submitted to microsurgery in the 2nd week after SAH the operative mortality was 6% and in cases submitted to microsurgery later than the 2nd week it was 3%. In the
ABSTRACTS

AB-4346-78
Early Estimation of Extent of the Lesion in Cerebral Infarction by Means of Cyclic AMP Concentration in Peripheral Venous Plasma — Tominaga S (Division of Internal Medicine, Research Institute of Brain and Blood Vessels, Akita, Japan), Kojima S, Murakami M, Uemura K, Suzuki T, Nakamura T — Brain and Nerve (Tokyo) 29: 987-993 (Sep) 1977

Cyclic AMP was measured in the peripheral blood of 15 patients within three days of cerebral infarction. In those patients with small infarcts, cyclic AMP level was normal. With large infarcts, cyclic AMP was subnormal. Infarct size was estimated with 99m Tc pertechnetate brain scanning performed 12 to 19 days after the onset of the deficit.

AB-4347-78
Bilateral Retinal Hemorrhages and Disk Edema in Migraine — Victor DJ, Welch RB (Retina Service, Wilmer Ophthalmological Institute, Johns Hopkins Hospital, Baltimore, Maryland 21205) — Am J Ophthalmol 84: 555-558 (Oct) 1977

A healthy 27-year-old man developed mild bilateral disk edema and retinal hemorrhages under the internal limiting membrane. He had been having three severe migraines a week with retching. The hemorrhages were perimacular and peripapillary and may have resulted from venous stasis and frequent valsalva maneuvers during the retching.

AB-4348-78
Recovery Patterns and Prognosis in Aphasia — Kertesz A (Department of Clinical Neurological Sciences Aphasia Research Laboratory, University of Western Ontario, St. Joseph’s Hospital, London, Ontario, Canada), McCabe P — Brain 100: 1-18 (Mar) 1977

The Western Aphasia Battery was used to test 93 aphasic patients at regular intervals up to one year following the onset of aphasia. Post-traumatic aphasics recovered better than did stroke patients. Those with Broca’s aphasia and conduction aphasia improved more than other types of aphasia. Younger patients and those patients with initially less severe aphasia improved most. Treated and untreated patients did equally well.

AB-4349-78

Krypton-81m is an inert gas with a radioactive half-life of 13 seconds. Since it decays too rapidly ever to reach equilibrium in the brain, its distribution reflects second-to-second cerebral blood flow. It can be infused into the internal carotid artery at the time of arteriography, and images can be made with a gamma camera and recorded on Polaroid film. Unlike washout techniques, which record flow only in perfused tissue and ignore unperfused areas, the krypton-81m technique shows both. The nuclide can be obtained by passing water through a cation-exchange column holding Rb-81.

AB-4350-78

Based on the physics of fluid dynamics, equations have been determined in the hopes of relating carotid back pressure to ipsilateral collateral blood flow. Two variables are involved: the ratio of collateral flow to normal flow and the ratio of carotid back pressure to mean arterial pressure. Cerebral venous pressure and cerebral vascular reserve determine the relationship between the two variables. Hypocarbia and hypertension increase collateral flow during carotid occlusion. Length of time of carotid clamping is also an important variable. For patients with normal venous pressure and cerebral vascular reserve, back pressure index (clamped pressure/mean arterial pressure) must be at least 0.32 to 0.39 for carotid operations without a shunt. For patients with no vascular reserve, the index is 0.64 to 0.68. Perhaps it is advisable to use a shunt in patients with completed stroke or intracranial arterial stenosis.

AB-4351-78
Central Depression of Carotid Baroreceptor Pressor Response, Arterial Pressure and Heart Rate by 5-Hydroxytryptophan: Influence of Supracollicular Areas of the Brain — Tadepalli AS (Department of Physiology and Pharmacology, Duke University Medical Center, Durham, North Carolina 27710), Mills E, Schanberg SM — J Pharmacol Exp Ther 202: 310-319 (Aug) 1977

Baroreceptor reflex mechanisms were studied in anesthetized cats to delineate the role of brain serotonergic systems in cardiovascular regulation. When the serotonin precursor 5-hydroxytryptophan was put in the fourth ventricle, resting arterial blood pressure, preganglionic sympathetic activity, and heart rate were decreased, both in intact animals and in those made decerebrate at the midcollicular level. Bilateral carotid occlusion should cause sympathetic discharge and a rise in blood pressure, but this pressor response was reduced after fourth ventricle 5-hydroxytryptophan in intact-brain but not in decerebrate animals. If the 5-hydroxytryptophan was administered rostral to the midcollicular level, it had no cardiovascular effect in either preparation. After a centrally-acting decarboxylase inhibitor was given to the animals to block the conversion of 5-hydroxytryptophan to serotonin, the reduction in pressor response to carotid occlusion was abolished, showing that the depression was mediated by way of
serotonin. Activation of the serotonergic system in the caudal brainstem depresses the baroreceptor pressor response by activating neural pathways which traverse the collicular area. Noradrenergic systems in the caudal brainstem and cord exert a reciprocal influence on the baroreceptor response.

AB-4352-78


When one of the leptomeningeal branches of the anterior, middle, or posterior cerebral artery is occluded, the resulting infarct has fixed deep borders. It generally does not extend to the ventricular wall because of the periventricular arterial supply. Deep infarctions, caused by occlusion of choroidal or thalamoperforating arterial branches, often extend to the ventricular wall, as do infarcts in the brainstem. Infarcts caused by cardiovascular collapse have a variable location involving primarily the distal fields of arteries. Arterial border zones are described and discussed.

AB-4353-78

Ophthalmologic Aspects of Subdural Hematoma — Mitsumoto H (Department of Neuropathology, University Hospitals of Cleveland, Cleveland, Ohio), Conomy JP, Regula G — Cleveland Clin Quart 44: 101-105, 1977

Of 115 consecutive patients with subdural hematoma, 71 had abnormal eye signs on admission to the hospital, five subsequently developed them, and in 13 patients additional eye signs appeared. Homonymous hemianopia, present in 27% of patients awake enough to be tested, was on the wrong side in 30% and always ipsilateral to the hemiparesis. Papilledema was present in 10%. Anisocoria was present in 33%. The large pupil was on the side of the lesion in 81% and contralateral in 19%. Six patients with a large pupil had bilateral hematomas.

Horner’s syndrome was present transiently in two patients. Six percent had a 6th nerve palsy and 15% a 3rd nerve palsy. These were on the wrong side a quarter of the time. The presence of eye signs and especially of anisocoria and homonymous hemianopsia was related to an unfavorable prognosis.

AB-4354-78

Study of the Circulation in the Carotid Artery With the Aid of Binocular Fundus Reflectometry — Meyjes FE, De Wilde A (Department of Neurology, Wilhelmina Gasthuis, University of Amsterdam, The Netherlands) — Electroencephalog Clin Neurophysiol 43: 425-428 (Sep) 1977

Circulation time to the retina was measured using binocular fundus reflectometry after a bolus injection of car-digreen dye in 100 patients who had had arteriograms. A left-right difference > 1 second was always associated with a serious obstruction of flow on the slow side. All patients with an isolated carotid occlusion showed a difference in circulation time. There were no side effects. A left-right difference appearing after carotid endarterectomy points to a re-thrombosis.

Items of Interest

Barbiturate Protection in Cerebral Hypoxia — Smith AL (Department of Anesthesia, San Francisco General Hospital, San Francisco, California 94110) — Anesthesiology 47: 285-293 (Sep) 1977

A review.


A review.

Cerebral Arterial Spasm: A Discussion of Present and Future Research — Allen GS (Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, Maryland) — Neurosurgery 1: 142-148 (Sep-Oct) 1977

The author presents a discussion of research on cerebral arterial spasm. Arterial smooth muscle contraction, receptor, and relaxation mechanisms are presented in the context of what is known about cerebral arterial spasm and the biochemistry of vascular smooth muscle. Several new experimental approaches are suggested and a theoretical biochemical basis for the idea that damage to the artery alone could cause cerebral arterial spasm is postulated. Methods of determining cerebral arterial spasm and the need for a quantitative, in vivo method are discussed and the question of an irreversible stage of cerebral arterial spasm is considered. Finally, the problems associated with the delivery of a potentially successful treatment to the cerebral arterial smooth muscle cells are examined.
Abstracts

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