

GENERAL STAFF MEETING
UNIVERSITY HOSPITALS

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I. ANNOUNCEMENTS:

1. Tumor Conference:

February 20, 1931, 11:00 A.M., Todd Amphitheater. Dr. Jacob Sagel.
Subject - Delay in Diagnosis of Carcinoma of Stomach.

2. "Knute" Nelson writes from Richmond, Virginia, to inquire about possibilities of younger brother medical student receiving summer work at Minnesota. Former medical interne - spent a year at Billings Hospital, Chicago and is now with McGuire clinic. Christened Kinloch, he discovered K. Nelson meant only one thing in Minnesota. He wishes to be remembered to his friends.

3. National Hook-up

C. B. S. takes unemployment message of President Paul H. Fesler, American Hospital Association, to country. Recommendations: Hospitals are public necessities like roads, postoffices, etc. Expansions, alterations, new buildings should be built now when labor is plentiful and materials are low. Community hospital units bring better working conditions for local medical profession and best medical service to people distant from medical centers. Special needs: psychopathic hospitals and convalescent centers.

4. Away

Drs. Irvine McQuarrie, J. C. Litzenberg, and K. Stenstrom to White House Conference, Washington, D. C., and Dr. W. A. O'Brien to meeting of committee of Board of Trustees of American Medical Association on Central Scientific Exhibit, and to tell of wonders of University Hospitals Staff meeting at St. Anne's Hospital, Chicago, Illinois.

5. Change

In arrangements for Staff Meeting, effective Thursday, Feb. 26, 1931. Because of crowding and poor acoustics, lunch will be served in Eustis Assembly Room and meeting will be held in Eustis Amphitheater downstairs. Lunch will be served from 11:45 A. M. to 1:00 P. M. upstairs. Meeting will start downstairs at 12:20 P. M. Staff members coming after 12:20 P. M. should obtain lunch and bring it downstairs. This will also allow us to use lantern slides. All telephone calls should be referred downstairs. Your cooperation is requested in trying out this plan.

6. Credit

Because of persistent cries for "author, author", the name of the pathologist responsible for the examination and history abstract will be found after the title, (i.e., Path. _____); the name of the abstractor thus, (Abstr. _____).

7. Medical Six O'Clock

Meeting, Tuesday, February 24th, Mens Union. Big winter quarter get-together of student body and interested faculty. High lights -- Louis B. Wilson, Mayo Clinic, "Graduate Medicine"; Leo G. Rigler, "Practical Teaching Plans for Problems of Medical Practice"; student opinion, music, jokes?, others. Low light -- Tenth Anniversary illustrated lecture of trip to "Out Where the West Begins." W. A. O'Brien. Seats reserved at head table for faculty who hand in names early.

II. ABSTRACTS:

Meningitis

Distribution according to Age and Etiology. Neal, J. C. - J.A.M.A. 82:1429-1430 (May 3) 1924; Abstr. O'Brien.

II. ABSTRACTS (Cont.)

Material

Reported cases in meningitis division of Department of Health of New York city, 1910 to 1924. During the time there was no epidemic of meningococci meningitis, therefore distribution probably represents normal rates in New York City from etiologic standpoint.

Cases

Table I. Distribution of Meningitis According to Age and Etiology

<u>Age</u>	<u>Tubercle Bacillus</u>	<u>Menin- gococ- cus</u>	<u>Pneu- mococ- cus</u>	<u>Strep- tococ- cus</u>	<u>Influ- enza Bae- cillus</u>	<u>Staph- ylo- coccus</u>	<u>Colon Bacil- lus</u>	<u>Total</u>
3 months	5	24	3	11	2	0	3	48
3 to 6 Mos.	21	58	4	6	8	0	0	97
6 to 12 Mos.	78	68	11	3	14	2	0	176
No. cases un- der 1 yr.	104	150	18	20	24	2	3	321
1 to 2 yrs.	178	79	8	9	14	2	1	291
2 to 3 yrs.	80	36	9	6	6	1	0	138
3 to 5 yrs.	99	80	6	11	1	2	0	199
5 to 10 yrs.	96	105	16	20	3	0	1	241
10 to 20 yrs.	57	101	7	5	3	2	0	175
Over 20 yrs.	48	74	22	12	0	2	0	158
Totals	662	625	86	83	51	11	5	1,523

Other Organisms: Friedlander's bacillus (2 years and 1 adult). B. Pyocyaneus, (7 years); Micrococcus catarrhalis (7 weeks); Streptothrix group (12 years); torula (16 years).

Mixed Infection

Meningococcus and staphylococcus (9 years); meningococcus and B. paratyphosus B. (7 months); Streptococcus hemolyticus and Staphylococcus albus (3 months); streptococcus, pneumococcus and staphylococcus (7 years); streptococcus (non-hemolizing); staphylococcus and unidentified gram-amphophilic coccus (8 years); mixed infection - 6 organisms never satisfactorily classified, the only identified pathogenic organism belonging to B. coli group (16 years).

II. Infants (3 months old or younger)

Meningococcus	24	B. Coli	3
Streptococcus	11	B. Influenza	2
Tubercle Bacillus	5	M. Catarrhalis	1
Pneumococcus	3	S. hemo S. albus	1

Comment: 1. Meningococcus is surprisingly large factor. Two were in infants aged 3 weeks. 2. Streptococci findings similar to Koplik and Holt's reports. 3. Tuberculous form also reported in very young by Holt (3 cases under 3 months in series of 218 children under 3 years). 4. Author finds self at variance with others because of low incidence of B. coli, e.g., Barron 1918 (Minn.) 40 cases under 3 months (14 B. coli, 5 meningococcus).

Summary

1. Meningitis is essentially a disease of childhood.
2. More cases of meningococci meningitis occur in first year than in any one year. 150 of 625 (24%).

3. The number is nearly twice that of the second year and more than from 5-10 years.
4. In all forms of purulent meningitis there are more cases in the first year than in any one year.
5. Tuberculous meningitis is more common in the second year than in the first.
6. 1,190 out of 1,535 cases occurred under 10 years (78%).
7. Organisms in order of frequency (1. tubercle bacillus 43.5%. 2. meningococcus 41.0%. 3. pneumococcus 5.6%. 4. streptococcus 5.5%. 5. B. influenza 3.4%. 6. Staphylococcus 7%. 7. Colon bacillus 3%.)
8. Pneumococcic meningitis (85) Types I 18, II 22, III 15, Group IV 30.
9. Streptococcus viridans seldom causes meningitis. Practically all such cases are due to one of the hemolyzing streptococci.
10. Practically any pyogenic organism may set up a meningitis. Also true of higher organisms (streptothrix, yeasts, etc.)
11. Mixed infection was comparatively rare.
12. In non-epidemic times tuberculous meningitis equals or exceeds meningococcic form.

Abstract -- Public Health Reports, Washington, 1928 43:2519-2525, 1929. Bull. of Hygiene (April) 1929. Rise in Meningococcus Rate Now Reported. Abstr. O'Brien.

A definite recrudescence in the incidence of meningococcic meningitis has been occurring in the U. S. since 1925. The recorded rate in the late spring of 1928 being the highest since 1918. The recrudescence has not yet appeared in other countries. Such early records of the disease in the U. S. as are available do not point to any definite upward or downward trend. There is some indication that the disease appears in epidemic form with a periodicity of 7-10 years. Further government reports show the following rates: 1925 (1859), 1926 (2226), 1927 (3204), 1928 (5781), 1929 (9660). This definite change must be kept in mind in interpreting figures reported by Neal, (1924)

Abstract -- Bell, E. T. Textbook of Pathology. Lee and Febriger, 1st edition, 143:544. 1930. Abstr. O'Brien.

I. Types Pachymeningitis (inflammation of dura), Leptomeningitis (of piaarachnoid)

1. Tuberculous: always secondary to some active focus. Usually hemotogenous in origin. Fluid under pressure clear at first, later cloudy. Examination shows thickening and opacities more prominent over base (often Sylvian fissures). Tubercles are indistinct (gross and microscopic). Bacilli demonstrated in smear of fluid (usually without difficulty). Usually fatal.
2. Meningococcic: sporadic and epidemic (winter, spring) Portal - cribriform plate and blood stream. cerebral hemispheres are covered with layer of yellowish pus (sulci or even layer), especially around base and down cord. In cases of long duration internal hydrocephalus may develop (adhesions). Sections show purulent exudate on surface and inflammation of surface of brain. Mortality varies from 20-90%. In certain epidemics mortality has been reduced 30 to 50% by treatment with specific sera (controlled). End result difficult to predict (many are crippled physically and mentally even if they survive).
3. Other pyogenic: clinical and anatomical features resemble epidemic form. Usually secondary to infection elsewhere in body (otitis media, mastoiditis, sinus and other venous thrombosis, abscess of brain, sinusitis, orbital cellulitis, osteomyelitis of skull, fractures (often compound), pyemia, etc.) Prognosis very unfavorable.

4. Meningismus: not true meningitis. Clinical signs without pus cells or bacteria. Develops as complication of disease outside nervous system (pneumonia, influenza, typhoid fever, etc.) Increased fluid pressure relieved by taps. Not fatal in itself.

5. Syphilitic: pia^{||}arachnoid regularly involved in cerebrospinal syphilis. Meninges thickened especially over base. Cranial nerves frequently involved. Sections show diffuse and perivascular lymphocytic infiltration. Also extends into adjacent brain substance. Small gummas may be found in meninges. Onset may be acute. Increased cells in fluid demonstrated by puncture. (Note - secondary syphilis may show changes in meninges due to roseola?).

6. Pachymeningitis (internal hemorrhagic): usually accidental post-mortem finding. Occasionally results in massive fatal hemorrhage. Internal surface of lateral or superior aspects of dura shows granular hemorrhagic surface. Lesion not inflammatory, no etiology known. Spontaneous hemorrhage of pia^{||}arachnoid (sub-dural) may be due to syphilis, non-specific inflammation or idiopathic.

7. Extra-dural abscess: occurs with infections of mastoid, ear, etc.

II. Symptomatology

1. Local: rigidity of neck, retraction of head, opisth^{||}onus, Kernig's and Brudzinski's sign.
2. Increased intracranial pressure: headache nausea, vomiting, dizziness, convulsions, choked discs, confusion, delirium, coma, etc.
3. Neurological: involvement of cranial nerves, spinal rootlets, paralysis of eye muscles, respiration, neuritic pains and signs of upper motor neurone lesions - positive Babinski, etc.
4. General: fever, malaise, anorexia, etc.

Unfavorable factors: 1. Inflammation in space with continual circulation of nutritive fluid of minimal antitoxic and bactericidal powers.
2. Little tendency to form adhesions in early stages except over vertex.
3. Increased intracranial pressure interfering with blood supply to vital centers already injured by toxins.

III. Course variable. Fulminating to weeks. Average 1-3 weeks, with death, lingering illness or sudden return to health. Disease is highly fatal except as stated.

Intracranial otogenic complications: 1. Sinus thrombosis; 2. meningitis; 3. brain abscess; 4. combinations. Over 50% of all brain abscesses are otogenic. Of this 50%, 80% arise as complication of chronic mastoid disease. Cholesteatoma are frequent finding in the mastoid (54%). Early cases of otogenic meningitis may later prove to be abscess. Dixon, O. J. J.A.M.A. 96, 481-487 (Feb. 14) 1931).

Abstract: -- Schroeder, R. Behandlingsresultatet af den >>rene<< otogene meningitis paa Rigshospitalets oto-laryngologiske afdeling aarne 1910-1927. Hospit alstiende 72, 605-615 (June 6) 1929. København.
Abstr. Pearson.

I. Material: 2 series (1910-18 - 17 cases) (1918-27 - 23 cases) - 40 cases. 4 others were rhinogenic (all complicated cases, i.e. sinusitis, brain abscess, orbital cellulitis, tumors, etc. Divided into 2 groups - (1) Developed meningitis before; (2) after hospital admission. Also into tympanogenic and labyrinthogenic. Spinal fluid observations in detail in last series only. Gross examination for cloudiness in first group.

II. Results: Group I - (1910-18) 17 cases.

(1) 5 cases (tympanogenic meningitis) developed outside hospital. 2 Schwartze, 2 radical operations (including 1 dural drainage), 1 none: 5 died.

(2) 12 cases: developed in hospital - 1 radical operation (tymp.) 1 died; 9 radical operations (laby); 7 died; 2 earlier labyrinth operations, 2 died.

Group 2 - (1918-27) 23 cases.

(1) 10 cases of tympanogenic form (developed outside hospital) 3 treated with spinal drainage; 3 died; 7 lived with other treatment (2 radical, 4 Schwartze with opening of dura and sinus in 3, repeated spinal drainage in all, and 1 anti-streptococcic serum).

(2) 3 cases (tympanogenic) developed in hospital, 1 died (radical) 2 lived (1 radical, 1 Schwartze and opening dura).

(3) 8 cases (labyrinthogenic) developed outside hospital. 3 died (radical), 5 lived (3 radical and labyrinth), 1 Schwartze, 1 radical, all had spinal drainage).

(4) 2 cases (labyrinthogenic) in hospital. 2 lived (radical, labyrinth, spinal drainage).

III. Relation of Mortality to Cells in Spinal Fluid

<u>Cells</u>	<u>Tymp.</u>	<u>L.</u>	<u>D.</u>	<u>Labyrinth</u>	<u>L.</u>	<u>D.</u>
10-20		2	0		0	0
20-50		2	0		3	0
200-500		1	0		0	0
500-1000		0	1		1	0
1000-5000		0	0		1	0
5000-10000		1	1		0	0
10000-up		<u>3</u>	<u>2</u>		<u>2</u>	<u>3</u>
<u>1918-27 - 23 cases</u>		9	4		7	3

IV. Other factors: Sex, 27 males, 13 females. Helser (69 males, 38 females), Blau (161 males, 62 females) 2-1/4 m to 1 f.

Because of small series no definite conclusions can be drawn.

V. Summary

- Deaths in Group I, 1910-1918 (15 out of 17) 90%. II. 1918-27 (7 out of 23) 30%.
- Deaths in Group admitted with meningitis (11 out of 23) 40%; developed in hospital (11 out of 17) 64%.
- Deaths by type: 1. Tympanogenic (10 out of 19) 52%. 2. Labyrinthogenic (12 out of 21) 57%.
- Deaths by sex: 1. Males (16 out of 27) 59%. 2. Females (6 out of 13) 46%.
- Death by age: 1-2 (0 of 1) 2-5 (1 of 1) 5-10 (4 of 7) 10-15 (5 of 7) 15-25 (6 of 12) 25-40 (2 of 5) 40-60 (3 of 5) 60-up (1 of 2)
Greatest number of cases (15-25).

6. Cases as to duration were almost equally divided - 19 (acute)
21 (chronic).
7. Detailed analysis of different types of treatment does not show any significant difference in results.
8. Mortality for series (22 of 40) 55%.

VI. Comment: In small series of 40 cases no significant prognostic factors are found in study of 1. time of admission (if any in favor of group brought in with disease); 2. type (tympanogenic or labyrinthogenic); 3. sex (females lower?); 3. age; 4. acuteness or chronicity; 5. type of treatment. Significant factor is no deaths, - 8 recoveries in cell count below 500; cell counts above 500 mortality (7 of 15) 46%, (2nd series), suggesting prognosis depends on degree and extent of involvement as revealed by cell count. Discrepancy in results before 1918 - deaths (90%), with next group (30%), can be explained on difference between methods of examining spinal fluid. First group graded by "visual change only"; second group included cases not detected by this method (microscope). (Pathological types recognized: meningitis circumscripta, collateralis, diffusa purulenta benigna and maligna).

III. CASE REPORTS

I. ACUTE OTITIS MEDIA, MASTOIDITIS, SINUS THROMBOSIS, FIBRINOPURULENT MENINGITIS (S. HEMOLYTICUS). Path. Pearson.

The case is that of a white male farmer, 58 years old, admitted to the University Hospitals 1-29-31 and died 1-31-31 (2 days).

1-25-31 - Developed cold at this time and felt a pain in the left ear. (It was noted that the patient had had trouble with the left ear for several years).

1-26-31 - Suffered from general malaise, weakness, dizziness and headache. Vomited some.

1-29-31 - Noted that there was discharge from the left ear. Also stiffness of the neck and marked drowsiness. Past history - Negative except that the patient was hit in the head with a sledge hammer in 1911.

Admitted to the University Hospitals at 7:30 P.M. Physical examination - Reveals a rational white male, well developed and well nourished, appearing drowsy, but answering questions when aroused. Pupils react to light and accommodation. Fundi are normal. There is some discharge from the left auditory canal. Ankle jerks are absent. The neck is stiff. Kernigs only suggestions. The abdominal reflexes were absent, and loss of deep tendon pain. There is a swelling and redness over the left mastoid region. Also considerable pain when this is palpated. DIAGNOSIS - Meningitis from middle ear extension. B.P. 140/80, P 92. Spinal puncture gave 20 cc. cloudy fluid and 15 cc. of anti-meningococcic serum given. Analysis of the spinal fluid showed: cloudy. Pressure normal. 2425 cells. Nonne - Positive and heavy. Noguchi - Positive and heavy. Smear shows numerous long chained gram positive streptococci. Urine - Negative. P 92, T 101.2.

1-30-31 - Patient is irrational. Put in restraints. Hypodermoclysis 1,000 cc. saline. Codeine gr. 1. Cisternal puncture was done and 15 cc. slightly bloody fluid removed. Cisternal fluid - Showed a few chains of streptococcic. Cell 9,500, Pms 90%, L 10%. Nonne and Noguchi both positive. Intravenous 2,000 cc 5% glucose given. Consultation - Left ear drum shows considerable bulging and redness in posterior superior quadrant. Hypodermic needle injected into ear drum and about 10 cm. of viscid, yellow, sero-purulent-sanguineous fluid obtained. Diagnosis - acute otitis media with meningeal complications. X-ray - Examination very unsatisfactory. There is suggestion of destruction in the posterior cells although this is not definite. P to 100, T to 104.

1-31-31 - Patient more stuporous. Myringotomy and serous pus obtained from the left ear. Respirations rapid and shallow. Pupils dilated. Catheterized and 500cc

obtained. Patient becomes very stuporous. Urinalysis shows albumin plus 1, sugar ++. Microscopic - 20-25 RBCs, 1-3 WBCs. Cheyne-Stoke's respirations. P 156, T 107. 2:05 P.M. died.

Autopsy

The right kidney weighs 150 grams, the left 180. The capsules strip without difficulty exposing rather smooth surfaces. On section slight swelling is seen. There is a bifid pelvis on right and a complete re-duplication of the ureter on the left which join together at about the lower 3rd. There is slight hydronephrosis of one of the ureters on the left. The kidneys show slight swelling. The bladder wall is thin and the cavity is greatly enlarged. There are a large number of hemorrhages at the dome. Slight trabeculation present. The middle lobe of the prostate is enlarged. The external genitalia are normal. The lymph nodes are normal. The aorta above moderate sclerotic changes. The organs of the neck are normal.

The scalp, calvarium and dura are normal. When the dura is reflected from the surface of the brain, a small amount of thin, greenish-yellow sticky exudate is found extending up over the lateral surfaces in the midportion. When the brain is lifted up from the base of the skull, a large amount of thick green exudate is found covering the under surfaces. There is a large collection beneath the tentorium and this has invaded the surface of the cerebellar lobe to such an extent that a pseudo-abscess is simulated. However, there is no direct invasion to the brain substance. When a section is made through the midportion of the brain, a large amount of thick greenish-yellow pus is found in the ventricles which are not distended. Serial sections of the brain revealed no evidence of abscess. There is a thrombosis of the left lateral sinus. The vessel is filled with dry, adherent, dark, reddish-gray pus. There is a soft postmortem clot on the right side. There is no extradural abscess. When the left mastoid and middle ear are opened, a large amount of pus is found. The drum has been opened (perforated) and there is slight softening of the mastoid. There is no change on the right side except for hemorrhage in the cavity.

DIAGNOSIS:

1. Acute otitis media, left (streptococcic)
2. Rupture of drum.
3. Acute left lateral sinus thrombosis.
4. Acute fibrino-purulent meningitis (streptococcic).
5. Pulmonary congestion and edema.
6. Acute splenitis.
7. Cloudy swelling of heart, liver and kidneys.
8. Old deformity of lower extremities (poliomyelitis).
9. Hypertrophy, dilation and hemorrhages of bladder.
10. Hypertrophy of middle lobe of prostate.
11. Double ureters.
12. Slight arteriosclerosis.
13. Pleural adhesions.
14. Puncture wounds in the thighs.
15. Melanoma of chest wall.
16. Puncture wounds.

II. CHRONIC OTITIS MEDIA, MASTOIDITIS (ACUTE EXACERBATION) FIBRINOPURULENT MENINGITIS. Path. Pearson.

The case is that of a white male farmer 68 years of age, admitted to the University Hospital 2-4-31 and died 2-5-31 (1 day).

October 1, 1930 - "Health failed". Physician states that blood pressure at this time was 145 systolic.

11-31-30 - Developed pain in the left side of the head and earache and loss of hearing. Saw a physician at this time, but condition did not improve.

12-10-30 - Had pneumonia. Quite ill for 5 days, but he did not stay in bed as long as the physician had ordered.

2-3-31 - About 7 A.M. Complained of headache and generalized aching all over the body. Became nauseated and vomited a greenish material. A physician was called who gave him M.S. He became increasingly irrational as the day progressed. He became less responsive and stuporous and failed to recognize people toward evening.

2-4-31 - 1:30 A.M. Admitted to the University Hospital in an excited, irrational, unresponsive and maniac condition, breathing very rapidly and deeply (Kussmal's type?). There is a fetid, sweetish odor to the breath.

Physical examination - Shows the right pupil slightly larger than the left, and light response is poor. Discs appear fairly distinct with no indications of increased intracranial pressure. The chest is negative except for a few coarse rales heard anteriorly. B.P. 220/105. The pulse is full and bounding with some irregularities. Rate 136. The bladder is full. The prostate is enlarged. All deep reflexes are gone. Bilateral Kernig's is present.

Laboratory - Spec. grav. 1020. Urine sugar - plus 3. Very many WBCs. No diacetic or acetone. Hb. 106%, WBCs 23,300. Pmns 92, L 7, M 1. Blood sugar .163 mg.

B.U.N. 32.2 mg. 2:10 A.M. Catheterized 725 cc. retention. 3:30 A.M. Patient is put in restraints. Chl. hydrates gr. 6:00 A.M. Catheterized and 800 cc. retention. 2,000 cc. saline given per vein. The patient is very restless and unresponsive. 11:00 A.M. Spinal puncture was done and a few cc. bloody fluid obtained.

The patient does not respond. 5:30 P.M. Cheyne-Stokes' respiration is noted. There is auricular fibrillation. Muscular twitchings are noted. P 136, T 102.8, R 40. Mag. Sul. o₂, 2 given per rectum. Intravenous 70 cc. 15% saline. 6:15 P.M. Catheterized and 525 cc. obtained. 9:30 P.M. Catheterized and 125 cc. obtained. 11:50 P.M. M.S. gr. 1/6 given.

2-5-31 - 2 A.M. Respirations are somewhat labored. The pulse is bounding, rate 136. The body is very rigid. 5 A.M. The temperature is 105, P. 160, R 44.

8 A.M. Respirations are much more labored and patient has some difficulty in swallowing. Catheterized and 125 cc. obtained. Caf. sod. benz. gr. 7-1/2 given. Mucus in the throat. 10:45 A.M. Pulse is imperceptible. Atropine gr. 1/120 given. 11 A.M. the patient died.

Autopsy - The heart weighs 525 grams and shows hypertrophy of the left ventricle (hypertension heart). The right coronary artery shows an occasional intimal plaque. The left coronary artery shows definite narrowing and thickening in the middle portion, of the ascending branch. There is a patch of hyaline thickening over the great vessels. The valve edges are free. There are raised yellowish plaques at the root of the aorta, the base of the aortic valves, and at the base of the aortic leaflet of the mitral valve. There is no thrombosis of the chambers. The right ventricle is not hypertrophied. The auricles are dilated. The root of the aorta shows marked sclerotic changes and longitudinal wrinkling. No evidence of syphilis present.

The pancreas weighs 150 grams and is normal. The adrenals are normal. The right kidney weighs 200 grams, the left 210. The capsule of the left kidney strips easily exposing a smooth surface. On section congestion is seen. The right kidney is essentially the same except for a large, thin walled cyst 4 cm. in diameter extending up from the upper pole. Just to one side of this and apparently communicating with it or beside it is another similar cyst 2 cm. in diameter. The specimen is preserved for further study. The pelvis and ureters are normal. The bladder wall is thickened and trabeculated. There is no change in the prostate. The mucous membrane of the bladder shows marked hemorrhages and nodular elevations. The external genitalia are normal. The lymph nodes are normal. The aorta shows moderate sclerotic changes. The organs of the neck are normal.

The scalp, calvarium and dura are normal. When the dura is reflected from the surface of the brain, moderate amount of thin, greenish yellow sticky pus is found. This extends up over both lateral surfaces. When the brain is removed, similar amount is found over the cerebellum to the base of the brain. No thromboses of the lateral sinuses; no extradural abscess. The right ear and mastoid regions are

normal. The left mastoid shows softening and pus. There are areas of sclerosis within the bone indicating probable chronic infection. The middle ear does not contain free pus although the ear drum is not present. Serial sections of the brain do not reveal any abscess formation.

DIAGNOSIS:

1. Chronic otitis media and mastoiditis.
2. Acute mastoiditis.
3. Acute meningitis.
4. Hypertension heart.
5. Coronary sclerosis.
6. Hyaline patches of spleen, liver and epicardium.
7. Pleural adhesions.
8. Adhesions about spleen.
9. Old infarct or abscess of spleen.
10. Pulmonary congestion and edema.
11. Probable terminal pneumonia.
12. Cloudy swelling of liver and kidneys.
13. Acute splenitis.
14. Solitary congenital cyst of right kidney.
15. Hemorrhages, hypertrophy and trabeculation of bladder.
16. Moderate arteriosclerosis.
17. Puncture wounds.

IV. ABSTRACTS: RENAL TUMORS. Abstr. Pearson.

1. Young's Practice of Urology, Vol. I. W. B. Saunders.
2. Keyes, Urology, D. Appleton & Co..
3. Kretschmer, H. L. and Hibbs, W. G., S.G.O. LII 1-24 (Jan.) 1931.
4. Judd, E. S. and Hand, J., J. of Urology (July) 1929.
5. Ljunggren, E., Acta Chir. Scand. LXVI (Supp. 16) 1-363 (Jan 12) 1930.
6. Creery, C. D., J.A.M.A. 92 (1256-1260) (Apr.13) 1929.

I. Types:

1. Benign

- a. Mark fibrom (fibrous nodule) in parenchyma.
- b. Adenomata, most common. No tendency to malignancy (Young).

May become malignant (Keyes). Note: Resemble malignant tumors in color (yellow), clear cells, shape (round), location (in parenchyma); called by some benign hypernephroma.

2. Malignant

- a. Children - Ref. 3 (17 cases) Frequency, Tumors of kidney in infants and children are uncommon. Kidney is most frequent

site of origin in genito-urinary tract. (So-called mixed tumor of Wilms'). Contains mixture of epithelium and connective tissue element (embryonal). May contain glands, smooth and striated muscle, cartilage, fat, elastic fibers and atheromatous tissue.

Origin - Arise from undifferentiated mesodermic tissue.

Gross Appearance - Vary in size from 230 to 1530 grams. Average weight 762. Only 2 of 17 were bilateral. Encapsulated, retroperitoneal growths which arise within the kidney capsule. Distort other viscera because of enormous size. Are globular to oval in shape, solid, opaque and gray, some are divided into lobules. Somewhere on the surface flattened renal tissue is found, (normal), except for compression and thinning. May occur in any portion. Cannot be separated from kidney because of firm fusion.

Metastases and extension. Regional involvement by extension. Extensive metastases may occur throughout the entire abdomen engulfing the viscera. May penetrate through walls of blood vessels, usually veins. May extend through diaphragm and

be found on pleural surface. Hematogenous extensions predominant to liver and occasionally lungs.

Clinical Data: Sex of little importance. 17 cases (14 males, and 3 females), youngest 3 months, oldest 6-1/2 years. Most occur from the 1st to the 3rd year. Time elapse - noticing tumor to consulting physician 6 days to 12 months. Pain in 5 of 17. Frequency and hematuria not present. Fever in 9 of 17. Chief sign - palpable tumor. 10 of 17 found on left side, 2 cases bilateral. Usually show secondary anemia. Pyelogram is very helpful in diagnosis. Tumors also occur in swine, (commonest tumor) and in chickens. 2 cases reported by Wolstein, Arch. Path. and Med. Vol. III, 1-13, 1927, where living and well 26 and 33 years after operation. As a general rule the prognosis is bad and operation is not attempted. Radiation is not of much benefit.

b. Adults -

(a). Papillary carcinoma and flat ulcerating carcinoma. Precancerous lesion - leukoplakia. Resemble tumors of bladder. Elevated growths invade kidney. Flat spreading ulcerate, early, invade adjacent tissues, (infected hydronephrosis). All specimens, operative hydronephrosis, should be carefully examined for malignancy in pelvic region.

c. Hypernephroma to be discussed.

II. Frequency:

4,500 autopsies. 9 primary renal tumors, 10 metastatic, 126 carcinomas, and 10 in 69 sarcomas. Metastatic usually bilateral, primary tumors unilateral.

Age factor:

Age	Ref. 1		Ref. 1	
	Küster '02	(No.) (%)	Young '25	(%)
0-5		128 30.3		-
6-10		41 9.7		-
20-29		-		4.6
30-39		-		9.3
40-49		125 29.8		23.2
55-over		128 30.3		37.2
60-69		-		20.9
				4.6
		422 cases		43 cases

Note: Mixed tumors occur under 5. Hypernephroma usually 40-70. Absence of young tumors in Young's report is probably due to type of patient observed.

Nephroma: (Hypernephroma, Grawitz tumor. Adenocarcinoma.)

III. Origin:

1. Suprarenal, Grawitz, (1883).
2. Nephrogenic tissue (Minnesota).

Evidence for suprarenal rest origin:

1. Rests are found in kidney.
2. Clear cells resemble adrenal portrait.

Against

1. Adrenal tumors do not show clear cells.
2. Known adrenal tumors cause secondary changes in children and young females.
3. Same tumor shows clear cells, dark tubules, cords and cysts.

IV. Site:

283 cases. 51 in upper pole, 60 lower, 39 mid-zone.

123 not recorded. (Ref. 4). Right kidney 46.3%, left kidney 53.6%.

(Ref. 1), right kidney 46.2%, left kidney 53.8%, (Ref. 4) right kidney 38% left 62% (Ref. 5).

V. Sex:

About equal (Ref. 4) 33 males, 25 females. (Ref. 5).

VI. Symptomatology - Initial symptom noted by patient.

Symptom	Young (43 cases)	Ljunggren (58 cases)	Judd and Hand (367 cases)
Hematuria	44.2%	50+%	43.8%
Renal colic	20.9		
Diffuse renal pain	11.6		
Pain	33.5	38	37.2
Tumor	4.6	8.0	13.6

Other symptoms (Young) Pain in testicle (2.3%), Loss of weight (2.3), Frequency (2.3), Varicocele (2.3), Epigastric pain (2.3), No symptom lesion discovered at physical examination (4.6). Note: Less than half had hematuria as initial symptom.

General Symptomatology:

1. Hematuria, 58 cases - 49 (85%) hematuria at some time. Also most common initial symptom. Duration - 1-3 months (26). 3-6 months (8) 1-2 years (6). 203 years (2). 8-1/2 years, (1). 12 years (1). 7 had large tumor. Hematuria is intermittent, comes quickly and goes quickly (may be microscopic). Most bleeding was spontaneous. Typical finding, clear urine which suddenly becomes red (Israel) -. Severe hemorrhagic anemia may result. In 14 bleeding was so severe that patient had difficulty in passing urine. 7 had to be catheterized (note: our case). 20 had pain in the region of kidney with hematuria.

2. Tumor palpated at some time during course of illness by (Israel) 80%, Judd and Hand (80%), Ljunggren (65%).

3. Pain, 67% during course. Usually at site of tumor - may radiate. Neuralgic pains indicate severe prognosis because tumor cannot be removed? 20 hematurias (no palpable tumor), but 14 had pain. In 28 pain not associated with hematuria, (not severe), 20 where pain was associated with hematuria, hematuria came first and then pain.

4. Varicocele (overemphasized) occurred in only 2 cases.

5. General, loss weight (29), fatigue and weakness (14).

6. Fever - (Ref. 6) U. of M. (11.7%) Israel (18.2%) Fetterhoff (25%).

Pyrogenic substance?

7. Blood pressure - Blum (1926) believes that characteristically there is hypertension and left ventricular hypertrophy because of adrenal substance. Voelcker & Boeminghaus (1927) state that the interesting thing about hypernephroma is hypertension which drops after nephrectomy. (Ref. 5) Believes tumor is of nephrogenic origin and no adrenal substance present. Only one author (Federoff 1905) showed tumor contained adrenalin. 30 blood pressure determinations before operation. 145-150 (3), 150-160 (7), 160-170 (4), 170-180 (2), 180 or more (4). Believes that most of these are due to associated conditions (age). In 12 of 30 cases blood pressure readings were made after operations as well.

In 12 of these 30 cases B.P. readings were determined after operation.

<u>Age</u>	<u>B.P. before Op.</u>	<u>B.P. after Op.</u>	<u>Remarks</u>
65	125	175 (1 yr. after)	No evidence of local extension or Met.
51	140	140 (1 Mo.)	Died 1 yr. 2 mo. Local ext. & Met.
53	145	150 (8 yrs.)	No extension or met.
(49	145	200 (5 yrs.)	No Met.
(-	-	240 (6 yrs.)	Died 6 Yrs. Metastasis and Uremia.
55	150	125 (3 Mos.)	Died 5 Mos. Met.
64	155	160 (10 yrs.)	No Ext. No Met.
		220 (11 yrs.)	Died 13 Yrs. No Ext. No Met.
50	160	115 (3 mos.)	
		130 (10 mos.)	
		170 (14 yrs.)	No Ext. No Met.
47	165	120 (6 wks.)	No Ext. No Met.
		175 (1-3/4 Yrs.)	
41	180	150 (9 yrs.)	No Ext. No Met.
58	185	185 (1 yr.)	X-ray. Met. Lungs
75	195	200 (10 Mos.)	Died 10 Mos. Uremia Nephrocirrhosis. No Met.
50	230	230 (6 yrs.)	Died 7 yrs. after Op. Uremia.

Conclusion: Removal of tumor or development of extension of metastases does not have any effect on the blood pressure. Therefore this argument cannot be used for the adrenal origin of these tumors.

8. Blood urea - Not significant.

9. Urinalysis - 11 cases studied in detail as to specific gravity and output revealed evidence of fixation. Not a contra-indication for operation.

VII. Delay by group before diagnosis was made - 43 cases (Ref. 1).

(1) 0-1 mo.	(2)	(4) 1-2 yr.	(9) 20.9%
(2) 1-6 mo.	(6)	(5) 2-3 yr.	(5) 11.6%
(3) 6mo.-1 yr.	(6)	(6) 3-5 yr.	(5) 11.6%
0-1 yr	(14) (32.5%)	(7) 5-10 yr.	(5) 11.6%

And one case which had symptoms for 12 years!

Groups 1. (0, 3 weeks) 2. (5 wk. 4, 4, 6, 6, 6 mo.) 3. (7,7,8,8, 10,11 mo.) 4. (12,12, 12, 12, 13, 15, 18, 18, 21 mo.) 5. (24, 24, 24, 30, 30 mo.) 6. (3, 3, 3, 3-1/2, 3-1/2 yr.) 7. (5, 6, 7, 8, 9 yr).

Note: Splendid control figures illustrating life history of untreated tumors. Also note life history after metastases were demonstrated.

VIII. Metastases:

1. (Ref. 4) 367 cases. Commonly progresses slowly and difficult to recognize. May not have trouble for years. 70 of group had metastases. (39 lungs (55%), 13 liver (18%), 11 bone (15%), 5 brain (6%). Of the 283 operated cases, 104, 36.7% had ruptured and were infiltrating adjacent tissues. Observed metastases at operation 98, (34.6%). Renal vein involvement 51 (18%).

2. (Ref. 5). Renal vein involvement.

<u>Author</u>	<u>Cases</u>	<u>In Renal Vein</u> <u>Cases</u>	<u>%</u>
Boethe 1926	23	2	8.7%
Weight 1922	19	4	21. %
Allemant			
Bayer 1924	24	8	33.3%
Gasparian 1928	?	?	13.46%
Hyman 1925	70	22	31.4%
Foulds 1923	200	45	22.5%
Ljunggren 1930	58	39	67.2%

(Ref. 5) 39 cases of tumor of renal vein, 6 died postoperatively. Of remaining 33 patients, 24 died (3 months to 10 years after operation). Showing involvement of renal vein is not contra-indication to removal of kidney.

Other metastases - Lungs and pleura (14), bones (11), other kidney (5), nodes (5), adrenals (4), liver (3), brain (3), local extension (10).

IX. Operative Mortality - Prior to 1900 both transperitoneal (front) and lumbar (back) routes were used in nephrectomy. 501 cases were reviewed by Kjester in 1902. 276 operations transperitoneal, 28.6% mortality. 265 operated extraperitoneally 24.6% mortality. Present time mortality of transverse route is greater than extraperitoneal type.

<u>Author</u>	<u>Yr.</u>	<u>Cases</u>	<u>Deaths</u>	<u>% Deaths</u>
Schmieden	1902	329	108	32.8%
1st decade				64.3%
2nd decade				43. %
3rd decade				22. %
V. Eiselsberg	1907	20	7	35 %
Rovsing	1912	34	6	17.6%
Paschen	1916	54	6	11.11%
Thierry	1921	19	2	10.5%
Michaelson	1921	30	4	13.3%
Lindstrom	1921	40	5	12.5%
Mayo Kline (Foulds)	1923	200	22	11. %
Smith & Shoemaker	1925	27	4	14.8%
Hyman	1925	47	3	6.4%
Ljunggren	1930	58	6	10.3%

Note: Time elapse 1-1/2 hours to 11 days. 4 cases died of postoperative shock. Two were due to resection of the pleura and complicating pneumothorax.

X. End Results.

1. Judd and Hand (Ref. 4) 367 cases. Nephrectomy 312. 106 lived 3-22 years (28%), 26 (7%) lived more than 10 years. (18 males, 8 females).

Average duration of symptoms before treatment 3 years.

2. Ljunggren - (1910-1928) 58 cases operated on at Maria Krankenhaus, Stockholm. Average age 51 years. 6 postoperative deaths, (4 shock, 2 uremia). 52 survived; of these death occurred as follows:

1 yr.	-	4		5 Yrs.	-	1	Total to here (20)
2 yrs.	-	10		6 yrs.	-	1	
3 yrs.	-	3	Total to here (17)	7 yrs.	-	3	
4 yrs.	-	2		11 yrs.	-	1	Total to here (25)

21 cases operated, at the time of operation had no extension. Of these 10 lived over 10 years after the operation, 4 died 6 years, 1-3 years, 1 - 2 years, 5 patients living less than 2 years after operation. In addition to this group there were 4 cases that died of non-malignant causes; (10 months, 1 year and 7 months, 5 years, 11 months, and 13 years of uremia, tuberculosis, arterio-sclerosis, pachymeningitis. 2 cases with extension. One lived 1 year, 8 months, and the other 4 years after operation. Of the 25 cases dying of extension, the symptoms of metastases began in 20 in the first 2-1/2 years after the operation. In 5 cases they began after 2-1/2 years. Two died of extension in the 5th year, and 2 in the 7th year. The statement in literature that metastases usually occurs in the first two years after operation. When late metastases occur, they occur about the 10th year. (Note: of the author's 24 cases operated on before 1920 (45.8%) were free from metastases at 10 years.) 42 operated before 1920, 19 or 45.2% lived 5 years after operation without extension. 49 patients operated before 1927, 22 or 44.9% lived 3 years after operation without extension. Hyman (1925) says from statistics it can be seen that the percentage of 3 year cures is 20-30% and 5 year cures less than 15%. The probable reason for the discrepancy is the inclusion in Hyman's of all tumors of kidney and not just the hypernephroma.

Other reports. Block (1909) going over Israel's material learned that 27.7% lived 3 years free of disease, and 25% lived 5 years. Michaelson (1921) 23.3% outlived the 3 year period free from extension. Paschen - 54 cases (1915) 35.19% outlived the 3 year period without extension. Von Ipsen (1912) 26.8% outlived 4 year period without extension.

3. 39 cases nephrectomy. (Young)

<u>Dead</u>	<u>I. Incomplete (7)</u>	<u>II. Complete (18)</u>	<u>III. Exploratory (13)</u>
0-1	5	6	8
1-2	1	1	-
2-3	-	2	-
3-4	-	-	1
4-5	-	1	-
5-6	-	-	-
Total	<u>6</u>	<u>10</u>	<u>10</u>

Group I. 7 cases, one living 1 year. Has severe pains in feet. Is being radiated. (6 dead of disease). II. 18 cases, 10 dead; 7 report selves as well. 1-2 yrs. (2), 2-3 (1), 3-4 (2), 6-7 (1), 10-11 (1). One not traced. All others died of disease except one postoperative hemorrhage. III. 13 cases. 10 dead, 1 refused operation, 1 dead of poisoning, 1 living 4 Mos. after first X-ray treatment.

Conclusions:

1. Renal tumors are not frequent.
2. Benign hypernephroma (adenoma) are probably the origin of malignant tumors (which may exist for years).
3. Wilm's tumor of childhood is non-hemorrhagic growths (diagnosis by palpable tumor) with poor prognosis (cures are reported) Common tumor of pigs and chickens.
4. Papillary carcinoma of pelvis is like bladder tumors.
5. Infected hydronephrosis may result and tumor etiology is not suspected.
6. Hypernephroma (nephroma, adeno-carcinoma) is not of adrenal origin.
7. Occur about equally on both sides. Sex is unimportant (males?)
8. Hematuria pain and tumor are usual symptoms. Bleeding not always initial symptom (about half) but usually occurs during course.

9. Bleeding may cause urinary obstruction.
10. Pain usually on same side as tumor.
11. Fever occurs in (11 to 25%) may be prominent.
12. Hypertension is probably not due to tumor.
13. Delay in treatment varies from 1 month to 12 years (long natural history).
14. Metastases commonly occur to renal vein, lungs, bones and sometimes to brain. Metastases not a contra-indication to attempted removal.
15. Metastases may occur early (first 2 years), or after 10th year.
16. Operative mortality (6-25%). (Post-operative shock is frequent).
17. Remarkably favorable end results are recorded (long life, late recurrence, slow metastases).

V. CASE REPORT

1. NEPHROMA - HYPERTENSION - POST-OPERATIVE SHOCK. Path. Pearson.

The case is that of a middle aged male farmer 45 years of age, admitted to the University Hospitals 12-31-30 and died 2-1-31 (33 days).

1927 - Nocturia 2-3 x began. Frequently during the day - 6-7 times noted.

May 1930 - Sudden severe epistaxis of 1 cupful noted. Physician packed nose. No further trouble.

11-15-30 - Acute urinary retention noted.

11-16-30 - Physician catheterized him and found clots and blood in the urine. Hematuria continued. States urine began to smell bad.

11-30-30 - Acute urinary retention recurred. Another physician cystoscoped him and said there was a growth in his bladder.

Past history - 1910 Treated at Rochester for impairment of hearing. 1919 - compound fracture of the right tibia which had had an open draining sinus until July 1930, and was in bed one year. 1922 went to Rochester. They gave him bandages and told him to go to bed and have his leg elevated. 1923 - Went to Rochester again for his leg.

12-31-30 - Admitted to University Hospitals.

Physical examination - Shows a well developed and nourished obese ambulatory white male. Bilateral diminution of hearing. B.P. 190/130. Scrotum and testes normal. Abdomen negative. Over the mid portion of the right tibia, there is a lump, apparently overlapping fragments of bone. There is a scaly, brownish pigment covering most of the anterior portion of the leg.

Laboratory - Hb. 95%, WBCs 8,050. Pmns 65%, L 33%, Mon. 2%, Urine - Spec. grav. 1009. Microscopic shows numerous WBCs. P 64, T 98.4.

1-1-31 - P.S.P. - 1st specimen - 80%
 2nd " - 20%
 3rd " - 20%
 4th " - 5%
 125%

1-2-31 - B.U.N. 28.93. X-ray - (K.U.B.) - Showed both kidneys well visualized and appeared normal in size, shape and position. No evidence of stone in the urinary tract.

1-3-31 - HMC #1 6:30 A.M. HMC #2 7:15 A.M. Cystoscopy 7:45 A.M. Shows the bladder, ureters and prostatic regions normal. There is a clear concentrated urine from both ureteral orifices. Ureteral catheters were passed and urine was bloody from the right side. Indigo carmine returned from the left side in 4 minutes.

Impression: Blood from the right side may be from some neoplastic process which was disturbed by catheters (supported by hematuria). Should be re-cystoscoped to confirm this observation. Pyelogram of left kidney pelvis was negative.

1-6-31 - Cystoscopy cancelled because of temperature. T 102.2, P 92.

1-7-31 - The patient had a slight epididymitis. Hot packs ordered.

1-8-31 - Cystoscopy - Indigo carmine was injected and returned in fair concentration on both sides, concentration being somewhat diminished on the right. The urine on the right contained pus and blood. **DIAGNOSIS:** Hypernephroma.

Pyelogram - Shows extensive infiltration of the right kidney pelvis which is markedly deformed, the lower calyx not being filled out and the upper part partly compressed. The appearance would suggest a very large tumor of the lower pole of the kidney with extension to the pelvis. There is displacement of the ureter.

Conclusion - Probably hypernephroma of the kidney.

1-9-31 - Complains of feeling hot. T to 104.4, P to 110.

1-10-31 - Complains of being warm. Urotropin, gr. x. Sod. ac. phosphate gr. xx given q.i.d. Intravenous 1500 cc. 10% glucose. Residual urine upon catheterization was 65 cc. P - 100, T 104.

1-11-31 - Intravenous 2,000 cc. 10% glucose. T to 103, P 100.

1-13-31 - Complains of cough. Elixir terpin hydrate with codeine and 1 dram q.4 h. given. The x-ray shows partial obliteration of the left costophrenic sinus due to pleurisy. No definite areas of metastases were found. P and T normal. Urine 1010. Microscopically negative. Conclusions for x-ray - Diaphragmatic pleurisy, left.

1-14-31 - Steam inhalations with benzoin given continually. T and P normal.

1-17-31 - P.S.P. 1st specimen	-	37%
	2nd "	- 21%
	3rd "	- 3%
	4th "	- 0%
		<hr/> 57%

Urine is negative. T 101, P 80.

1-18-31 - 1-19-31 - Coughed a great deal during this time. T from 101.2-102.

Urine negative. X-ray - Shows the same picture as 1-13-31. No definite evidence of metastases can be made out. Conclusion - Diaphragmatic pleurisy, left.

1-20-31 - Complains of pain in right kidney region. Lugol's solution, mm xv t.i.d. after meals for 10 days. T 101, P 88.

1-21-31 -- 1-27-31 - Coughs considerably daily. Relieved by cough mixture. Urine examined every other day was negative. T and P were normal.

1-27-31 - Still coughs some. T 101, P 100.

1-28-31 - Does not cough. T and P normal.

1-29-31 - Coughs about the same. T and P normal.

1-30-31 - The patient is worried about the operation. The operation was begun at 1:32 P.M. and ended at 3 P.M. (1 hr. 28"), under spinocaine anesthesia. A high oblique lumbar incision with the lower end at the umbilicus was made. Involving the midportion of the anterior and posterior surface of the kidney opposite the hilus was a hypernephroma measuring 8 cm. in diameter transversely and seen anteriorly, posteriorly. There was infiltration of the perirenal fat at one small point anteriorly. Everywhere else the tumor was definitely encapsulated. The renal artery was isolated and clamped; doubly ligated to renal vein which could be ligated. The patient returned from Surgery in fair condition. 2,000 cc. normal saline given by hypodermoclysis. 6:10 P.M. M. S. gr. 1/4. Hyperventilated 5 minutes. Gastric lavage with 750 cc. retention. 11 P.M. The patient is very nervous and restless. Profuse bloody discharge from the wound. 2000 10% glucose per vein. T 101, P 116, urine negative.

1-31-31 - 1:15 A.M. P 118, good quality. Skin is very warm. 1:30 A.M. profuse bloody drainage from the wound. 1:45 A.M. Amytol gr. iii given. 2:50 A.M. B.P. 94 systolic. The patient is restless and nervous. M.S. gr. 1/4 given. 6:30 A.M. Hypodermoclysis 1,000 cc. saline. B.P. 74 systolic. Ephedrine gr. 3/4 x 2. Pulse stronger. 8:30 A.M. The patient is slightly irrational. Emesis of 900 cc. of water. Hyperventilated 5 minutes t.i.d. 2,000 cc. 10% glucose given per vein. 9:15 A.M. Patient very restless. M.S. gr. 1/4 given. Emesis of 200 cc. clear fluid. 1 P.M. Transfused 750 cc. blood. Condition very poor. The patient is pulseless, listless and stuporous. Complains of pain in the bladder. Catheterized and 110 cc. obtained. Involuntary defecation noted. 7 P.M. the pulse was very weak, rate 130. Patient is very stuporous. Digalen 3 cc. given intravenously. 8:30 P.M. Breathing is very labored and noisy. Adrenalin 1/2 cc. given per vein. M.S. gr. 1/6. 9:55 P.M. Pulse is imperceptible. Mucus in the throat. Atropin sulphate gr. 1/100 given. 10 P.M. Respirations now very shallow. More mucus in throat. Ephedrine gr. 3/4. T 102, P 130.

2-1-31 - Involuntary urination and defecation. 12:30 A.M. The hands are cyanotic. 2:30 A.M. Respirations are very shallow and the face is very cyanotic. The pulse is imperceptible. 2:55 A.M. died.

Autopsy: The heart weighs 810 grams and is enormously enlarged. There is marked hypertrophy of the left ventricle. All chambers are increased in size. There is a slight increase in the right but this is not marked. The right coronary artery is negative except for a few intimal plaques. The left shows more marked changes, especially in the midportion. The valve edges are free. There are a few raised yellowish plaques in the root of the aorta, the base of the aortic valve and the base of the aortic leaflet of the mitral valve. The endocardium is normal. No thrombosis is seen. The root of the aorta shows moderate sclerotic changes.

The right lung weighs 1,000 grams; the left 750. Moderate anthracosis is present. Crepitation is reduced. On section a marked dark red congestion and edema is seen with partial atelectasis of the lower lobes. There is no definite evidence of pneumonia.

The spleen weighs 300 grams and is enlarged. The surface is smooth and purplish. On section the pulp is swollen. The liver weighs 2500 grams. The surface is fairly smooth. On cut section the edges evert. There is slight darkening of the centers of the lobules. There is an increase in subserous fat in the gallbladder and the wall is thickened. The gastro-intestinal tract has been previously described. A careful search for possible injury was made in the region of the retroperitoneal operative site, but none was found.

The pancreas is normal. The left adrenal is normal. The left kidney weighs 350 grams and is enlarged (probably proportionate). The capsule strips easily exposing a finely pitted surface. On section marked congestion is seen. The left pelvis and ureter are normal. The bladder wall is slightly thickened and trabeculated but numerous hemorrhages are seen. The external genitalia are normal. The aorta shows moderate sclerotic changes. The lymph nodes are normal. The organs of the head and neck are not examined.

The operation wound was opened and a moderate collection of fluid and clotted blood was found. No definite evidence of tumor tissue was seen and the sac containing fat, hemorrhagic tissue, was taken out for further examination for the possibility of a tumor. The vessels in this region showed no evidence of tumor tissue and no metastases were found.

DIAGNOSIS:

1. Hypernephroma of right kidney.
2. Absence of right kidney.
3. Collection of blood at operative site.
4. Operation wound.
5. Hypertension heart.
6. Acute pulmonary congestion and edema.
7. Slight passive congestion of liver.
8. Obesity.
9. Hemorrhages of bladder.
10. Chronic cholecystitis.
11. Old deformity of right leg.
12. Gaseous distention of stomach.
13. Cyanosis of head and neck, and nails.