CASE 1

Submitted by : Dr. Kenneth A. Osterberg, University of Minnesota, The Medical School, Minneapolis, Minn.

Ref. No. U.H. #990164, A62-477

The patient, an elderly white female, noted the onset of generalized seizures six years prior to death. Despite Dilantin therapy the seizures were poorly controlled and occurred on an average of once each week. She died at 74 years of age from causes unrelated to her central nervous system disorder.

At autopsy a tough, partly calcified, rounded mass 4 cm. in diameter was found attached to the dura of the right anterior temporal fossa.

CASE 2

Submitted by: Dr. Irwin Feigin, New York University Medical Center, New York, N. Y.

This 26-year-old man died two years after the onset of symptoms referable to a neoplasm in the thorax and neck. This neoplasm was diagnosed by biopsy, as a bronchogenic carcinoma. He was treated by radiation and Myleran.

There were no neurological abnormalities until three weeks before death, when the patient noted dizziness and visual difficulties. The terminal course was characterized by headache, dizziness, increasing confusion and disorientation. Examination revealed bilateral papilledema, left homonymous hemianopsia, left hemiparesis and a positive Babinski sign on the left. A right carotid angiogram indicated the presence of a right cerebral mass.

At autopsy, neoplastic tissue was present in both lungs and in the superior mediastinum, visceral pericardium, and in the right supraclavicular area. This tissue was interpreted microscopically as bronchogenic carcinoma.

There was a well demarcated tumor nodule 9x4.5x4.5 cm. in size in the right parietal area of the brain, impinging on the right lateral ventricle. The tumor tissue was soft, friable, granular, dark red in color and largely hemorrhagic and necrotic. The surrounding tissues were edematous, the gyri were flattened, and herniations of the right hippocampal gyri were observed.

CASE 3

Dr Newcastle

Submitted by: ~~Dr. Mary I. Tom~~, University of Toronto, Toronto, Canada.

NP: No: 391-62

A baby boy of 19 months, who had a mild upper respiratory infection, choked on a piece of candy, vomited repeatedly for 15 minutes and became deeply unconscious. He recovered consciousness shortly after admission and was discharged from hospital four days later with no residual symptoms.

Three months later he was readmitted semiconscious with twitching of the right side of his face and right arm and leg. Both pupils were widely dilated and reacted sluggishly to light and accommodation. He appeared under-developed and his mother stated he could not walk, sit or crawl. Cerebrospinal fluid was clear and of normal pressure. He gradually became unconscious, though his right sided twitchings were no longer apparent. He died two months later without regaining consciousness.

There were five children in this family, born in the following order:

(1) A girl, born in 1941, who is alive and well. The present father is her step-father.

(2) A boy, born in 1951, who developed an upper respiratory infection, pneumonia and generalized convulsions, and died at 14 months of age.

(3) A boy, born in 1952, who developed choreiform twitchings in all limbs and died one month later aged 24 months.

(4) A boy, born in 1953, who is alive and well.

(5) The present case, a boy, born in 1960.

On gross inspection of the brain there was slight thickening of the leptomeninges in the interpeduncular fossa and slight symmetrical dilatation of the lateral and third ventricles.

CASE 4

Submitted by: Dr. Matthew T. Moore U. of P. Graduate School Medicine and
Dr. Juan R. Ravens Bowman-Gray School of Medicine

A 56-year-old white male, never ill in his life, suddenly developed a confusional state, loss of memory, complete disorientation for time and place with a retrocession to a period of his life twenty to thirty years earlier. Neurological examination showed unequal pupils which reacted sluggishly to light; other than this the examination was entirely normal. Blood pressure: systolic 140, diastolic 70; pulse 76; weight 132 pounds. He was admitted to a psychiatric hospital with the admission diagnosis of an organic cerebral disorder. X-ray of the skull was reported as "Paget's disease." Laboratory studies: spinal fluid protein 86 mg. per cent; acid phosphatase 16.8; alkaline phosphatase 31.5; CSF pressure 135 mm. On the tenth day there developed two diopters of papilledema in the right disk, enlarged right pupil fixed to light stimulation, mild supranuclear weakness left side of the face, hyperreflexia throughout - greater on the left. Angiography was "normal." Air study revealed "dilatation of the lateral ventricles with no evidence of a space-occupying lesion." EEG showed " an abnormal EEG." He died quite suddenly, 33 days after onset of symptoms. At autopsy the skull was spongy in appearance and had a rarified structure. Thr brain weighed 1145 grams. Involving both lateral walls of the third ventricle there was a diffuse, pinkish-gray, granular, well-vascularized tumor mass which invaded the thalamus, subthalamic nuclei, red nuclei, substantia nigra and the internal portion of the pars basalis of the cerebral peduncles. There was a similar tumor mass extending from the inferior portion of the splenium of the carpus callosum to the middle portion of the hippocampal formation involving the floor of the occipital horn of the lateral ventricle, the inferior surface of the nucleus lenticularis and part of the internal capsule. The spinal cord was normal.

CASE 5

Submitted by: Dr. Richard Lindenberg, Director of Neuropathology and Legal Medicine, State of Maryland Department of Mental Hygiene.

Ref. No.: CAL. 632/61

The patient, a three month old colored baby, was dead on arrival at the hospital. The mother reported that at night she had been upset due to an argument with her husband. Since the baby had been crying continuously she became so nervous that she slapped the baby and made him fall off the bed. The next morning she noticed that the baby was not moving and took him to the hospital.

At autopsy there was a thick fresh hematoma in the galea of the convexity extending from the occipital to the frontal region. Both parietal bones were fractured. Over the right cerebral hemisphere there was a subdural accumulation of 2 cc. of fresh blood. Over the left parietal and posterior temporal lobe there was dark subarachnoid hemorrhage. On coronal sections the cerebrum showed numerous cysts; of the white matter which contained no blood. These cysts were located in both first frontal convolutions extending from the frontal pole to the anterior central convolution, in several convolutions of both orbital lobes, and in both anterior temporal poles extending posteriorly into the first and second temporal convolutions on the right. The attached photograph depicts some of these cysts at the level of the tuber cinereum. The cause of death was aspiration of vomitus due to craniocerebral injury. The histologic examination of the galeal hemorrhage and of the skull fracture showed an age of not older than 24 hours and was, therefore, consistent with the report given by the mother.

Question: What is the nature of the cysts?

CASE 6

Submitted by: Dr. R. A. Clasen, Presbyterian-St. Luke's Hospital, Chicago, Ill.

Ref. No.: A62-486

A white female patient was first admitted in 1959, at the age of 4 years, because of abdominal enlargement for 4 months. At operation, a tumor of the right kidney measuring 10x8x8 cm. was removed. This was diagnosed as a nephroblastoma. One brother, age 13, and the mother had cafe au lait spots with tumors, and another brother, age 8, had been operated upon for a neurofibroma of the chest. This sibling also had headaches and an abnormal EEG.

The patient in January 1962 complained of headaches for one month. Neurologic examination, including a spinal tap, was normal. The EEG, was abnormally slow with atypical sleep frequencies. Numerous cafe au lait spots were noted.

In March 1962, the patient showed ataxia and papilledema. A spinal tap revealed clear colorless fluid, pressure 300 mm.; protein 39mg.%; no cells. A skull plate revealed an abnormal sella turcica. The child was thought to have an optic glioma and radiation therapy was begun. Following this, her visual acuity deteriorated and on April 23, a right frontal craniotomy was performed, revealing a dilated third ventricle and compression of the optic nerves.

She was readmitted on Aug. 31, 1962 at age 7, in a lethargic state. A ventriculogram revealed gross dilatation of both lateral ventricles and the third ventricle. Dye injected into the lateral ventricle was not recovered from the lumbar space. She began to have convulsions on Sept. 16 and on Sept. 19 a posterior fossa exploration was performed. The left cerebellar hemisphere was increased in size and very firm, with blunt folia. A portion of this hemisphere was resected. The material submitted is from this biopsy, stained by the hematoxylin-eosin and Masson trichrome techniques. The patient deteriorated and died on the 35th postoperative day.

CASE 7

Submitted by: Dr. Peter W. Lampert, Armed Forces Institute of Pathology, Washington, D.C.

Ref. No.: AFIP Accession 919265

In 1945 a then 19-year-old man was hospitalized for treatment of a brain tumor which began to manifest itself 2 years before by a left facial palsy and 3 months prior to admission by increased frontal headaches, blurring of vision and personality changes. A biopsy of the deep seated tumor in the "fronto-temporal" region was diagnosed as "malignant glioma of the astrocytic series (astroblastoma)". Resection of the tumor was considered inadvisable.

During 5 weeks in January 1946 he received a total of 6000r to the right temporal region, 3000r to the vertex, 3000r to the right occipital, and 2500r to the left temporal region. (Daily dose 500r, field size 10x10 cm. KV 1000; Filter W3; HVL Pb 3.6; MA 3; TSD 70; r/min. air 80). The total tumor dose was calculated as 8320r; the total surface radiation dose 14500r.

The patient survived until April 1959. Autopsy showed cystic degeneration of the white matter throughout the right cerebral hemisphere with preservation of the cortex. The slides are from the right parietal lobe.

CASE 8

Submitted by: Richard L. Davis, LCDR, MC, USN, Armed Forces Institute of Pathology, Washington, D.C.

Ref. No.: NP2

The patient was a Caucasian male, the product of a normal pregnancy and delivery, and had been apparently normal until 3-1/2 years of age, except that he was "slower" than his siblings. He walked alone at 13 months, was speaking words at 9 months and sentences by the 2nd year.

At 3-1/2 years he had a seizure and had 15 to 20 within the next year. At 4-1/2 years he was walking only with aid, his balance was poor and he was afraid of falling. He had difficulty speaking sentences, "blocked" on some words and was barely intelligible. He was taking Dilantin and phenobarbital for the seizures.

Physical examination showed a child with an intention tremor, "drooling", and "who had signs of cerebellar ataxia." No pyramidal tract signs were observed; cogwheeling was present. The right pupil was fixed but reacted consensually; the left reacted directly but not consensually. There "seemed to be some primary optic atrophy and a question of gaze palsy."

EEG showed "diffuse seizure activity with abnormal slow background activity and the absence of sleep spindles". A year (5-12 years) later it was more abnormal with multiple seizure foci mainly in the left hemisphere and maximal in the parietal area.

Pneumoencephalogram showed slight enlargement of the ventricles,

The child was tried on a number of drugs, continued his regression, developed pyramidal tract signs and myoclonic spasms, was institutionalized and died at the age of 8-1/2 years.

Subsequently a sibling has developed similar symptoms.

CASE 9

Submitted by: Dr. A. Koestner, The Ohio State University, Department of Veterinary Pathology, Columbus, Ohio.

Ref. No.: D1312-1

The section is from the brain of a 13-year-old Boston Terrier which had a sudden onset of depression, anorexia and impairment of motion. When examined 24 hours later the animal was prostrate and unable to stand. Harsh lung sounds, moist rales, a serous nasal discharge and diarrhea were noted. Mammary tumors diagnosed as adenocarcinoma were present but no pulmonary metastases were demonstrated radiographically. BUN, hemogram and EKG did not add to the diagnosis. The tentative clinical diagnosis was CVA. The dog died 5 hours after admission to the University Veterinary Hospital. Post mortem examination of the brain revealed a spherical, plum-colored nodule in the right cerebral hemisphere extending from the tip of the occipital lobe 2 cm. cranially compressing the lateral ventricle and the cortex. The ventricle anterior to the nodule and the contralateral ventricle were markedly distended (hydrocephalus). The nodule appeared well demarcated.

CASE 10

Submitted by: Drs. Helena E. Riggs and Lucy B. Rorke, Philadelphia General Hospital, Philadelphia, Pa.

Ref. No.: N.P. 61-447

A colored male, age 76, was admitted to the hospital after a fall down stairs. Four months before he had a stroke involving the right side from which he made almost complete recovery. He died one month after hospitalization. There were fractures of the roof of the orbit bilaterally but no traumatic lesions of the brain or cord. The brain presented mild convolutional atrophy with meningeal thickening. The basal vessels showed diffuse atheromatous change without narrowing of the lumen. The anterior horns of the ventricles were dilated. Small, cystic vascular lesions were present in the left putamen and in the right globus pallidus and posterior limb of the capsule.

The striking feature, however, was the presence of multiple, poorly circumscribed lesions of the white matter. These appeared as pinkish plaques with occasionally a necrotic center. Some appeared depressed. They measured from 0.5 to 1 cm. in individual size and were localized to the white matter above the callosum and extended from the prefrontal region through the occipital lobe. No similar lesions were found elsewhere in the brain.

CASE 11

Submitted by: Dr. John Moossy, Louisiana State University, New Orleans, La.

Ref. No.: A-59-705 - N-687

A 7 year old colored female admitted on March 5, 1959 with anorexia, abdominal pain, frontal headache, insomnia, generalized weakness, polydipsia and recurrent vomiting since November 1958. Estimated weight loss, 30 pounds. Birth, neonatal period and development were normal. Present weight 29 pounds; height 46-1/2 inches. Head circumference 40 cm. Emaciated, with loss of subcutaneous fat. Head, chest, lungs, heart, abdomen, lymphatic system, musculo-skeletal system, external genitalis and rectum were normal. Neurological: Alert, oriented. Cranial nerves: intact. Normal fundi. V.A. 20/200 OS 20/100. Motor - normal, except generalized muscle wasting. Sensory examination and cerebellar tests, normal. Reflexes, normal.

She maintained her weight between 28-32 pounds. She received fluids, tube feedings, and soft oral diet with occasional vomiting. On March 6, during fasting state she convulsed. Blood sugar was 11 mg.%. Average urinary output was 800-1400 per 24 hours. On April 13, she developed bilateral VIth nerve palsies, right pupil fixed to light and bilateral papilledema. Ventriculography and surgery on April 17. Postoperatively she remained alert; EOM palsies persisted. Irradiation begun on May 1 and continued until the day of her death for a total dose of 2250r. She became comatose on May 11, 1959 and died within two hours.

Laboratory: CBC and urine normal. Fishberg: maximum urinary concentration of 1.006. X-rays: hands for bone age normal. Spot films of sella normal. Skull films showed separation of sutures. Ventriculogram: dilated nondisplaced lateral ventricles. Aqueduct and 3rd and 4th ventricles not visualized.

Gross: On coronal section an irregularly shaped, multilobular hemorrhagic mass occupied the 3rd ventricle and was intimately adherent to the walls of the hypothalamus. Total measurement approximately 2.5x3.0 cm. Choroid plexuses and ependyma were stained a pale tan color.

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CASE 12

Submitted by: Dr. Ellsworth C. Alvord, Jr., University of Washington, Seattle, Washington.

Ref. No. : UWH A-60-93 Np 160

This 32 year old white male had a head injury in a mine accident in September 1948. He was unconscious and in shock immediately after the injury. Several days later examination showed ecchymosis about both orbits, bilateral subconjunctival hemorrhage, old clotted blood in right external auditory canal and right nostril. There was bilateral VIth nerve palsy, slight facial weakness on the left, and impaired hearing on the right. Spinal tap showed 170 mm. CSF pressure, xanthochromic fluid and total protein of 150 mg.%. X-rays of the skull showed a fracture, possibly extending into the right orbit. He developed proptosis of the right eye, associated with bruit, and subsequently the right common carotid artery was ligated, following which a transient left bruit developed.

In June 1956 he complained of a pounding sensation synchronous with the pulse, which he heard in his right ear. The proptosis of the right eye remained unchanged over the last 5 years, he had double vision at times, impaired hearing on the right, and anosmia. There was enlargement of the orbital veins in upper and lower lids.

In February 1957 right carotid arteriogram showed complete occlusion of the right internal carotid artery, but the dye in the right external carotid artery went through the orbital-ophthalmic system to enter the fistual in the right cavernous sinus. The right external carotid artery was ligated, but a retrograde injection of dye down the common carotid filled the right vertebral artery and showed a massively enlarged posterior communicating artery feeding into the fistula in the right cavernous sinus.

On October 27, 1960 ligation of the intracranial portion of the right internal carotid and ophthalamic arteries was performed. The patient did not regain consciousness. Pupils were dilated and fixed and there were bilateral Babinski signs. He developed decerebrate posturing, progressively deteriorated, and expired the following morning.

At autopsy there was a massive right intracerebral hemorrhage. The right middle cerebral artery was completely occluded, thin and white, resembling a small string for 2 cm. distal to the basal penetrating branches. The sections are of the occluded artery stained by H&E and elastica-Van Gieson.

CASE 13

Submitted by: Dr. H. J. Peters, Medical College of Georgia, Augusta, Georgia.

Ref. No.: FA-141-61.

A 42 year old white male was admitted to the V.A. Hospital, Augusta, Georgia, 26 days prior to his death. The past history indicated that over a 2 month period , prior to the admission, he had exhibited slight mental aberrations and, on occasion, had black-out spells. When these signs and symptoms first appeared, the patient was seen by a neurosurgeon. An arteriogram failed to reveal any definite lesion at that time. His mental difficulties increased, making it necessary for him to be admitted to the State Mental Hospital. During that hospitalization he first was conscious and cooperative, but later developed a left-sided spasticity with a left facial weakness, focal seizures involving the left lower extremity only, and over the weeks slowly dropped into a severe coma. The past history was essentially non-contributory, but his divorced wife stated that he had behaved erratically for a period of 10 years prior to his death.

Diagnostic studies, many of which were repeated several times, finally suggested the presence of a neoplasm in the region of the corpus callosum. An exploratory craniotomy was planned, but the patient developed cardiac arrest during induction of the anesthesia.

The gross examination of the brain, which weighed 1570 gms., revealed marked edema with pressure marks. There was slight asymmetry of the mammillary bodies. On mid-sagittal section one recognized marked increase in the anterior portion of the corpus callosum (approximately 1.5 cm. in thickness at the widest point) due to a diffuse gray velvety neoplasm. The process spread slightly laterally into both hemispheres and though grossly not recognized, microscopically it involved the entire brain stem down to the level of the pons and medulla. A complete autopsy was performed, but a similar process was not noted in any of the other organs of the body.