has lost ten to twelve pounds in the past three months. P. E.—Fairly developed and nourished. Heart and lungs negative. Slight tenderness over lower spine. Abdomen lax, tympanitic, no masses or tenderness. No organs felt. Genitals negative. Considerable tenderness over great trochanter on the right. Reflexes normal. Prostate soft, slightly large. Blood pressure 180 mm. systolic, 100 mm. diastolic. X-rays of genito-urinary tract negative. Urine very bloody, sediment showed nothing but blood. Soft catheter passed easily to the bladder withdrawing about eight ounces bloody urine.

Catheter drainage for 48 hours with cessation of hematuria.

On October 10 cystoscopy under local anesthesia was attempted but owing to marked irritability of the urethra nothing was accomplished.

On October 14, the urine meantime being clear, spinal anesthesia was given for another cystoscopic examination, in order to determine the source of bleeding. Anesthesia was given easily with the patient sitting on a flat table. The patient was then lifted to an operating table in order that he might be put in the lithotomy position. After this move it was noted that the right femur was fractured in its upper third, a mishap which had occurred without the knowledge of the patient or of those in attendance. In spite of this and in the belief that thorough investigation was important, cystoscopy was performed and the ureters catheterized. There was a normal jet from each kidney. The sediment of the right urine (except for a little blood) was entirely negative and the phthalein test (intravenous) showed an appearance time of six minutes with a function of 40%. The sediment of the left urine showed much blood and a few white cells. Phthalein appeared in six minutes with a function of 35%. The exigencies of the case made a pyelogram at that time seem unwise. Subsequent investigation by x-ray showed that almost the entire right femur was replaced by new growth.

The patient was transferred to the West Surgical service where after some deliberation a hip-joint amputation was performed from which the patient made a good recovery. Pathological examination showed almost the entire shaft of the femur to be invaded by necrotic new growth, which on microscopic examination proved to be adenocarcinoma.

In this case the presence of sudden, unprovoked and "total" hematuria, together with some loss of weight in a man past middle life naturally aroused a suspicion of malignant disease, but whether of kidney or bladder could not be told without cystoscopy. The subjective and objective leg symptoms did not,

however, occur to anyone as being due to a possible metastasis.

The fracture of the leg while absolutely unavoidable was none the less a most unfortunate affair, and one which might very properly put the surgeon in an awkward position. While one would undoubtedly prefer to make his diagnoses in a different way, this accident furnished the diagnosis at once, not only as to malignant disease, but also localized it to the kidney as malignant renal tumors seem to have a predilection for the long bones.

REPORT OF A CASE OF ACUTE EN- CEPHALOMYELITIS WITH AUTOPSY.

By HOWARD OSGOOD, M.D., BUFFALO, N. Y.

THE following case of "encephalitis lethargica" is of interest because it was under continuous observation from onset until the fatal outcome, and because the diagnosis, obscure in the beginning, was corroborated by post-mortem examination.

The patient, male, aged 58, white, a broker, was seen for the first time at his home in vicinity of Boston on May 1, 1920.

History. Family History—Father died, cause unknown. Mother died of cancer. Patient has been married twice. One child by first wife is living and well. First wife divorced. Second wife living and well; no children. Past History—In early manhood, the patient went West for a short period for his health. He is said to have had "ambulatory typhoid" many years ago after his return from the West. Since then he has had no serious illness. He has not had influenza. He has taken very good care of his health, spending much of his leisure out of doors. During the past winter he has regularly frequented the gymnasium. For two years he has felt below par, without definite symptoms; circumstances of his life have not been very happy. He has not been troubled with headaches, colds or sore throat. No *cardio-respiratory* symptoms. Gastro-intestinal—For the past two years or so once or twice a month, he has had a sense of fulness immediately after eating, especially when tired at night, relieved by induced vomiting. Vomitus which is not increased in amount, consists of food just eaten. No pain or hematemesis. Unless he is careful of his diet, the symptoms are aggravated. For the past few weeks, this fulness and vomiting have occurred two or three times a week. He is habitually troubled with constipation and flatulence; bowels regulated by a mild laxative four to five times a week. No diarrhea; no bloody, tarry or clay-col-

ored stools. Genito-urinary—Micturition $\frac{D-4-5}{N-1}$. Nocturia for several years. No other symptoms referable to the genito-urinary tract. Questioning elicits no symptoms in the past referable to the *neuromuscular* system. He is, however, reticent by nature, and has worried a good deal about his health. For the past year he has shown a tendency to doze off in the evenings, and has gone to bed early. He has been under considerable strain from worry and long hours at his business for four or five months, and has been troubled with insomnia. Skin—Face and hands tanned from exposure; never any jaundice. Weight—Best, 185 pounds 25 years ago; present, 150 pounds, stripped. Habits—Rarely tea or coffee; rarely tobacco. No alcohol or drugs. Present Illness—The patient gives April 30 as date of onset. For several weeks preceding he had felt tired and dull. Two weeks previously the author chanced to be present at a small dinner with him. At that time, he appeared tired and pale and unusually quiet, jokingly apologizing to his hostess for his lack of conversation. About the same time he had remarked to a business associate at his usual lunching place that “he could go to sleep in his chair.”

On April 30, patient felt very tired at work and had no appetite. He came home in the evening feeling feverish. Was restless and vomited once or twice that night. He did not believe that he had had fever before the day of onset. He had considerable discomfort from gas in the bowels and complained of “deep breathing” at night which tired him. He stayed in bed the next day, eating very little. Vomited again three or four times without effort, vomitus chiefly bile. There was a slight nosebleed once after vomiting. No headache, abdominal pain, respiratory or genito-urinary symptoms.

Physical Examination, May 1, 1920—A well developed and nourished man lying quietly in bed, not appearing very ill, conscious and rational. Complaints of “gas in the bowels.” Hair iron gray and plentiful. Skin of face, neck and hands brown and weatherbeaten, rather sallow. Sinuses—No tenderness. Eyes—conjunctivae pale; no jaundice. External ocular movements normal, no nystagmus. Pupils round, right slightly larger than left, both react promptly to light. Nose—No obstruction or discharge. Teeth—Good. Tongue—Clean; protrudes in midline without tremor. Throat—Slight general redness. Tonsils—Negative. Lymphnodes—Cervical, epitrochlear and axillary not enlarged. Heart—Size normal; sounds rather faint. $A^2 > P^2$. No murmurs. Blood vessels not palpably sclerosed. Lungs negative throughout. Abdomen flat, soft, hypertympanic. Liver edge just felt on deep inspiration; not tender. Gall-bladder not felt, but some local voluntary rigidity; Spleen and kidneys not felt. No masses or tenderness.

Costo-vertebral angles negative to palpation. Genitalia not examined. Reflexes—Knee and ankle jerks active and equal. No Babinski. No neck sign. Skin, clear; no rose spots. Blood pressure $\frac{144}{80}$. Blood smear—Polymorphonuclear neutrophils, 60%; small lymphocytes, 28%; large lymphocytes, 8%; large mononuclears, 4%; eosinophiles, mast cells and myelocytes, 0; reds and platelets normal. Urine (morning specimen)—Amber, slightly cloudy. Acid, Sp. Gr. 1017. Alb. ? trace (heat). Sugar $\pm$ (Benedict). Diacetic and Bile—0. Sediment—Much thin mucoid, prostatic secretion. Many minute oblong crystals. Few cylindroids. One coarse granular cast seen. Few epithelial cells. No pus or blood. Stained smear negative.

Provisional diagnosis in absence of definite findings—A mild acute gastro-enteritis of unknown origin. Treatment—Castor oil, then milk of magnesia, soft solids and bed.

Course of Disease—During the next week the temperature ranged from 99 in the morning to 102 in the afternoon, subsiding to 99 on the afternoon of May 6. The patient showed a slight tendency to somnolence and complained of lack of appetite; several nosebleeds. Further physical examination disclosed a large, firm, non-tender prostate; no rigidity of neck. Otherwise there seemed to be an improvement. White count, 5,600. Blood culture, stool culture, Widal and blood Wassermann were all negative (Dr. F. B. Mallory's laboratory).

Acute retention of urine developed on May 7, with considerable spasmodic pain in bladder, relieved by morphia. He was seen in consultation by Dr. H. H. Crabtree and was removed to the New England Baptist Hospital where a suprapubic cystotomy was done under local anesthesia, preliminary to prostatectomy, the acute illness apparently having subsided. During the operation the patient evinced remarkably little reaction nervously. Before the operation, it was noted that the patient was a little deliberate in his gait, especially when turning, but at the time it was attributed to the effects of the morphia. From that time on, however, he became distinctly more dull.

After the operation there was almost complete suppression of urine for 36 hours, a rise of temperature, and great drowsiness, later followed by satisfactory diuresis. Blood pressure $\frac{145}{90}$. Urine—Cloudy, alkaline, very large trace of albumen (heat), no sugar or diacetic acid. Blood chemical examination (May 10)—Urea nitrogen 13.98 mgm. per 100 c.c.; non-protein nitrogen 41.5 mgm. per 100 c.c.; chlorides 497 mgm. per 100 c.c.

During the next few days the albumen diminished; no casts were seen. Irregular fever persisted, however, with pulse between 100-120; respiration 25. The patient was very drowsy at times during the day, lying semi-recumbent with little effort to change position. He complained of insomnia at night; his nurse re-

ported that he slept only in naps. There was obstinate distention, temporarily relieved by enemata and rectal tube. Phenolsulphonephthalein test (May 12)—Appearance time 13 min.; first hour, 17%; second hour, 25%; total 42%.

Daily notes are given below as they show the progress of the disease better than a summary. May 13—Not taking nourishment well. Patient has begun to have drenching sweats several times a day. Night nurse reports that he "jumps" frequently in his sleep. White count, 10,200. P. E.—Heart and lungs negative. Abdomen moderately distended; wound clean. On this day ptosis of left eyelid developed; no palsy of other ocular muscles or of face or tongue. Doubtful Babinski on left; slight weakness in lifting left leg from bed. Deep reflexes normal. Ophthalmoscopic examination, atropine dilation: right eye, disk sharp, vessels normal; retina negative as far as seen. Left eye, some refractive error distorts disk, which seems normal; retina negative.

May 14—Patient slightly delirious; breathing regular, 28 per minute, but almost hyperpnoeic in character, not periodic; intervals of tachypnoea. In addition to pareses noted before there is weakness of left frontalis muscle, expressionless face and drooping of lower jaw. Fine muscular twitchings in calves and biceps, almost fibrillary in character. Slowness and uncertainty of voluntary movements; slight bilateral ataxia in heel to shin and finger to nose tests. Questionable clonus on left. No Babinski. Fingers are held straight, and flexed at metacarpo-phalangeal joints, thumbs approximated to side of index finger. Feet adducted and plantar-flexed at ankle; toes flexed at metatarso-phalangeal joints, interphalangeal joints straight; big toes slightly adducted and straight; Chvostek's and Trousseau's signs absent. General mild rigidity of muscles of extremities. Resistance to extension of legs at knee with thigh flexed, but no pain. Sensation tested roughly with hand and sharp point normal. Lumbar puncture; pressure 8-12 c.m., fluid crystal clear; cells 4-6 per cu. m.m. Globulin 0, Wassermann 0; no clot formed over night in ice-box.

Seen in consultation by Dr. E. W. Taylor. At this time patient showed unexplained stupor, probable ptosis, apparent external strabismus, blurred fundus with no hemorrhages, nasal side of both disks indistinct, a probable right Babinski; other reflexes normal; weakness of right side of face. Dr. Taylor made a probable diagnosis of encephalitis lethargica.

May 15—White count 10,200. Blood pressure $\frac{130}{95}$. Blood culture sterile. Blood chemical examination (taken two hours after a cup of coffee with cream and sugar and a half hour after 8 ounces of milk)—Urea nitrogen 17.71 mgm., non-protein nitrogen 42 mgm., blood

sugar .116 mgm., chlorides 562 mgm. per 100 c.c. CO₂ capacity 42.

Patient bright in the morning, but lapses into stupor during day; intelligent response when roused. Ear drums negative. Ptosis now bilateral, convergence weak. Tongue not fully protruded in mid-line; tremulous. Voluntary movements deliberate with coarse intention tremor.

May 16—White count, 23,000; temperature, pulse, and respiration climbing; perspiring freely. Rarely makes spontaneous remark. Pupils dilated, oval, fixed (three days after atropine in the eyes). Fundi—Right disk slightly more blurred than before. Heart dilated to left; rate 140 per minute. Lungs—Fine consonating râles at left base, faint dulness at right base. Acute decubitus developing over sacrum and right great trochanter. Swallows liquids fairly well but holds solid food in mouth a long time before swallowing. Food accumulates between teeth and cheeks.

May 17—Patient very stuporous. Replies to direct questions rationally but briefly. Coarse clonic tremor appears in the limbs when disturbed, which lasts for several minutes. Pupils as before, right larger than left. Neck stiff. Knees resist extension without pain. When roused, he can differentiate position of toes when placed up or down. Small patch suggestive of pneumonia at right base. Rectal examination by Dr. Crabtree showed prostate firm and smaller than before operation; not tender. No evidence of any inflammatory process anywhere about rectum. Epididymes normal.

May 18—Temperature, pulse, and respiration higher. Definite bronchopneumonia at left base. Loose cough but unable to raise sputum on account of weakness. Tremor as before, more marked in legs than in arms. Tongue protruded in midline with tremor; patient can open jaw about 2 cm., no spasm of masseters. Unsustained bilateral clonus; general muscular rigidity increased; grip weaker, right feebler than left. Neck somewhat stiff but not painful; positive Kernig without pain. Stupor more continuous; profound at times during the night with deep breathing; roused with greater difficulty; replies in monosyllables but understands questions. Considerable bloody oozing from bladder.

X-ray pictures taken in bed showed patch of broncho-pneumonia at right base; kidneys, ureters and bladder negative (Dr. J. R. Healy).

After disturbance for x-rays there was tremor of the lips and jaws, and the respirations rose to 50 per min. Lumbar puncture (12 hours ante-mortem): 15 c.c. crystal clear fluid; pressure 12 cm. Cells 3 to 4 per cu. m.m. Globulin positive (one plus). No clot after 24 hours in the ice-box. Gold sol 001100000. White count on blood, 32,200. Reds slightly achromia; platelets normal. There were many polymorph. neutrophils two to

Differential:

Polymorph. neutrophils, normal	77.7% }	90.0%
Large granular neutrophils	13.2% }	
Small lymphocytes		3.6%
Large lymphocytes		1.8%
Large mononuclears		3.6%
Eosinophiles, masts, myelocytes, and blasts		0.0

three times the usual size, with lobulated nucleus and many rather large neutrophilic and basophilic granules. No phagocytosis seen.

Atropine gr. $\frac{1}{150}$ subcut. at 5.15 P.M. and again 8 hours later.

May 19—Patient failing rapidly. Recognized relative and said "Good morning." Respirations rapid, regular, but gasping; very little moisture in trachea. Quality of pulse varied

but remained fairly strong. Patient recognized wife an hour before death, then became unconscious. Respiration became more gasping and shallower; ceased at 9.53 A.M. The heart stopped 3-4 minutes later after becoming absolutely irregular.

Autopsy was performed 4¾ hours post-mortem by Dr. F. B. Berry of Dr. F. B. Mallory's laboratory.

Body length 169 cm. Age 58 years. The body is that of a well developed, well nourished, middle-aged, white male. There is moderate lividity but no rigor mortis or oedema. The face is somewhat long, oval and narrow, and both it and the neck are somewhat tanned with constant exposure to the weather. The left pupil is .6 cm. in diameter and round; the right is oval, and measures 1x.8 cm. There is a median suprapubic incision 7 cm. in length. The upper 4 cm. are recently healed and still contain four interrupted silk worm gut sutures. The lower 3 cm. are open and a large rubber drain is inserted. The wound edges all appear clean.

Peritoneal Cavity. The intestines are slightly distended. There is no evidence of any peritonitis anywhere in the peritoneal cavity. The appendix is 6 cm. in length, free and retro-caecal. The mesenteric lymphnodes are negative. On the left, the diaphragm is at the level of the fifth interspace; on the right at the fourth rib. The liver extends 6.5 cm. below the ensiform.

Pleural Cavities. There are a few strands of old adhesions about the right apex.

Pericardial Cavity. Contains about 20 c.c. of clear, straw-colored fluid.

Heart. It is of normal size and, on opening and sectioning, the muscle is of excellent color and tone. The valves are negative except that in the mitral and about the base of both it and aortic valve there are a few yellow, sclerotic patches. Similar patches may be seen in the coronaries occasionally.

Measurements. Tricuspid valve, 14 cm.; pulmonary valve, 8.5 cm.; mitral valve, 11. cm.; aortic valve, 8. cm.; left ventricle, 1.2 cm.; right ventricle, .5 cm.

Lungs. Both apices exhibit a small amount of contraction with white fibrous scars. There are petechiae over the dependent portions of both lower lobes and on section some granular and slightly projecting irregular foci are noted. Both lungs are decidedly moist. They are otherwise large and well distended with air. The bronchi are congested and contain a very small amount of mucus. The bronchial lymph nodes are negative.

Spleen. Is small, pale blue-gray, and flabby. On section the pulp is a dull brick red and does not scrape away.

Gastrointestinal Tract. The stomach is dilated to about three times its normal size, otherwise the intestinal tract is negative.

*Systolic blood pressure.

*Diastolic blood pressure.

Last four days, temperature taken per rectum.

Pancreas. Negative.

Liver. Apparently normal in size. The capsule is smooth and the color a dull chocolate brown. The gall-bladder contains a pale mucoid bile and, together with the ducts, is negative.

Kidneys. Are of equal size and shape and appear to be of normal weight. On section the cortex is well demarcated from the pyramids and shows nothing abnormal. It is about .5 cm. in thickness and the glomeruli may be seen clearly as fine transparent points. The pelves show a few punctate hemorrhages. The ureters are negative. No calculi can be found in kidneys or ureters.

Adrenals. Negative.

Bladder. There is a wound in its anterior and superior portion through which the drain is inserted. It is much contracted and its mucosa is in folds and much congested, with a small amount of fibrin on its surface.

Genital Organs. The prostate is slightly enlarged and on section shows grossly a glandular hypertrophy and dilatation.

Aorta. There are a few yellow fatty portions and in the abdominal portion these have become thickened and more fibrous.

Organs of Neck. Not examined. Nothing abnormal on palpation.

Head. The head is covered with steel gray hair. The scalp, calvarium and dura are negative.

Brain. It is normal in development and size and, save for congestion and a slight pink tint of the gray matter of the basal nuclei, shows no gross lesions. The pink color is especially marked in the pons and medulla. The middle ears are clean.

ANATOMICAL DIAGNOSIS.

(?) Encephalitis.

Hypertrophied prostate.

Recent operation, cystotomy.

Healed tuberculosis, both apices.

Healed pleuritis, right apex.

Hypostatic pneumonia, both bases.

Dilatation of stomach.

MICROSCOPIC EXAMINATION.

Heart. Negative.

Lung. The pleura is thickened and fibrosed, in one section, and there are foci of lymphocytes in it. In the other there is a bronchitis and bronchopneumonia with an exudate of polymorphonuclear and endothelial leukocytes. Many of these latter contain fat.

Spleen. Slight thickening of the trabeculae and of the walls of the arteries.

Stomach. Congestion of the mucosa and infiltration with lymphocytes and polymorphonuclear leukocytes. Some of the glands contain leukocytes.

Pancreas. Negative.

Liver. Irregular areas of congestion.

Kidney. Negative. Small adenoma.

Adrenal. Postmortem changes.

Bladder. Chronic cystitis. Epithelium thickened and lymphocytes in submucosa.

Prostate. Hypertrophy due to glandular hyperplasia and slight dilatation and chronic inflammation.

Aorta. Fatty endothelials beneath the intima.

Brain. Sections of the cortex are negative except for congestion and oedema. Sections through the basal nuclei vary. The vessels show marked hyaline change. In some sections there is almost nothing, whereas in others there is a marked lymphocytic and endothelial reaction about the vessels, diffuse infiltration of the tissues with lymphocytes, and rarely small hemorrhages. The process is most marked in the pons. The cerebellum shows a small zone of lymphocytic infiltration. The medulla and cervical cord are negative except for a slight perivascular reaction in the latter.

Hypophysis. Congestion.

Choroid Plexus. Negative.

MICROSCOPIC DIAGNOSIS.

Encephalitis lethargica.

Bronchopneumonia.

Chronic gastritis.

Small so-called adenoma of kidney.

Chronic cystitis.

Hypertrophy of prostate due to glandular hyperplasia, dilatation, and chronic inflammation.

Hyalin in arteries of brain.

WEEK'S DEATH RATE IN BOSTON.

DURING the week ending December 4, 1920, the number of deaths reported was 207 against 187 last year, with a rate of 14.43 against 12.24 last year. There were 30 deaths under one year of age against 34 last year.

The number of cases of principal reportable diseases were: Diphtheria, 51; scarlet fever, 19; measles, 22; whooping cough, 28; typhoid fever, 3; tuberculosis, 52.

Included in the above were the following cases of non-residents: Diphtheria, 10; scarlet fever 3; typhoid fever, 1; tuberculosis, 6.

Total deaths from these diseases were: Diphtheria, 7; scarlet fever, 2; tuberculosis, 12.

Included in the above were the following cases of non-residents: Diphtheria, 1.

Infantile paralysis cases, 1; deaths, 1.