Abstracts

AB-2925-77
Carotid-Ophthalmic Aneurysms — Sengupta RP (Department of Neurosurgery, Regional Neurological Center, Newcastle University Hospitals, Newcastle upon Tyne, England), Gryspeerdt GL, Hankinson J — J Neurol Neurosurg Psychiatry 39: 837-853 (Sep) 1976*

Thirty-two cases of carotid-ophthalmic aneurysms are reviewed. As with intracranial aneurysms in other positions they present mainly with subarachnoid haemorrhage but, in spite of their close proximity to the optic nerve, visual involvement is infrequent. They are more common in women, more frequent on the left side, and more prone to multiplicity. In cases of multiple aneurysms a carotid-ophthalmic aneurysm is usually an incidental finding. Detailed angiographic studies employing various projections are required before treatment can be planned. Yet angiography does not always disclose some of the technical difficulties that may be encountered during surgery. Different methods of treating these aneurysms are discussed and suggestions for safe direct surgery made.

AB-2926-77
Some Observations in Progressive Arterial Occlusions in Children and Young Adolescents: (Moyamoya Disease) — Numaguchi Y, Balsys R, Marc JA (Radiology Department, George Washington University Medical Center, Washington, D.C. 20037), O'Brien MS — Surg Neurol 6: 293-300 (Nov) 1976*

In "primary arterial occlusions of children," an unusual collateral circulation has been described first by Japanese, and later by others worldwide. As experience was gained some workers started to realize that the "typical angiographic appearance" could be found in several disease entities. It thus became evident that angiographic differentiation is important. In this communication we wish to discuss this entity and outline its significance as well as emphasize the pitfalls.

AB-2927-77
Cerebral Ischemic Events Associated With Prolapsing Mitral Valve — Barnett HMJ (Department of Clinical Neurological Sciences, University Hospital, London, Ontario, Canada N6A 5A5), Jones MW, Boughner DR, Kostuk WJ — Arch Neurol 33: 777-782 (Nov) 1976*

Twelve patients who had no evidence of atherosclerotic cerebral vascular disease, lacked hypertension or coagulation defect, and had not been receiving contraceptive therapy had recurrent transient cerebral ischemic attacks (TIAs) and partial nonprogressive strokes. All had prolapsing mitral valve proved by angiocardiology. The average age was 38 years, compared with 62 years in a larger series of patients with TIA associated with arteriosclerosis. We propose that the ischemic events are related to emboli emanating from the abnormal mitral valve with or without an associated paroxysmal cardiac arrhythmia.

AB-2928-77
Emergency Carotid Artery Surgery in Neurologically Unstable Patients — Goldstone J (Department of Surgery, University of California, San Francisco, California 94121), Moore WS — Arch Surg 111: 1284-1291 (Nov) 1976*

Although angiography and carotid artery surgery are ill-advised in patients with acute, profound stroke, there is no consensus on the management of patients with stroke in evolution, waxing and waning neurologic deficits, or crescendo transient ischemic attacks. This type of clinical picture was associated with a critical, unstable lesion of the internal carotid artery in each of 12 patients. Emergency angiography permitted identification of the lesion responsible for the varying neurologic manifestations, and emergency carotid thromboendarterectomy produced prompt, complete recovery in all but one patient, who had a total carotid occlusion, received no operation, and died of a cerebral infarction. Based on our experience with these 12 patients, an aggressive diagnostic and therapeutic approach is recommended for patients with acute unstable cerebrovascular disease.

AB-2929-77
Spontaneous Dissection of the Internal Carotid Artery — Ehrenfeld WK (Department of Surgery, University of California Medical Center, San Francisco, California 94143), Wylie EJ — Arch Surg 111: 1294-1301 (Nov) 1976*

The arteriographic diagnosis of spontaneous, nontraumatic dissection of the internal carotid artery was made in 19 patients and confirmed at operation in ten. The tapered narrowing beginning in or about the carotid bulb and ending at the bony canal was a consistent finding. Four patients had associated aneurysm formation. All but one patient developed an acute hemispheric neurologic deficit as the initial symptom. The deficit was transient in ten and prolonged in eight. The dissection occurred in the outer layers of the media. None of the surgical specimens showed atherosclerosis. Surgical methods of management included segmental resection and grafting, thrombectomy and intimeotomy, dilation, and simple ligation. Considerable improvement of luminal diameter occurred in six of seven patients whose arteries were left undisturbed.

AB-2930-77
Treatment of Experimental Delayed Cerebral Arterial Spasm With a Beta-Adrenergic Stimulator and a Phosphodiesterase Inhibitor — Norwood CW, Poole GJ, Moody D (reprint request: Alexander E Jr, Section on Neurosurgery, Bowman Gray School of Medicine, Winston-Salem, North Carolina 27103) — J Neurosurg 45: 491-497 (Nov) 1976*

Delayed cerebral arterial spasm was induced by subarachnoid hemorrhage in 11 rhesus monkeys. Ten monkeys (62%) developed spasm. Of seven monkeys treated with
salbutamol (a beta₂-adrenergic stimulating drug), five had relief of vasospasm. Four monkeys, one of which had failed to respond to salbutamol alone, were treated with salbutamol and aminophylline (a phosphodiesterase-inhibiting drug), and all four were relieved of their vasospasm. When considered as one group, the monkeys had an 81% response rate. The authors suggest that a combination of beta₂-adrenergic stimulation and phosphodiesterase-inhibition might be of value in preventing or treating delayed cerebral arterial spasm.

**AB-2931-77**

Pitfalls in the Measurement of Cerebral Blood Volume With Computed Tomography — Phelps ME (Division of Nuclear Medicine, Department of Radiological Sciences, Center for Health Sciences, University of California, Los Angeles, California 90024), Kuhl DE — *Radiology* 121: 375-377 (Nov) 1976*

The use of contrast material and computed tomography (CT) to measure cerebral blood volume (CBV) is valid only if the agent does not egress into cerebral tissue. Since disruption of the blood/brain barrier is common in cerebral disease states, this raises serious doubt as to the validity of this technique. Studies in experimental animals and patients with cerebral lesions demonstrate that contrast material does egress into the extracellular space. In normal brain tissue, contrast enhancement is comparable to the error in CT. Contrast material also causes transient changes in autoregulation, blood pressure, cerebral blood flow, and CBV.

**AB-2932-77**


The studies were performed on operation material from 17- to 63-year-old patients and on fetuses at 19-23 weeks gestational age. Formaldehyde histofluorescence showed the presence of numerous perivascular adrenergic nerves around pial and intracerebral vessels, the carotid system being better supplied than the vertebral system. Cholinergic nerves, visualized by the cholinesterase technique, followed the adrenergic fibers in the plexus formations of the pial arterial system. Histamine-containing mast cells, often with a perivascular distribution, were located with the α-phthalaldehyde method. Transmural electrical stimulation of the perivascular nerves contracted isolated pieces of pial arteries in a frequency-dependent manner, and the response was inhibited by the adrenergic nerve blocking agent, guanethidine. On the basis of the relative potency of various amines and related compounds in producing a motor response of isolated pial arteries, and the mode of inhibition caused by specific antagonists, various amine receptors could be demonstrated: adrenergic alpha-receptors (mediating contraction), and beta-receptors (dilation), cholinergic muscarinic receptors (dilation) and histamine H₁-receptors (mediating dilation). Thus, the amine mechanisms demonstrated in human brain vessels appear to be principally the same as those shown in more extensive studies on laboratory animals.

**AB-2933-77**

Microvascular Bypass Surgery. Part 2: Physiological Studies — Spetzler R, Chater N (reprint request: Editorial Office, Department of Neurological Surgery, University of California School of Medicine, San Francisco, California 94143) — *J Neurosurg* 45: 508-513 (Nov) 1976*

Intraoperative electromagnetic blood flow measurements were recorded in 15 patients undergoing extracranial-intracranial arterial bypass surgery. The initial average blood flow of 28.2 cc/min supplies 8.4% of the expected flow from one internal carotid artery. Blood flow probably increases postoperatively, as evidenced by angiographic enlargement of the bypass and its recipient cortical arteries.

**AB-2934-77**

Parinaud's Syndrome: Cerebrovascular Disease as a Common Etiology: Analysis of 16 Cases — Sullivan HG (Division of Neurological Surgery, Medical College of Virginia, Richmond, Virginia 23298), Harbison JW, Becker DP — *Surg Neurol* 6: 301-305 (Nov) 1976*

Sixteen consecutive adult cases of Parinaud's syndrome are reviewed. Ten of the sixteen cases were due to brain stem infarction while four patients were suspected of harboring tumors. Parinaud's syndrome alone did not favor a diagnosis of tumor in the pineal region in this series. Associated neuroophthalmic findings are discussed.

**AB-2935-77**

Reactive Hyperglycaemia in Patients With Acute Stroke — Melamed E (Department of Neurology, Hadassah University Hospital, Jerusalem, Israel) — *J Neurol Sci* 29: 267-275 (Oct) 1976*

Initial and follow-up fasting serum glucose levels following acute stroke were evaluated retrospectively in 392 selected hospitalized patients. Transitory reactive hyperglycaemia was observed in a large number of patients (28% of the total series) without a history of diabetes prior to the acute cerebrovascular event. The data from this group suggest a possible relationship between the impairment of carbohydrate metabolism and the type and location of stroke since both the frequency and severity of the hyperglycaemic response were higher in patients with haemorrhagic stroke and brainstem infarction as compared with cerebral infarction. The incidence and degree of the reactive hyperglycaemia were also related to the severity of the acute stroke. There were more comatose patients in the group showing this phenomenon. Initial serum glucose levels in the latter group were higher in unconscious patients than in alert ones. In addition, hospital mortality was significantly higher in these patients. Transitory reactive increases of serum glucose levels were also observed in the majority of patients with a history of overt diabetes prior to the acute stroke.
The hyperglycaemic reaction following acute stroke may be attributed to several underlying mechanisms. These include: a non-specific reaction to acute stress and tissue injury with the associated autonomic, hormonal and metabolic alterations; uncovering of underlying latent diabetes by the acute stroke; increased secretion of growth hormone due to stroke-induced hypothalamic dysfunction; and irradiation of the glucose regulatory centres in the hypothalamus and brain stem by blood-laden cerebrospinal fluid or local ischaemia.

**AB-2936-77**
Granulomatous Angiitis of the Central Nervous System. Case Report and Review — Harrison PE Jr (Department of Neurology, University of Texas Health Science Center, Dallas, Texas 75235) — *J Neurol Sci* 29: 335-341 (Oct) 1976*

The nineteenth case report of granulomatous angiitis of the central nervous system is described in a 47-year-old patient, who survived 2 years with his disease. Problems with establishing the diagnosis are discussed. No single group of clinical symptoms or laboratory data exist for making a positive diagnosis during life, although a combination of certain nonspecific factors such as mental change, spinal fluid protein elevation and pleocytosis should be present before the diagnosis of granulomatous angiitis is entertained. Special blood tests and immunological studies and contrast procedures, as well as cortical biopsy have been of little value in establishing the diagnosis; instead, a leptomeningeal biopsy may be the procedure of choice. This patient, as well as the others given a trial of steroid treatment, demonstrated some obvious detectable clinical improvement. All patients treated with steroids have survived longer than any untreated patient suggesting that these drugs may be of some benefit.

**AB-2937-77**
Proximal Occlusion of the Dominant Anterior Cerebral Artery for Anterior Communicating Aneurysm — Choudhury AR (Department of Neurosurgery, Derbyshire Royal Infirmary, Derby, England) — *J Neurosurg* 45: 484-490 (Nov) 1976*

Twenty-seven patients with ruptured and one with symptomatic unruptured anterior communicating aneurysms were treated by proximal clip occlusion of the dominant anterior cerebral artery. These patients have been followed for 2 to 4½ years and the results evaluated. The operation carried a very low mortality rate (3.5%) and a relatively low morbidity. There was no instance of recurrent hemorrhage during the study period. Clinical and preoperative angiographic criteria for selection of patients and the timing and technique of surgery are discussed.

**AB-2938-77**
Brain Energetics and Circulatory Control After Subarachnoid Hemorrhage — Fein JM (Department of Neurological Surgery, Albert Einstein College of Medicine, Bronx, New York 10461) — *J Neurosurg* 45: 498-507 (Nov) 1976*

Ischemia-provoking factors such as vasospasm, decreased cerebral perfusion pressure, and intravascular thrombosis may be present after subarachnoid hemorrhage (SAH). When these factors were not present during controlled SAH, a primary depression of cerebral glycolysis associated with normal stores of energy-rich phosphates was found. Although cerebral blood flow usually changes in response to changes in cerebral metabolic needs, this influence on the circulation was not evident in the early hours after SAH. After 3 to 4 hours an erratic decrease in blood flow occurred, probably related to vasospasm; and there were measurable decreases in energy-rich phosphates similar to those occurring after more severe and prolonged ischermias. These findings are indicative of abnormally erratic vascular responses to metabolic cues and may play a role in producing the encephalopathy of SAH.

**AB-2939-77**
Endothelial Cell Damage by Temporary Arterial Occlusion With Surgical Clips. Study of the Clip Site by Scanning and Transmission Electron Microscopy — Gertz SD, Rennels ML, Forbes MS, Kawamura J, Sunaga T, Nelson E (Department of Neurology, University of Maryland School of Medicine, Baltimore, Maryland 21201) — *J Neurosurg* 45: 514-519 (Nov) 1976*

The effects of temporary vascular occlusion with surgical clips on the underlying endothelial lining were studied with scanning (SEM) and transmission (TEM) electron microscopy. Twenty-five rabbits were anesthetized and both common carotid arteries exposed. A Heifetz clip was used to occlude the right carotid artery for 5, 15, and 30 minutes, and 2 hours in five animals each. The clips were removed and the vessels immediately perfused with glutaraldehyde. In the five remaining animals, the right carotid arteries were occluded for 30 minutes followed by removal of the clip and resumption of blood flow for 30 minutes prior to fixation. Combined SEM and TEM examination of the endothelium of compressed segments revealed “craters” and “balloons,” blebs and vacuoles, swollen mitochondria, dilated granular endoplasmic reticulum, and subendothelial edema. There were also areas of endothelial cell flattening, discontinuity, and desquamation exposing the subendothelial tissues. Following restoration of flow, platelets and fibrin were found adherent to altered endothelial cells and to exposed subendothelial tissues. Endothelial craters and balloons were also found distal and, significantly less frequently, proximal to the site of occlusion. It is suggested that antiplatelet aggregating agents may prove beneficial for the prevention of thrombus formation at the site of the clip as well as craters and balloons distal to the clip following procedures requiring temporary vascular occlusion.

**AB-2940-77**
Transient Third Nerve Palsy After Electrometallic-thrombosis of Carotid Cavernous Fistulae — Wilson WB (Division of Ophthalmology, Denver General Hospital, Denver, Colorado 80204), Bringewald PR, Hosobuchi Y, Hoyt WF — *J Neurol Neurosurg Psychiatry* 39: 854-860 (Sep) 1976*

Three patients had oculomotor nerve palsy as a complication of the treatment of carotid cavernous fistulae by electro-
metallithrombosis of the cavernous sinus. In two, third nerve function returned without misdirection in two months or less. One was left with a partial third nerve palsy, also without misdirection.

AB-2941-77
An Ergot Alkaloid Preparation (Hydergine) in the Treatment of Dementia: Critical Review of the Clinical Literature — Hughes JR (University of Mississippi Medical Center, Jackson, Mississippi 39216), Williams JG, Currier RD — J Am Geriatr Soc 24: 490-497 (Nov) 1976*

A critical review is presented of 12 clinical trials with Hydergine (a hydrogenated ergot alkaloid preparation) in the treatment of dementia. Qualitative and quantitative comparisons of improvement in symptoms showed that Hydergine consistently produced statistically significant (p ≤ 0.05) improvement in 13 symptoms associated with dementia. However, because of the small magnitude of the improvement and the absence of indications of long-term benefit, Hydergine would seem to be of minor value in dementia therapy. Further research with better methodology and design might lead to a different conclusion.

AB-2942-77
Primary Hyperlipoproteinemia in Childhood and Adolescence: Identification and Treatment of Persons at Risk for Premature Atherosclerosis — Rose V (Division of Cardiology, Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8), Allen DM, Pearse RG, Chapell J — Can Med Assoc J 115: 753-756 (Oct 23) 1976*

Determination of serum cholesterol values in three populations of children and adolescents, totalling 4013 subjects aged 1 month to 20 years, revealed 16 cases of primary hyperbetalipoproteinemia (overall frequency, 1:251) and led to the detection of the disorder in 12 asymptomatic siblings. The upper limit of normal for serum cholesterol concentration was approximately 200 mg/dl at all ages studied. Dietary treatment was instituted in patients whose serum cholesterol value exceeded this limit and in whom a primary lipid defect was confirmed; the serum cholesterol value decreased in all patients who adhered to the diet. However, since the potential hazards and long-term results of dietary treatment, with or without drug therapy, in growing children are not known, such treatment should be reserved for affected children with a family history of premature atherosclerosis, and follow-up is essential.

AB-2943-77
Cerebral Vasospasm After Brain Injury — Hamer J (Department of Neurosurgery, University of Heidelberg, Heidelberg, Federal Republic of Germany), Krastel A — Neurochirurgia (Stuttg) 19: 185-189 (Sep) 1976*

Severe vasospasm of the supracallosal portion of the internal carotid artery and the proximal part of the anterior and middle cerebral arteries was displayed by cerebral angiography in a 45 year old female patient who had developed progressive disturbance of consciousness and marked meningism with extremely bloody lumbar CSF within a few days after craniocerebral trauma. Aneurysm could be excluded angiographically and operatively. One and a half weeks after evacuation of a subdural hematoma and an intracerebral contusional bleeding, when the patient was discharged without any neurological deficit, control angiography showed that angiospasm had disappeared. The scanty literature on cerebral vasospasm after brain trauma is reviewed. The role of traumatic angiospasm in prognosis and the necessity for broad indications for cerebral angiography in cases with brain contusion is emphasized.

AB-2944-77
Doppler-Sonographie bei mikrovaskulärem Bypass. Ultrasonic Doppler Technique for Microvascular Bypass — Homann H (Neurologische Klinik, Universität München, München, Germany), Gratzl O, Schmiedek P, Schneider I — Neurochirurgia (Stuttg) 19: 190-196 (Sep) 1976*

Following an operative microvascular extracranial bypass, 50 patients were re-examined by the ultrasonic Doppler technique. The findings were compared with the results achieved by post-operative angiography. This examination of the patency of extracranial anastomoses with the ultrasonic Doppler technique can be conducted on an outpatient basis, is noninvasive and can be frequently repeated. It has a high degree of accuracy (96%).

In addition, there were indications that, in certain areas, a gauge could be established for the function of the anastomosis by comparing the amplitude indices from the bypass and the afferent vessels.

AB-2945-77

Twelve patients with bilateral symptomatic lesions of internal carotid arteries have had bilateral carotid endarterectomy at single operations without complications. These patients were up to age 80 who had prior myocardial infarction, stroke with recovery, and hemispheric and non-hemispheric episodes. Neurologist’s clearance and three- or four-vessel intracranial-extracranial angiography preceded all operations, which were performed with the patient under general anesthesia. Stump pressure measurements were the principal guideline of adequacy of collateral flow and predictor of safe outcome.

The safety of this concept of bilateral operations during one anesthesia can eliminate uncertainties of sequence and timing, obviate delay and indecision, and avoid the hazards of a second anesthetic-operative experience.

AB-2946-77
Influence of CO₂ on Cerebral Vasocostricting Effect of O₂ — Fujimoto S (Department of Neurological Surgery, Okayama University Medical School, Okayama, Japan), Nagao S, Kuyama H, Nishimoto K, Ninomiya K, Akioka

*Authors' abstract

50 mongrel adult dogs were used to study the influence of CO₂ on cerebral vasoconstricting effect of O₂. Oxygenation was performed at 1 ATA O₂ and 2 ATA O₂. Responses of the cerebral vascular bed to oxygenation were assessed by changes of CSF pressure which was measured in the cisterna magna.

In order to study the influence of arterial CO₂ on the cerebral vasoconstricting effect of O₂, PaCO₂ was maintained at 20, 40 and 60 mmHg respectively, at which level oxygenations were performed. And changes of CSF pressure during oxygenation were compared with each other.

In another study, prior to oxygenation, acetazolamide 50 mg/kg was intravenously injected to inhibit the effect of arterial and brain tissue CO₂ on the cerebrovascular bed, and then the changes of CSF pressure were compared between in acetazolamide treated and untreated group.

Results were as follows:

1. The cerebral vasoconstricting effect of O₂ was the greatest at PaCO₂ 40 mmHg (normocapnia), moderate at PaCO₂ 60 mmHg (hypercapnia) and slight in degree at PaCO₂ 20 mmHg (hypocapnia).

This study demonstrated that vasoconstricting effect of O₂ in various degrees of intracranial hypertension was maximal in normocapnia but diminished in pathological conditions such as hypercapnia and particularly in hypocapnia.

2. CSF pressure was definitely lowered by oxygenation in the group treated with acetazolamide which inhibits the effect of CO₂ on the cerebral vessels as untreated group.

Concerning the mechanism of action of O₂, this result indicates that O₂ has a vasoconstricting effect by acting directly on the cerebral vascular smooth muscle, independently of arterial and brain tissue CO₂.

ABSTRACTS

AB-2947-77

The Mark IV System for Radionuclide Computed Tomography of the Brain — Kuhl DE (Division of Nuclear Medicine, Department of Radiological Sciences, Center for Health Sciences, University of California, Los Angeles, California 90024), Edwards RQ, Ricci AR, Yacob RJ, Mich TJ, Alavi A — Radiology 121: 405-413 (Nov) 1976*

The Mark IV scanning system is a simple four-sided arrangement of 32 independent detectors which rotate continuously as a unit, detecting, processing, and displaying the reconstructed data while the study progresses. Detection is by single photon counting and is compatible with commercially available radionuclides. An empirical correction is maintained as a unit, detecting, processing, and displaying the reconstructed data while the study progresses. Detection is by single photon counting and is compatible with commercially available radionuclides. An empirical correction is

AB-2948-77

The Course of Pregnancy in Patients With Artificial Heart

AB-2950-77

Cardiovascular-Disease Mortality Trends and Oral-Contraceptive Use in Young Women — Beral V (Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine, London WC1E 7HT, England) — Lancet 2: 1047-1051 (Nov 13) 1976*

Analysis of mortality trends in 21 countries indicates that, since oral contraceptives first became available, changes in mortality from non-rheumatic heart-disease and hypertension (I.C.D. 400-429, cerebrovascular disease (I.C.D. 430-439), and all non-rheumatic cardiovascular diseases (I.C.D. 400-469) among women aged 15-44 years have been strongly associated with changes in the prevalence of oral contraceptive use in each country. This relationship is highly specific for women of reproductive age. The relative risks of death from heart-disease and hypertension, cerebrovascular disease, and all cardiovascular diseases for women using oral...
contraceptives compared with non-users were estimated to be 5 to 1, 2 to 1, and 3 to 1 respectively. These findings suggest that the range of vascular diseases affected by oral contraceptives and the size of the associated risks may be greater than previously recognised. Furthermore, the increased risks of cardiovascular disease might exist not only with the pills containing high estrogen doses, but also with the new “lower dose” pills.

**AB-2951-77**

**Experimental Cerebral Ischemia in Mongolian Gerbils. IV. Behaviour of Biogenic Amines** — Mršulja BB (Laboratory of Neuropathology and Neuroanatomical Sciences, NINCDS, National Institutes of Health, Bethesda, Maryland 20014), Mršulja BJ, Spatz M, Ito U, Walker JT Jr, Klatzo — *Acta Neuropathol (Berl)* 36: 1-8, 1976*

Behaviour of biogenic amines was studied in the brains of Mongolian gerbils subjected to unilateral occlusion of the common carotid artery. Assays on the hemispheres ipsilateral to occlusion revealed in symptom-positive animals a progressive decrease in norepinephrine and dopamine, and an increase in serotonin throughout the duration of an ischemic insult.

In post-ischemic periods following the release of the clip, changes in biogenic amine levels generally conformed to the principles of a previously described “maturation” phenomenon, with delayed reactions occurring after the shorter ischemic insults.

**AB-2952-77**

**Angiographic Study of the Growth of Intracranial Aneurysms** — Alcock JM (Department of Diagnostic Radiology, University Hospital, London, Ontario, Canada N6A 5A5), Canham PB — *J Neurosurg* 45: 617-621 (Dec) 1976*

The authors have attempted to assess whether there is any standard rate of growth of intracranial aneurysms. Angiographic studies were performed on 67 patients with 82 aneurysms with intervals between angiograms ranging from a few days to 10 years. Examination of these records showed no consistent rate of change in size, possibly partly because of inherent inaccuracies in the method, which are discussed. The clinical reasons for the repeat studies are briefly mentioned. It is concluded that it is unwise to wait and see what may happen to any but perhaps the smallest aneurysm.

**AB-2953-77**


The effect of spinal cord trauma on the vasculature and blood flow of the spinal cord is reviewed. Both quantitative and nonquantitative studies are critically discussed and reasons sought for some of the major controversies that have arisen. Differences in methodology, species variation, and variation in the degree and type of cord injury may all be important factors in producing the conflicting results reported in the literature. In general, it can be said that trauma has a profound effect on the vasculature and blood flow in the cord and that severe compression injury of the cord causes marked ischemia in the gray and white matter.

**AB-2954-77**


Spinal cord blood flow (SCBF) was measured in the primate thoracic spinal cord using the 14C-antipyrine autoradiographic technique that allowed direct differentiation between white and gray matter blood flow. Individual SCBF values were obtained for 0.1-sq mm areas of the thoracic cord cross section. White matter blood flow was homogeneous throughout with a mean value of 10.3 ± 0.2 ml/100 gm/min. Gray-matter flow was more variable with lower values in the dorsal horns and higher values in the central gray and anterior horns. Mean gray-matter flow was 57.6 ± 2.3 ml/100 gm/min. Arterial PO2 was 123 ± 2 torr, PCO2 was 40.2 ± 0.5 torr and pH was 7.327 ± 0.010. Mean arterial blood pressure was 113 ± 3 mm Hg and core temperature was 36.4° ± 0.1° C.

**AB-2955-77**


Spinal cord blood flow (SCBF) was measured in 24 rhesus monkeys after injury to the cord produced by the inflatable circumferential extradural cuff technique. Measurement of regional blood flow in the white and gray matter of the cord in areas of 0.1 sq mm was achieved with the 14C-antipyrine autoradiographic technique and a scanning microscope photometer. After moderate cord injury (400 mm Hg pressure in the cuff maintained for 5 minutes), which produced paraplegia in 50% of animals and moderate to severe paresis in the other 50%, mean white matter SCBF was significantly decreased for up to 1 hour. White matter blood flow then rose to normal levels by 6 hours posttrauma and was significantly increased by 24 hours posttrauma. Gray matter SCBF was significantly decreased for the entire 24-hour period posttrauma. After severe cord injury (150 mm Hg pressure in the cuff maintained for 3 hours), which produced total paraplegia in almost all animals, SCBF in white and gray matter was reduced to extremely low levels for 24 hours posttrauma. In addition, focal decreases in SCBF were seen in white and gray matter for considerable distances proximal and distal to the injury site. It is concluded that acute compression injury of the spinal cord is associated with long-lasting ischemia in the cord that increases in severity with the degree of injury.

**AB-2956-77**

**Management of Intracerebral Hemorrhage in Idiopathic Thrombocytopenic Purpura. Report of Four Cases** —

*Authors' abstract*
Humphreys RP (Division of Neurosurgery, Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8), Heckley AD, Freedman MH, Saunders EF — J Neurosurg 45: 700-704 (Dec) 1976*

There has been little comment on the specific management of intracerebral bleeding occurring in patients suffering idiopathic thrombocytopenic purpura. The authors present the cases of four children with intracerebral hemorrhage due to this coagulation disturbance. A plan of management is described based on this experience; it includes immediate control of cerebral edema, emergency splenectomy, supportive care with platelet transfusions and corticosteroids, cerebral angiography, and a definitive neurosurgical procedure. If necessary, the radiological investigation and surgical therapy can be performed with a single general anesthetic. Three of the patients have survived without major neurological sequelae.

AB-2957-77

Two patients are described, both of whom demonstrate a temporal association between the clinical manifestations of cerebral ischaemia and smoking. A number of mechanisms through which smoking may influence cerebral blood flow and platelet function are discussed, and their relevance to the present cases is considered.

AB-2958-77

A quantitative study has been made of the EMI numbers of normal brain, cerebral infarction and certain tumours. The scans were recorded on magnetic tape and analysed using a minicomputer linked to a graphic display unit. This system not only yielded 16 grey scales compared with the ten currently available, but was programmed to allow selected regions of the scans to be outlined. From these regions the computer calculated the area, the mean EMI number and its standard deviation.

It was found that in 15 normal brain scans, the EMI values obtained for normal frontal and temporal lobes were similar, but that the values for the basal ganglia and occipital lobes were significantly different from the first two regions and from each other. Ten cases of cerebral infarction and 30 cases of cerebral tumour were analysed, and it was shown that analysing representative areas was more informative than surveying the whole lesion. Whilst only half of the scans of brain tumours had a significantly altered EMI number compared with that of normal brain, enhancement of tumour density with sodium iothalamate revealed a consistent and significant elevation of the EMI number for all tumours. In particular, the value for enhanced meningiomas was almost double and malignant tumours more than a third larger than normal brain. It was not possible to differentiate quantitatively between astrocytomas and metastases.

AB-2959-77
Platelet Adhesiveness and Fibrinolysis After Recent Cerebro-Vascular Accidents and Their Relationship With Subsequent Deep Venous Thrombosis of the Legs — Warlow CP, Rennie JAN, Ogston D (Department of Medicine, University of Aberdeen, Aberdeen AB9 2ZD, Scotland), Douglas AS — Thrombos Haemostas (Stuttgart) 36: 127-132 (Aug 31) 1976*

In fifteen patients with a cerebro-vascular accident resulting in an acute hemiplegia there was a subsequent rise in the platelet count and plasma fibrinogen level. There were no significant alterations in platelet adhesiveness, plasminogen activator, plasminogen, FR-antigen and haematocrit. Patients diagnosed as developing deep venous thrombosis with the 1M I-fibrinogen technique had a significantly lower platelet adhesiveness and plasminogen level than those who were not.

AB-2960-77
Spontaneous Carotid-Cavernous Fistulas. Clinical Symptomatology — Brismar G (Department of Ophthalmology, University Hospital, S-22185, Lund, Sweden), Brismar J — Acta Ophthalomol 54: 542-552 (Oct) 1976*

The symptomatology in six cases with spontaneous carotid-cavernous fistulas is discussed. All six patients presented with exophthalmos, dilated veins, pain and restriction of ocular movements. In four patients a bruit was found objectively as well as subjectively, four patients exhibited an increase of the intraocular pressure and in three cases vision was impaired. Of special interest is the finding that discrete symptoms such as venous congestion and slight pain appeared early in the course of the disease in all patients, and that in some of the patients an increase in intraocular pressure as well as disturbances in ocular motility were diagnosed long before the appearance of the exophthalmos.

AB-2961-77
Cardiac Myxoma: A Diagnostic Challenge for the Neurologist — Yufe R, Karpata G, Carpenter S (Montreal Neurological Institute, Montreal, Quebec, Canada H3A 2B4) — Neurology (Minneap) 26: 1060-1065 (Nov) 1976*

Three patients with left atrial myxoma presented with prominent neuroligic symptoms and signs (cerebrovascular disease and/or syncope) within the past year. Two patients died because antemortem diagnosis was late or missed. One patient was successfully treated. Cardiac myxoma produces protean clinical manifestations that do not always include cardiac signs and symptoms. Neurologists may be called on for diagnostic consultation in patients who will prove to have cardiac myxoma. Unexplained transient ischemic attacks, cerebral infarction, or syncope (with possible features of seizure activity) are common neuroligic manifestations of this disease. Additionally, systemic symptoms, signs, and laboratory data suggestive of collagen vascular disease or
vasculitis are also often present. Echocardiography is a
dependable noninvasive procedure for a confirmation of
diagnosis in suspected cases.

**A-B-2962-77**

Unoperated, Asymptomatic Significant Internal Carotid
Artery Stenosis: A Review of 182 Instances — Humphries
AW (The Clinic Center, 9500 Euclid, Cleveland, Ohio
44106), Young JR, Santilli PH, Beven EG, deWolfe VG —
Surgery 80: 695–698 (Dec) 1976*

One hundred and sixty-eight asymptomatic patients with a
carotid artery stenosis of more than 50 percent were
observed over a period of up to 12 years. During this time,
136 patients remained asymptomatic, two patients developed
typical neurologic symptoms that spontaneously dis-
appeared, 26 patients developed transient ischemic attacks and
successfully underwent carotid endarterectomy, three patients
developed transient ischemic attacks that were ignored and
they subsequently suffered a completed stroke, and one patient
suffered a completed stroke without a warning transient attack.
These data suggest that surgery is not required in the patient with an asymptomatic carotid stenosis until a transient ischemic attack occurs.

**A-B-2963-77**

Recurrent Carotid Stenosis — Stoney RJ (Department of
Surgery, University of California Medical Center, San Fran-
cisco, California 94143), String ST — Surgery 80: 705–710
(Dec) 1976*

Twenty-nine patients developed recurrent stenosis of the
carotid artery 5 months to 13 years following carotid en-
derarterectomy. Thirty-two recurrent lesions were repaired. Recurrent atherosclerosis was present in 19 patients, intimal
fibrosis occurred in nine patients, and one patient had exter-
nal stricture. All recurrent atheromas developed more than 2
years following original operation (mean, 5 years), and inti-
mal fibrosis was seen in the first postoperative year in all but
one patient (mean, 9 months). Reconstructive techniques in-
cluded endarterectomy for atherosclerosis and patch angioplasty and resection and anastomosis for intimal
fibrosis.

**A-B-2964-77**

Attenuation Measurements of Whole Blood and Blood Fractions in Computed Tomography — New PFJ (Department of
Radiology, Massachusetts General Hospital, Boston, Massa-
chusetts 02114), Arnow S — Radiology 121: 635–640 (Dec) 1976*

Computed tomography (CT) provides an extraordinarily
effective means of diagnosing intracranial hemorrhages. Normal blood has a relatively high x-ray attenuation in the
circulation and following extravasation, permitting the dis-
crimination by CT of many pathologically enlarged vascular
spaces containing circulating blood and/or blood clot (such as arteriovenous malformations and large aneurysms) in addition to recent hemorrhages, from contiguous anatomical
structures. To promote further understanding of the factors

*Authors' abstract

**A-B-2965-77**

Bypass Surgery for Vascular Disease of the Carotid System
— Sundt TM Jr (Department of Neurologic Surgery, Mayo
Clinic, Rochester, Minnesota 55901), Siekert RG, Piepgras
DG, Sharbrough FW, Houser OW — Mayo Clin Proc 51:
677–692 (Nov) 1976*

A series of 58 operations on 56 patients, in whom a branch
of the superficial temporal artery was anastomosed to a
branch of the middle cerebral artery (STA-MCA bypass or
Yaşargil procedure), is reviewed. These operations were per-
formed chiefly for occlusions or for inaccessible stenotic
lesions of the internal carotid or middle cerebral arteries. Patency in eight patients operated on from April 1971
through November 1973 was low (25%). Patency in patients
operated on since July 1974 has been high (95%). There have
been no deaths and no major ischemic strokes attributable to
the surgery. The rationale for this procedure is considered in
relationship to the anatomy and physiology of the cerebral
circulation and the pathogenesis of syndromes of cerebral
ischemia. The operation appears to have a low morbidity in
good-risk patients. The role of this operation in managing
common manifestations of cerebral vascular disease such as
tocal transient cerebral ischemic attacks (TIAs) and amaurosis fugax, although not fully established, appears en-
couraging. The procedure seems useful for orthostatic
cerebral ischemia caused by multiple occlusions of major ex-
tracranial (and intracranial) vessels and, occasionally, for
progressing strokes related to internal carotid artery occlu-
sion, both of which are relatively uncommon manifestations of
cerebral vascular occlusive disease. It may have applica-
tion in the rare "slow stroke." The procedure is probably of
limited value, if any, in the management of large completed
infarcts but may be indicated in selected patients with small
infarctions who have preserved most of their cerebral func-
tion and who have had evidence of subsequent focal ischemic
events. The procedure is useful for bypassing giant
aneurysms or basofrontal tumors invading major vessels. It
may have a role in the management of fibromuscular disease of
the internal carotid artery.

**A-B-2966-77**

Vitrectomy in Subarachnoid Haemorrhage — Carruthers J,

In a 34-year-old man with a subarachnoid hemorrhage,
bilateral vitreous hemorrhages reduced his vision to the
perception of hand movements, with no improvement over a
year. B-scan ultrasonography revealed unresorbed posterior
vitreous membranes. Vitrectomy restored his vision to 6/9 in
one eye and 6/60 in the other eye, and he is leading a normal
life.

**A-B-2967-77**

Temporal Artery Biopsy in Herpes Zoster Ophthalmicus
With Delayed Arteritis — Victor DI, Green WR (Eye...
ABSTRACTS

Pathology Laboratory, Johns Hopkins Hospital, Baltimore, Maryland 21205) — Am J Ophthalmol 82: 628–630 (Oct) 1976

After minor head trauma, a 58-year-old man developed herpes zoster ophthalmicus. Five weeks later, he developed a transient ipsilateral blindness, ipsilateral Horner's syndrome, contralateral hemiparesis and homonymous hemianopia. His sedimentation rate was normal. His spinal fluid showed a monocytic pleocytosis (55 WBC). He was found for the first time to be diabetic. Temporal artery biopsy revealed a vasculitis without giant cells. Electron microscopy demonstrated no virus particles. This delayed arteritis is felt to be the result of the spread of vasculitis from the carotid system, and not a direct viral inflammation.

AB-2968-77

Case 1 concerned a 35-year-old woman who had three months of unsteadiness of gait followed by signs of increased intracranial pressure. Contrast ventriculography revealed a cherry-sized mass in the fourth ventricle. At surgery a subependymal hemorrhagic cyst was removed from the pontine tegmentum, and the patient recovered well. In case 2 computerized axial tomography (CAT) was performed on a young man because of a sixth nerve palsy. It showed a small pontine tegmental mass with the density of extravasated blood. Surgery removed the clot and demonstrated a vascular malformation. The sixth nerve palsy was permanent, the postoperative course was complicated, and the clot demonstrated by CAT, recurred immediately.

AB-2969-77
Mural Thrombosis After Experimental Carotid Endarterectomy — Pollak EW (Department of Surgery, University of California, School of Medicine, Davis, California 95616), Webber MM — Vasc Surg 10: 214–218 (Sep-Oct) 1976

Carotid lesions were made in 12 dogs by removing a patch of intima, scratching the endothelium with a wire, or cross-clamping the artery with a hemostat. After four hours, the dogs were sacrificed and the carotids examined for evidence of mural thrombus, which was evident in all 12. A jet of water was able to fragment the clots, suggesting that blood flow might have had the same effect. The authors conclude that at least three days of heparin anticoagulation is warranted after carotid endarterectomy.

AB-2970-77

In infants with birthweights of less than 1,501 gm, intracerebellar hemorrhage was found to be more common in those treated with mask-applied ventilatory support than in those ventilated after tracheal intubation. The tight head-band holding the mask to the face produced a tower-skull deformity and overlapping of the occipital and parietal bones. This may have caused direct cerebellar contusion, altered venous drainage, or ischemic stasis. The authors urge caution in applying to a premature infant any contrivance which changes the shape of the head.

AB-2971-77

Both orthograde and retrograde axonal transport of proteins and organelles take place in the nerve fibers of the retina and optic nerve. When ischemia causes focal axonal interruption, a dense white cotton wool spot develops. This appearance is due to the accumulation of mitochondria brought by axonal transport. Nerve fiber swelling without axonal interruption produces a grayish discoloration. In central retinal artery occlusion, the ganglion cells undergo cloudy swelling. Around the optic disc, white cotton wool patches develop, because the axons in the disc receive their blood supply from the posterior ciliary circulation and can transport mitochondria to the border of the infarcted territory. Conversely, in temporal arteritis, where the posterior ciliaries are occluded and the ganglion cells intact, the nerve fibers on the disc become distended with axoplasmic debris, giving a white swollen appearance of the disc. Occlusion of both circulations simultaneously results in a gray swollen retina.

AB-2972-77

In an analysis of the first 100 cases of intracranial aneurysm treated at Oxford by microneurosurgery, all patients had bilateral carotid arteriography before surgery, and many repeat arteriography after surgery. Six months postoperatively 15% were dead, 64% had a good result, 12% a fair result, and 9% a poor result. Intraoperative hypotension and hypothermia had no effect on the final result. Systemic hypertension was related to surgical outcome. Of 20 patients with untreated hypertension, 11 died. Those with treated hypertension had good or fair results. Surgery in the first week after the bleed had a mortality of 22% while in the second week, it was 5% and of those operated in the third week, none died. Operation in the second week carried a higher morbidity (23% poor results) than in the first week (7% poor results). In the first week after the bleed, surgical mortality was high, no matter what the neurologic status of the patient was preoperatively. Preoperative vasospasm had no relation to postoperative vasospasm. Generalized vasospasm was a major cause of postoperative death and was not prevented by sodium nitroprusside.
Two groups of patients with transient cerebrovascular ischemia were identified: those with normal serum lipids and those with type IV hyperlipoproteinemia. There was also a group of normal controls. Platelet counts, platelet aggregation, and serotonin release were normal in all three groups. Platelet coagulant activities (contact-product-forming activity and collagen-induced coagulant activity and intrinsic factor Xa-forming activity) were two to three times increased in the patients with ischemic attacks and normal serum lipids, and normal in patients with type IV hyperlipoproteinemia. Partial thromboplastin times were slightly shortened in both groups with transient ischemia.

A 27-year-old man was involved in a car accident in which he remained conscious. Six hours later, he was deeply comatose with decerebrate rigidity and small equal pupils reacting poorly to light. Bifrontal and bitemporal burr holes revealed swollen brain. Arteriography, when it could be performed, demonstrated hydrocephalus without a midline shift. There was a depressed fracture of the occipital bone, and over it a bruise visible only after the head was shaved. Although the patient was by then flaccid with fixed pupils, surgical removal of a posterior fossa hematoma restored him to consciousness. After he recovered from a transient unilaterial paralysis of his lower cranial nerves, with a cerebellar shift. There was a depressed fracture of the occipital bone, and over it a bruise visible only after the head was shaved. Although the patient was by then flaccid with fixed pupils, surgical removal of a posterior fossa hematoma restored him to consciousness. 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pressure helped to indicate those patients with poor collateral flow; in those patients an inlying shunt may prevent neurologic complications.

AB-2979-77
Comparison and Heparin as Anticoagulants Following Endarterectomy in the Dog — Daniel TM (Department of Surgery, Duke University Medical Center, Durham, North Carolina 27710), Pizzo SV, McKee PA — Ann Surg 184: 223-228 (Aug) 1976

Ancrod is a thrombin-like enzyme obtained from Malayan pit viper venom that lowers plasma fibrinogen and is thus an anticoagulant. It does not damage platelets. Endarterectomy was performed in the femoral arteries of 50 dogs. Operated control dogs were given neither ancrod nor heparin. Twelve dogs were given heparin, either high-dose or low-dose, after endarterectomy. Twenty-two dogs were given ancrod in high and low doses for short and long periods of time. All femoral arteries were fixed in formalin and studied. Of control arteries, 67% were completely thrombosed and 3% were completely patent. Six dogs on high-dose heparin bled to death from the surgery. Dogs on low-dose heparin had the same number of occlusions and patentities as had control dogs. Dogs on ancrod preoperatively and immediately post-operatively developed bleeding from their arterial sutures and died. Dogs receiving low-dose ancrod, beginning two hours after surgery, all survived with no wound bleeding. Twelve of their 16 endarterectomized vessels were patent. Their wounds, however, continued to leak fluid and 88% separated during the seven postoperative days.

AB-2980-77

In a group of 100 patients with sinoatrial disorder (heart rate < 60 or recurrent sinus arrest, or bradycardia-tachycardia syndrome), 16 had evidence of embolism, and 15 of these had the bradycardia-tachycardia syndrome. A second group of 41 patients with atrial fibrillation or flutter with a slow ventricular rate had an embolic prevalence of 7.3%. Control patients with atrioventricular block and a normal rate < 60 or recurrent sinus arrest, or bradycardia-tachycardia syndrome had the bradycardia-tachycardia syndrome. A second group of 41 patients with atrial fibrillation or flutter with a slow ventricular rate had an embolic prevalence of 7.3%. Control patients with atrioventricular block and a normal slow ventricular rate had an embolic prevalence of 7.3%. Control patients with atrioventricular block and a normal slow ventricular rate had an embolic prevalence of 7.3%. Control patients with atrioventricular block and a normal slow ventricular rate had an embolic prevalence of 7.3%. Control patients with atrioventricular block and a normal slow ventricular rate had an embolic prevalence of 7.3%. Control patients with atrioventricular block and a normal slow ventricular rate had an embolic prevalence of 7.3%

AB-2981-88
Computerised Axial Tomography Findings in Patients With Migrainous Headaches — Cala LA (Department of Radiology, Perth Medical Center, Shenton Park, WA 6008, Australia), Mastaglia FL — Br Med J 2: 149-150 (Jul 17) 1976

Forty-six patients with a history of recurrent migraine were examined on the EMI scanner, seven patients during a headache. Small infarcts were found in six patients, significant cerebral atrophy in two, appearances suggestive of early cerebral atrophy in six, unsuspected gliomas in two, and appearances compatible with mild cerebral edema in 21, most commonly in the frontal white matter.

AB-2982-77
Glossopharyngeal Neuralgia With Cardiac Syncope. Treatment With a Permanent Cardiac Pacemaker and Carbamazepine — Jamshidi A (Cardiovascular Laboratory, Bridgeport Hospital, Bridgeport, Connecticut 06602), Masroor MA — Arch Intern Med 136: 843-845 (Jul) 1976

A 72-year-old woman with glossopharyngeal neuralgia experienced faintness with some of her attacks of pain, and with one paroxysm became unconscious for a few minutes. ECG monitoring showed severe sinus bradycardia and occasional sinus arrest during paroxysms, causing cardiac syncope, presumably by the carotid sinus reflex mechanism. A permanent demand pacemaker was inserted, and carbamazepine abolished the painful attacks. Glossopharyngeal nerve sectioning was not undertaken because of the patient's age and her good response to carbamazepine.

AB-2983-77

Detailed operative procedures are discussed for disease of the innominate, subclavian, and vertebral arteries. The authors report 251 cases in 172 patients, of direct approach or extrathoracic grafting for vascular lesions of this system. Mortality was 1.5%. Vertebralbasilar signs were alleviated in 25 of 31 patients. Neurologic deficits became worse in four of 93 patients.

AB-2984-77
Cerebral Hematomas — Arana-Iñiguez R (Instituto de Neurologia, Hospital de Clinicas, Montevideo, Uruguay), Wilson E, Bastarrica E, Medici M — Surg Neurol 6: 45-52 (Jul) 1976*

One hundred patients with primary cerebral hemorrhage were studied to evaluate previously established guidelines for surgical treatment. Sixty two patients were not operated upon and 38 were. The mortality in the 100 cases was 51%. It appears that the mortality can be lowered if a careful selection of surgical cases is made.

AB-2985-77

The entry of 131I-labelled low density lipoprotein (LDL) into different regions of the aortic intima has been studied over a 6 hour period in both normotensive and renal hypertensive rabbits fed a normal diet. Studies have also been carried out in previously hypertensive rabbits in which the blood pressure was normalized with parenteral hydralazine during the six hour period, in which entry was studied. In the

*Authors’ abstract
normotensive rabbits entry into the aortic intima was less than 1 μg of LDL protein/100 mg dry defatted weight over the 6 hour period with greatest entry into aortic arch intima and significantly less into both the thoracic and abdominal aortic intimae. Hypertension increased the entry into the arch and into the thoracic and abdominal segments but this was only statistically significant for the aortic arch. The entry of [126I] LDL into the intima in those rabbits in which the hypertension had been normalized was similar to that for the hypertensive rabbits. The results suggest that hypertension in the normal fed rabbit increases lipoprotein entry into the arterial wall by an effect on vessel wall permeability rather than by a direct effect of filtration pressure.

**AB-2986-77**

Oculoplethysmography: An Adjunct to Arteriography in the Diagnosis of Extracranial Carotid Occlusive Disease — Kartchner MM (Ocular Pulse Clinic, Tucson Medical Center, Tucson, Arizona 85733), McRae LP, Crain V, Whitaker B — *Am J Surg* 132: 728-732 (Dec) 1976*

Oculoplethysmography complemented by carotid phonoangiography is a highly effective, safe, noninvasive study to detect the presence of carotid occlusive disease, thereby facilitating the selection of patients for and enhancing the diagnostic accuracy of arteriography. Oculoplethysmography proved 90 per cent accurate compared with arteriography in detecting hemodynamically significant internal carotid stenosis.

**AB-2987-77**


Extensive coagulation profiles were obtained in forty-five patients with clinically suspected hypercoagulability. The results of these tests agreed with the clinical impression in approximately 90 per cent of cases.

**AB-2988-77**

Epilepsy After Two Different Neurosurgical Approaches to the Treatment of Ruptured Intracranial Aneurysm — Cabral RJ (Section of Neurological Sciences, The London Hospital, London, England), King TT, Scott DF — *J Neurol Neurosurg Psychiatry* 39: 1052-1056 (Nov) 1976*

One-hundred-and-fifty-two patients who underwent surgery for intracranial aneurysm were studied to determine the incidence of postoperative epilepsy in relation to the site of the aneurysm and the type of surgical approach. The overall incidence of epilepsy was 22%. Of the 116 patients treated by the intracranial approach 27.5% developed epilepsy, in contrast with only 5% of the 36 patients who had carotid artery ligation in the neck. Epilepsy occurred most frequently (35%) with middle cerebral artery aneurysms, especially if moderate or severe operative trauma was sustained and there was postoperative dysphasis.

*Authors' abstract

**AB-2989-77**

Arterial Spasm and Recovery From Subarachnoid Haemorrhage — Richardson JTE (Department of Psychology, Brunel University, Uxbridge, Middlesex UB8 3PH, England) — *J Neurol Neurosurg Psychiatry* 39: 1134-1136 (Nov) 1976*

In a series of 120 cases of subarachnoid haemorrhage due to ruptured intracranial aneurysm the occurrence of preoperative arterial spasm was found to have no effect upon the clinical outcome. After surgery, generalised arterial spasm was found to lead to an increased probability of fatality, and to an increased probability of psychological impairment among the survivors. The occurrence of spasm only in the vessels immediately adjacent to the haemorrhage did not constitute a risk to survival. However, the presence of generalised or localised spasm led to an increased risk of neurological impairment. It is suggested that the mechanisms by which postoperative arterial spasm is responsible for fatalities and for neurological impairment are distinct.

**AB-2990-77**

Autopsy Correlations of Computerized Tomography: Experience With 6,000 CT Scans — Jacobs L (Dent Neurologic Institute, Millard Fillmore Hospital, Buffalo, New York 14209), Kinkel WR, Hefner RR Jr — *Neurology (Minneap)* 26: 1111-1118 (Dec) 1976*

Seventy-nine autopsy correlations of CT scans showed (1) excellent correlations in normal brains, but the size of the lateral ventricles consistently larger during life than after death; (2) a distinctive pattern differentiating obstructive from nonobstructive hydrocephalus; (3) infarctions appearing as areas of decreased densities of parenchyma in vascular distributions; (4) distinctive high density appearances of hemmorhages that differentiated them from infarctions and, in general, all other pathologic processes; (5) supratentorial, intraventricular, and posterior fossa tumors appearing as masses that displaced, distorted, collapsed, and enlarged normal spaces and structures such as ventricles and pineal gland; (6) 11 false-negative CT scans in some cases of brain stem infarction, brain stem hemorrhage, and small metastasis; and (7) an overall accuracy of 86.2 percent of CT scanning in correctly identifying pathology of the brain.

**AB-2991-77**

Comparison of Radionuclide Scans With Computer-Assisted Tomography in Diagnosis of Intracranial Disease — Clifford JR, Connolly ES (1514 Jefferson Highway, New Orleans, Louisiana 70121), Voorhies RM — *Neurology (Minneap)* 26: 1119-1123 (Dec) 1976*

Radionuclide brain scans were compared with computer-assisted tomography (CAT) for the diagnosis of intracranial disorders in 297 patients. The diagnosis was confirmed in 281 patients who formed the population for the study. The radionuclide scan was false positive for 12 patients (3.9 percent) and false negative for eight (2.6 percent). The CAT was false positive for three patients (1 percent) and false negative for one (0.3 percent). In the 133 patients in whom both tests were negative, no evidence of central nervous system pathology has been found during the 6 to 18 month follow-
up. Brain tumors and intracerebral hemorrhage are more readily detectable with CAT.

**AB-2997-77**

**Anosognosia for Hemiplegia: Somatosensory Evoked Potential Studies** — Green JB (Department of Neurology, Medical College of Georgia, Augusta, Georgia 30902), Hamilton WJ — Neurology (Minneapolis) 26: 1141-1144 (Dec) 1976*

Somatosensory evoked potential studies in nine patients with anosognosia for left hemiplegia and in one patient with anosognosia for right hemiplegia revealed an absence of response over either hemisphere on stimulation of the median nerve on the hemiplegic side. This apparent lack of cortical processing may underlie the impaired awareness of the hemiplegic side, manifested as anosognosia.

**AB-2998-77**

**Neurophysiologic Changes in Hemiplegia. Possible Explanation for the Initial Disparity Between Muscle Tone and Tendon Reflexes** — Ashby P (Toronto Western Hospital, Toronto, Ontario, Canada M5T 2S3), Verrier M — Neurology (Minneapolis) 26: 1145-1151 (Dec) 1976*

In an attempt to clarify the neurophysiologic changes that may follow a cerebral lesion in man, we have studied patients with recent and with long-standing hemiplegia from cerebral infarction. In patients with recent cerebral lesions, inhibition of the monosynaptic reflex by vibration is enhanced. In patients with long-standing cerebral lesions, this inhibitory mechanism is less effective and a comparison of the electrically and mechanically induced monosynaptic reflexes suggests that fusimotor drive may be increased. Related clinical findings are reduced muscle "tone" immediately after the lesion and increased muscle "tone" and exaggerated tendon jerks in patients with long-standing hemiplegia.

**AB-2999-77**

**Extracranial Angiographic Findings in Giant Cell (Temporal) Arteritis** — Stanson AW (Department of Diagnostic Roentgenology, Mayo Clinic, Rochester, Minnesota 55901), Klein RG, Hunder GG — Am J Roentgenol 127: 957-963 (Dec) 1976*

Angiograms of 10 patients with giant cell arteritis who had large-artery and aortic abnormalities were reviewed. The affected arteries had multiple stenotic areas, and occlusions were relatively common, usually located at the end of tapered stenotic segments. Bridging collateral arteries usually refilled the distal portion of the occluded artery. The alterations were seen most frequently in the subclavian, axillary, and brachial arteries, and the arteriographic lesions reflected the clinical findings.

Such arteriographic abnormalities are suggestive of giant cell arteritis in a patient over the age of 50. The differential diagnosis includes Takayasu's disease, arteriosclerosis, thoracic outlet syndrome, and ergotism.

**AB-2995-77**

**Cortical Neuronal Function During Ischemia. Effects of Occlusion of One Middle Cerebral Artery on Single-Unit Activity in Cats** — Heiss W-D, Hayakawa T, Waltz AG (Department of Neurology, Pacific Medical Center, San Francisco, California 94120) — Arch Neurol 33: 813-820 (Dec) 1976*

To assess the effects of ischemia on neuronal function, the action potentials of 261 individual cortical neurons were recorded extracellularly and related to regional cerebral blood flow (CBF) measured by hydrogen clearance in 19 cats, seven of which had the left middle cerebral artery occluded during a recording. The onset of ischemia could be associated with transient increases of activity, including "seizure discharges," as well as cessation of activity. No activity was noted at CBF less than 0.18 ml/gm/min; at higher (but ischemic) values for CBF, abnormal patterns of activity frequently were recorded. One neuron recovered function after cessation in association with an increase of CBF, indicating a potential for the restoration of function of ischemic neurons by effective therapeutic measures.

**AB-2996-77**

**Computer Tomography of Traumatic Extracerebral Lesions** — Svedsén P (Department of Diagnostic Radiology, Sahlgren's Hospital, Gothenburg, Sweden) — Br J Radiol 49: 1004-1012 (Dec) 1976*

Twenty-one traumatic intracranial extracerebral lesions in 15 patients were examined with the EMI scanner using the 160 X 160 matrix. The results were compared with operation and angiographic findings. Although angiography seems to be a more reliable diagnostic aid, computer tomography has important advantages as it provides information on the nature and extent of the extracerebral lesion as well as on concomitant brain damage.

**AB-2997-77**

**Spinal Cord Angiomas Diagnosed by Gas Myelography** — Lillequist B (Department of Neuroradiology, University of Umeå, Umeå, Sweden) — Neuroradiology 12: 15-19 (Oct 27) 1976*

Three cases with spinal cord arteriovenous malformations are reported with characteristic changes evident on gas myelography. The malformations were confirmed by selective spinal angiography in all cases and surgically removed in 2 of the cases.

**AB-2998-77**

**The Improvement of Cognition and Personality After Carotid Endarterectomy** — Haynes CD (Department of Surgery, Emory University, Atlanta, Georgia 30322), Gideon DA, King GD, Dempsey RL — Surgery 80: 699-704 (Dec) 1976*

Seventeen patients with at least 50 percent carotid artery stenosis were given intelligence and personality tests just prior to and 6 weeks after carotid endarterectomy. When compared with nine control patients, the endarterectomy patients showed increases in verbal-comprehension I.Q., perceptual-organization I.Q., decreases in time to complete perceptual motor tasks, decrease in asphasic signs, and...
significant reductions in anxiety, suspicion, confusion, disorientation, and other personality symptoms generally associated with senility. Statistical evaluation showed these results to be valid.

**AB-2999-77**

Treatment of Neurogenic Orthostatic Hypotension With a Monoamine Oxidase Inhibitor and Tyramine — Nanda RN (University Department of Neurology, Institute of Neurological Sciences, Southern General Hospital, Glasgow G51 4TF, Scotland), Johnson RH, Keogh HJ — *Lancet* 2: 1164-1167 (Nov 27) 1976*

Six patients with neurogenic orthostatic hypotension were treated with a chemical preparation of tyramine and tranylcypromine ('Parnate'), a monoamine oxidase inhibitor (M.A.O.I.). Four had autonomic failure with no other neurological deficit (idiopathic orthostatic hypotension), and in two patients other neuronal systems were also involved (Shy-Drager syndrome). Previous therapy with fluorocortisone, ephedrine, elastic garments, postural training, and, in one patient, an anti-G suit was unsatisfactory. Tyramine given orally with tranylcypromine produced a moderate rise in blood-pressure which was sustained for 2-4 hours, enabling patients to walk about without symptoms of orthostatic hypotension. Measurement of circulating adrenaline and noradrenaline during therapy suggested that release of noradrenaline caused the pressor response. In three patients there has been a pronounced improvement for 8, 20, and 30 months. In a further patient, therapy has been successful in treating the orthostatic hypotension, although his mobility has been restricted by cerebellar ataxia. In one patient a confusional state developed during treatment and therapy was stopped. The only patient in whom the drugs did not produce a pressor response had orthostatic hypotension with failure of noradrenaline release. It is suggested that the pressor response to a M.A.O.I. and tyramine should be examined in patients with neurogenic orthostatic hypotension and that this treatment should be tried in those who respond.

**AB-3000-77**

The Role of Arterial Baroreceptors in the Regulation of Arterial Pressure in Conscious Dogs — McRitchie RJ, Vatner SF (New England Regional Primate Research Center, Southboro, Massachusetts 01772), Heyndrickx GR, Braunwald E — *Circulation Research* 39: 666-670 (Nov) 1976*

To elucidate the role of arterial baroreceptors in the acute regulation of arterial pressure in the conscious animal, arterial pressure was lowered and raised in intact, conscious dogs, and in dogs after bilateral section of both carotid sinuses and aortic nerves (total arterial baroreceptor denervation, TABD). Pressure was altered by intravenous bolus injections and continuous infusions of nitroglycerin and methoxamine and also by hemorrhage. TABD resulted in a change in peak mean arterial pressure 2-4 times as great as that seen in intact dogs following injection of nitroglycerin or methoxamine. However, when the time taken for the arterial pressure disturbance to return to control levels, as well as the absolute change in arterial pressure, was considered (the pressure-time product), responses of dogs with TABD were far greater for nitroglycerin (7-9 times that seen in intact dogs) and methoxamine (11-15 times). Arterial pressure responses of dogs with selective section of the carotid sinus nerves were intermediate but closer to those of intact dogs than to dogs with TABD. With infusion of drugs or following hemorrhage, responses of mean arterial pressure were 3- to 5-fold greater in dogs with TABD than in intact dogs, indicating that the static open loop gain of the arterial baroreceptor system ranged from 2 to 4.

**AB-3001-77**

Depression and Enhancement of Baroreceptor Pressor Response in Cats After Intracerebroventricular Injection of Noradrenergic Blocking Agents. Dependence on Supracollicular Areas of the Brain — Tadepalli AS, Mills E (Department of Physiology and Pharmacology, Duke University Medical Center, Durham, North Carolina 27710), Schanberg SM — *Circulation Research* 39: 724-730 (Nov) 1976*

The α-adrenergic blocking drugs, phentolamine and Hydergine, both act centrally at different sites to depress and enhance the pressor and sympathetic nerve response to decreased baroreceptor afferent input in anesthetized cats. Depression of the rise in blood pressure and sympathetic nerve discharge during bilateral carotid occlusion (BCO) followed injection of the agents into the 4th cerebral ventricle when the brain was intact but not when connections were interrupted at the midcollicular level by transection or lesion. Enhancement of responses occurred when drug distribution was confined to the brain rostral to the midcollicular level via injection into the 3rd cerebral ventricle with the cerebral aqueduct cannulated. Both agents decreased resting blood pressure and Hydergine decreased heart rate in intact and decerebrate preparations but not in 3rd ventricle-cerebral aqueduct experiments. We found that pretreatment with the noradrenergic precursor, L-dopa consistently prevented depression by phentolamine but was less effective against Hydergine. The results indicate that mechanisms which enhance and suppress the baroreceptor pressor response are normally operative in anesthetized cats and, furthermore, that neural pathways mediating the effects are ones connecting the caudal brainstem with supracollicular levels of the brain. It is further suggested that the pathways may be noradrenergic.

**AB-3002-77**

Management of Concomitant Occlusive Disease of the Carotid and Coronary Arteries — Urschel HC (Department of Thoracic and Cardiovascular Surgery, University of Texas Health Science Center, Dallas, Texas), Razzuk MA, Gardner MA — *J Thorac Cardiovasc Surg* 72: 829-834 (Dec) 1976*

With the advent of direct coronary artery revascularization, the high mortality rate from cardiac disease associated with carotid endarterectomy can be favorably altered by simultaneous or staged revascularization for combined lesions. The choice for combined or sequential procedures is...
determined by the severity of the disease both clinically and anatomically in each system. Review of 32 patients with both severe coronary and carotid occlusive disease established that selective surgical intervention has been successful, with no deaths and only minimal morbidity. Simultaneous revascularization was carried out in 8 patients with preinfarctional angina, significant left main lesion or triple vessel disease producing a functional lesion of the left main coronary artery, and tight carotid lesion. Staged operations were performed in the remaining 24 patients. Priority of staging was determined by the extent of disease in each system.

**AB-3003-77**

**Use of the Holter Electrocardiographic Monitor in the Diagnosis of Transient Ischemic Attacks** — Levin EB (330 Park Avenue, Laguna Beach, California 92651) — *J Am Geriatr Soc* 24: 516-521 (Nov) 1976

The diagnosis of transient ischemic attacks usually is based on an accurate history and physical examination (with the finding of carotid bruits), a complete neurologic examination, a brain scan, an encephalogram and an angiogram. Recently the Holter technique for continuous 24-hour electrocardiographic monitoring has been used as a diagnostic aid in these problem cases. Severe bradycardia, sick sinus syndrome, tachy-brady syndrome, recurrent tachycardia and heart block have been found to be the cause of the central-nervous-system symptoms in aged atherosclerotic patients. Correction with anti-arrhythmia drugs and pacemakers, with or without carotid endarterectomy, has been highly successful. Data are presented on 204 patients tested by Holter monitoring over a 2.5-year period in a small community hospital; 6 cases are illustrated in detail. The Holter monitor is a valuable tool in evaluating the patients with cerebrovascular insufficiency.

**AB-3004-77**

**Computerised Axial Tomography in Patients With Severe Migraine: A Preliminary Report** — Hungerford GD, du Boulay GH (The National Hospital, Queen Square, London WC1N 3BG, England), Zilka KJ — *J Neurol Neurosurg Psychiatry* 39: 990-994 (Oct) 1976

Patients suffering from severe migraine, usually for many years, have been examined by the EMI scanner between attacks. Judged by criteria validated originally by comparison with pneumoencephalography, about half of the patients showed evidence of cerebral atrophy. Perhaps of more significance than generalised atrophy was the frequency of areas of focal atrophy and of evidence of infarction.

**AB-3005-77**

**Autoregulation of Cerebral Blood Flow During Controlled Hypotension in Baboons** — Fitch W (University Department of Anesthesia, Glasgow Royal Infirmary, Glasgow G4 OSF, Scotland), Ferguson GG, Sengupta D, Garibi J, Harper AM — *J Neurol Neurosurg Psychiatry* 39: 1014-1022 (Oct) 1976

The effect of graded, progressive hypotension on the autoregulation of cerebral blood flow was studied in anaesthetised baboons. Progressive hypotension was produced over a period of four to five hours, either by graded haemorrhage or by the administration of increasing concentrations of hypotensive drugs. During haemorrhagic hypotension autoregulation was maintained until the mean arterial pressure had decreased to 65% of its baseline value, below which cerebral blood flow was pressure passive. In those animals subjected to drug-induced hypotension, autoregulation persisted to lower levels of mean arterial pressure (35-40% of baseline). It is postulated that under conditions of haemorrhagic hypotension, constriction of the extraparenchymal cerebral vessels in response to sympathetic stimulation decreases the possible range of autoregulation in the anaesthetised baboon.

**AB-3006-77**

**Intracranial Arteriovenous Malformations. Observations After Experience With Computerised Tomography** — Hayward RD (Department of Neurosurgery, National Hospital for Nervous Diseases, Queen Square, London WC1, England) — *J Neurol Neurosurg Psychiatry* 39: 1027-1033 (Oct) 1976

Thirty-six patients with angiographically confirmed intracranial arteriovenous malformations have had computerised tomographic scans performed as part of their investigation. This study demonstrates the incidence of haematoma formation after haemorrhage, the frequency of calcification not visible on plain radiographs, and describes the possible causes for a complicating hydrocephalus. Further information has been gained from the intravenous injection of sodium iothalamate (Conray 420), with comparison of the scans taken before and after the injection.

**AB-3007-77**

**Cerebrovascular Permeability Changes Following Experimental Cerebral Angiography. A Light- and Electron-Microscopic Study** — Sterrett PR (Department of Anatomy, Texas Technical University School of Medicine, Lubbock, Texas 79409), Bradley IM, Kitten GT, Janssen HF, Holloway LS — *J Neurol Sci* 30: 385-403 (Dec) 1976

Morphological alterations of the cerebral vasculature as related to the permeability of plasma proteins and angiographic contrast media following unilateral cerebral angiography were studied. Both Evans blue albumin and horseradish peroxidase were employed as protein tracers for light and electron microscopy investigation respectively. Grey matter regions of the cerebral cortex, cerebellum, corpus striatum, hippocampus and midbrain showed the most extensive and consistent leakage of these protein tracers. The most extensive penetration of EBA was noted at 1 hr following cerebral angiography as compared to the 5 or 30 min sample times. Permeability changes were noted in small venules and arterioles as well as capillaries. The extent of permeability, however, was appreciably greater in the capillaries as evidenced by rapid extravasation of HRP into the surrounding neuropil extracellular spaces. The glial basement membrane surrounding the perivascular spaces of small venules and arterioles precluded rapid penetration of

*Authors' abstract*
HRP into the neuropil interstitium. Opening of the tight junctions between the endothelial cells was primarily responsible for the extravasation of HRP in all vessel types. Furthermore, it is our opinion that the hyperosmolar nature of the contrast medium is responsible for opening of these tight junctions.

**AB-3008-77**

**Cardiac Myxoma. A Report of Eight Cases** — Kyllönen KEJ (Department of Thoracic and Cardiovascular Surgery, University Central Hospital, 00290 Helsinki 29, Finland), Tala P, Merikallio E, Kala R — *J Cardiovasc Surg (Torino)* 17: 392-397 (Sep-Oct) 1976

In a series of eight patients with cardiac myxoma, four had experienced cerebral embolization before diagnosis (one 14 years before). One patient presented with a myxomatous embolus in the common iliac artery. The patients were felt to have mitral valve disease until the tumor was palpated at surgery. Three of the cases were a mother and two sons, and other members of the same family also had cardiac myxomata. Cardioangiography gave both false-negative and false-positive results. Echocardiography was accurate in both cases where it was used. One myxoma had destroyed the tricuspid valve. In young women with cerebral embolization, this diagnosis should be fully considered.

**AB-3009-77**

**Prevalence of Cerebral Hemorrhage and Thrombosis in Japan: Study of the Major Causes of Death** — Netsky MG (Department of Pathology, Vanderbilt University School of Medicine, Nashville, Tennessee 37232), Miyaji T — *J Chron Dis* 29: 711-721 (Nov) 1976

Japanese death certificates have given rise to the belief that 25% of all deaths are due to cerebrovascular disease, predominantly hemorrhage. Data are presented which show a major diagnostic discrepancy between death certificates and autopsies. Autopsies done throughout Japan show that malignant neoplasms are the major killer. The autopsy population is not representative in respect to age and sex. The Atomic Bomb Casualty Commission has done autopsies on a more representative population. Malignant neoplasms are responsible for death in 30.4%, all vascular lesions of the CNS in 6.1%, and cerebral hemorrhage in 1.6%. The death rate from cerebrovascular disease in Japan is similar to that in the United States, and cerebral hemorrhage is commoner than cerebral hemorrhage. The reasons for overreporting are cultural.

**AB-3010-77**

**Atherosclerotic Human Carotid Sinus** — Hasleton P (Department of Pathology, University of Liverpool, Liverpool, England), Heath D — *Cardiology* 61 (Suppl 1): 46-50, 1976

Postmortem histopathologic investigation was carried out on the carotid sinuses of 38 people. The carotid bifurcation was dissected and intimal and medial thickness were determined in the carotid sinus, internal, external, and common carotid. The percent occlusion of the carotid sinus by atheroma was determined. Strips of the sinus wall were tested for distensibility. With increasing age, there was an increase in luminal occlusion and a decrease in distensibility. The authors conclude that the efficiency of the sinus as a baroreceptor may be impaired as it ages.

**AB-3011-77**


The blood pressure responses to a tilt-table test and to the Valsalva maneuver were measured in patients with and without cerebrovascular disease. Orthostatic hypotension was more evident in those with cerebrovascular disease, and it increased with age. Vasoconstrictor and cardioacceleratory responses both tended to be abnormal in this group, whether the ischemia was in the carotid or the verteobasilar distribution. In five patients, circulatory responses were absent, but blood pressure on tilting fell no lower than in those with functioning reflexes. Patients with Parkinsonism and Huntington's chorea had as much orthostatic hypotension as had those with cerebrovascular disease. The author feels that the carotid sinus-brainstem reflex is not the only mechanism preventing hypotension on the assuming of erect posture.

**AB-3012-77**

**Non-Bacterial Thrombotic Endocarditis. Clinicopathologic Correlations** — Deppisch LM (Department of Laboratories, The Youngstown Hospital Association, Youngstown, Ohio 44501), Fayemi AO — *Am Heart J* 92: 723-729 (Dec) 1976

Nonbacterial thrombotic endocarditis (NBTE) is the presence of a bland fibrin-platelet vegetation occurring on a cardiac valve, without valve destruction or the presence of microorganisms. Fifty-five cases were found, representing an incidence of 1.6% of adult autopsies. Seventy-eight percent had one or more malignancies, most commonly adenocarcinoma, especially pancreatic. NBTE was rarely diagnosed before death, though 31 patients had cardiac murmurs. Infarcts were found most commonly in the spleen and kidney. Almost half of the brains examined showed hemorrhage or infarction. Twenty-one hearts showed arterial thrombi, with myocardial infarction in five. Disseminated intravascular coagulation had been present in 18.5% of cases.

**AB-3013-77**

**Tumorous Aneurysms** — Sarwar M (Section of Neuroradiology, University of Texas Medical Branch, Galveston, Texas 77550), Batnitzky S, Schechter MM — *Neuroradiology* 12: 79-97 (Nov 11) 1976*

Intracranial aneurysms commonly present with subarachnoid hemorrhage. Rarely, they may attain a large size and manifest exclusively as intracranial space-taking lesions. We have collected a series of 48 cases of large aneurysms; 47 of them have been previously unpublished. To our knowledge, this is the largest series on this subject.

**AB-3014-77**

**Carotid and Vertebral Vascular Changes With Primary Calcium Oxalosis** — Sunday MT, Haughton VM (Depart-
Primary calcium oxalosis is a rare, inherited metabolic disease that is associated with calcium oxalate deposits in both renal and extrarenal tissues. An unusual angiographic appearance results from subintimal oxalate crystal deposition.

Items of Interest

Review of the Measurement of Normal Spinal Cord Blood Flow — Sandler AN (Medical Sciences Building, University of Toronto, Toronto, Ontario M5S 1A8, Canada), Tator CH — Brain Res 118: 181-198 (Dec 17) 1976

Spinal Cord Vascularity. IV. The Spinal Cord Arteries in the Rat — Tveten L (Institute of Pathology, Section of Neuropathology, University of Oslo, Rikshospitalet, Oslo, Norway) — Acta Radiol [Diagn] (Stockh) 17: 385-404 (Jul) 1976

Spinal Cord Vascularity. V. The Venous Drainage of the Spinal Cord in the Rat — Tveten L (Institute of Pathology, Section of Neuropathology, University of Oslo, Rikshospitalet, Oslo, Norway) — Acta Radiol [Diagn] (Stockh) 17: 653-662 (Sep) 1976

Hypertension in Childhood: A Review — McLain LG (Colorado Department of Health, 4210 East 11th Avenue, Denver, Colorado 80220) — Am Heart J 92: 634-647 (Nov) 1976

Idiopathic Orthostatic Hypotension: Clinical Spectrum and Prognosis — Schirger A (Division of Cardiovascular Diseases, Mayo Clinic, Rochester, Minnesota 55901), Thomas JE — Cardiology 61 (Suppl 1): 144-149, 1976

Orthostatic Hypotension in Neurological Disease — Johnson RH (University Department of Neurology, Institute of Neurological Sciences, Southern General Hospital, Glasgow, Scotland) — Cardiology 61 (Suppl 1): 150-167, 1976

Role of Hypertension in Atherosclerosis and Cardiovascular Disease — Hollander W (Department of Medicine and Biochemistry, Boston University School of Medicine, Boston, Massachusetts 02118) — Am J Cardiol 38: 786-800 (Nov 23) 1976

The Sick Sinus Syndrome — Scarpa WJ (Cardiac Catheterization Laboratory, The Long Island College Hospital, Brooklyn, New York 11201) — Am Heart J 92: 648-660 (Nov) 1976


General Classification System for Hemorrhagic and Thrombotic Disorders — Lechner K (Internal Medizinische Universitätsklinik, Vienna, Austria), Barrett DA, Veltkamp JJ — Thrombos Haemostas (Stuttg) 36: 251-262 (Aug 31) 1976

Proposed classification based on World Health Organization (WHO) coding system.
Abstracts

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