VOL. II THURSDAY, APRIL 16, 1931 NO. 26

GENERAL STAFF MEETING
UNIVERSITY HOSPITALS
UNIVERSITY OF MINNESOTA

CONTENTS

PUBLICATION FINANCED BY SECTIONS AND SOCIETIES

ANNOUNCEMENTS

Tumor Conference: Friday, April 17, 1931, 11:00 A.M., Todd Amphitheatre. Dr. Cyrus Hanson - "Radiation, Effect on Tissues".

Internists of state meet at University Hospitals all day Monday, April 13. Return visit. Truly a good sign to see so many organizations come to University to deliberate.

Leo Rigler visits North Dakota (home boy), wins audiences at Bismarck and Jamestown in usual way, establishes bond of friendship with groups who desire to feel we are their University. Welcome!

Twin City public health nurses attend cancer short course every Monday at 4:00. More than 100 in attendance. Activity sponsored by Citizens Aid Society. Great interest and earnest desire to help cause.

5. Medical Schools (undergraduate) have been defined as place of training for internships. Outstanding hospitals of state excel as "teaching" non-teaching organizations. True picture not given by J.A.M.A. Hospital Number. Future numbers will show something like this - "St. Marys Hospital Graduate Medical School", E. L. Tuohy, Director, Duluth - not so many beds but so many teachers.

6. Finest "examination room" in city at Northwestern Hospital. Given by women (lay-board). Supt. Rexford proudly displays first "operating room" to staff and lay-board of distinguished persons. High-lights - warm grey walls, ventilating system, monel table, rosewood grill, operating table pad and pillow, continuous drain, one-piece table and sink, closet, etc. Address - "Examinations" by W. A. O'Brien.

II. ABSTRACT: Replacement lipomatosis of the kidney.

Ref. Kutzman, A.A., S.G.O. LII, 690-701, (Mar.) 1931.

1. Definition: A condition first described accurately by Rayer (1837), with 33 proved cases reported, which consists of fat replacement of the kidney, usually associated with calculous disease.

2. Author's Case: Male 56, dull pain over right kidney, burning on urination, frequency, chills and fever. Duration 2-3 years (nocturia). Nothing else until 2 weeks ago (above). Phthalein excretion - 55%. Non-protein nitrogen 32 mg. X-ray - two large stones. Cystoscopic - mild cystitis. Pus, no phthalein on right. Pyelogram showed destroyed pelvis. Operation: markedly adherent kidney. Oval mass. Kidney tissue at one side - rest of specimen was fat (intracapsular removal done). Stones in calyces. Sections showed almost complete replacement by fat and fibrous tissue (in part fat was solid). Good recovery.

3. Pathogenesis: substitution of renal parenchyma by true adipose tissue. Early stage lipomatous paranephritis. As condition advances fat may surround kidney, or limit itself to certain areas usually at hilus or poles. May involve ureter. Fat substitution usually parallels atrophy of renal substance. End stage shows rim of renal tissue surrounded by dense fibro-areolar structure. Structure 30 closely associated with fat of pelvis hilus and peripelvic tissues that it appears as a single unit. Usually calculi are found in fat or calyces. Pyonephrosis may be present. Microscopic structure is true adipose tissue and not metaplasia.

Some reports indicate probable neoplastic invasion but condition is not a tumor. Theories only one organ shows physiological fat replacement, i.e. thymus. (Note - lymph nodes show change not infrequently; physiological?) Pelvic fat probable origin. Calculous disease found in (80%) real primary cause. Pelvic fat shows hyperplastic tendency in chronic infections, e.g., tuberculosis and invades as part of fibratic process. Not a true renal lipoma or perirenal lipoma.

4. Clinical: No pathognomonic signs. Diagnosis made at operation or autopsy. Picture that of associated calculous disease and infection. All cases prior to 1901 were seen at autopsy. Israel found first surgical case. All have been associated with renal infection and 3 were bilateral. Side right 12, left 13. Sex males 12, females 15. Age 11 to 67 years. Most seen from 51-60. Treatment surgical removal for associated conditions.

5. Summary:
   1. Replacement lipomatosis of kidney has not been frequently reported (33 cases).
   2. Always associated with renal infection (100%) calculous disease (80%).
   3. Sex, side and age are not significant.
   4. Condition follows renal destruction (fat replacement) from surrounding areolar tissues.
   5. Has never been diagnosed as such before autopsy or surgical removal.

6. Case Report (and surgical specimen) Courtesy of T. J. Devereaux, M. D. Eitel Hospital.

Female 31, married, pain over kidney since childhood. Attacks of pain, fever, chills and urinary findings made worse by recent pregnancy. X-ray shows calculi. Kidney removed with difficulty. Specimen shows marked fatty replacement. Few cystic areas remain filled with calculi. Sections show no evidence of renal tissue. All show fibrous tissue and diffuse and focal lymphocytic tissue. Diagnosis: Replacement lipomatosis of kidney, multiple calculi. Note: This specimen was shown at a recent meeting of urologists. None had seen anything like it before (many were men with a large experience) indicating its rarity?

7. Discussion: Some Phases of Areolar Disease.

(1) Obesity: types - exogenous and endogenous (sometimes combined). Endogenous form - local or general, sometimes familial. (Barr.) lecture at Minnesota spoke of tendency as lipophilia. Related case of woman who had deep skin graft from thigh to back of hand. Later when fat on thigh increased, pad on back of hand made parallel increase (greater than other hand). By developing special strain of fat mice (barely able to move), attraction of areolar tissue was so great for fat in diet, metabolic interference resulted.

(2) Brown fat: (E. S. J. King, S.G.O. LII, 665-671 (March) 1931. Two kinds of fat (yellow, brown). Evidence in favor of special cells whose function it is to develop and store fat. Yellow fat in human embryo occurs in single globule. Fat in axilla beneath pleura has cells with abundant protoplasm, central nucleus, and small fat droplets (brown fat). Some as interscapular gland (hibernating gland of lower animals) also seen in embryos. Recent investigations show it to be more widespread and persists in adult.

(3) Lipoma: Tumors of fat (Ewing) Firm, elastic, rounded after multi-lobulated structures, circumscribed but not encapsulated, pea to many pounds, each lobule with a blood vessel. Blood vessels are usually abundant (over) and may at times be so marked as to obscure areolar tissue. Comment: One of our patients (J.N.) showed multiple subcutaneous tumors and paraplegia (transverse myelitis). Diagnosis: neuro-fibromatosis? Section of subcutaneous tumor showed lipoma not fibroma. Cord tumor (extradural) showed angioendothelioma. Other skin biopsies showed blood vessel structure. Lipoma may be found any place, including viscera. Show any secondary change including malignancy.

(Gland of Bonnot or moruloid fat). Pink in embryo, brown in adult. Found in neck, axilla, breast, subpleural and perirenal. Also in fatty mass of neck of cretius. May give rise to tumors and subject to inflammation. Author described brown fat of groin, one in abdominal wall, nodule in left supraclavicular region. Thought to be a hemalymph structure? Common in sheep popularized by Warthin? much in dispute. When traumatized (fat necrosis), develops change, is similar but different. True inflammation of brown fat is reported.

Summary: Brown fat is widely and irregularly distributed in man. It may cause tumors or become inflamed. Disease (inflammation) can be reproduced in guinea pigs. Some are painful, and may be associated with neurofibromatosis (including nervous system. Xanthoma are also seen in connection. Does this explain our patient? Hereditary influence has been noted (chiefly males). Other interesting cases observed have been (osteolipoma) enormous tumor on rib, a fatty tumor which recurred after removal (soft tissue) and proved to be spindle cell sarcoma, a tumor of the sucking pad of the cheek of a child, and a pedunculated tumor of the oesophagopharyngeal region (Mayo). Others have been reported in the cranium, mediastinum and on synovial membrane.

Comment: the lowly lipoma may present many variations, appear in unusual placed and should be considered a precancerous lesion!

III. CASE REPORT:
CONGENITAL ATRESIA OF THE OESOPHAGUS - TRACHEO-OESOPHAGEAL FISTULA (LOWER SETMENT). Path. Henrikson.

Normal

Mother; Age 20. Gravida II, para I. Abnormalities of previous pregnancy: none. (1 normal labor). L.M.P. May 9, 1930, making expected date of confinement 2-16-31. Abnormalities during this pregnancy: none. Delivery date: 3-4-31 at 11:20 A.M.
Approximate duration of labor: 1st stage 9 hours, 2nd stage 5 minutes, 3rd stage 25 minutes. Presentation: O.D.A. No complications. Condition of baby at birth was good.

Mucus: 12:30 P.M. nurse noticed mucus in throat causing cyanosis. Mucus aspirated with bulb. 2 P.M.-Still had considerable mucus in throat. 4 P.M. Mucus still troublesome. Foot of the crib elevated. 6 P.M.-Mucus in nose and throat. 9 P.M.-Less cyanotic. 12 M.-Sleeping but still much mucus in throat. 4 A.M.-Crib elevated at head. Infant able to breathe better. 6 A.M. Unable to nurse at breast. 10 A.M.-Very cyanotic. Thick yellow mucus aspirated from throat. Respirations labored. 6:45 A.M.- Infant more comfortable. 7 A.M.-Respirations labored. 12:30 A.M.-Unable to retain water given by medicine dropper.

Atresia: 1:30 P.M.-To x-ray for fluoroscopy. X-ray chest: No pathology. Lateral plate made with catheter in situ in esophagus. Catheter passed in esophagus to bifureation of trachea where a definite atresia of esophagus can be made out following injection of barium. None of it passed beyond this point. No evidence of communication with trachea or bronchi can be made out. 2:30 P.M.-Has had yellowish looking purulent discharge from nose and mouth all afternoon. 7 P.M.-120 cc. normal saline subcutaneously. Ox.1 of 5% glucose rectally. Stools composed of meconium. Gets very cyanotic at times. Nasal oil every 3 hours.

Expectant: 3-7-31-Rectal feedings 6 times daily. Not retained. Crib elevated at head. 11:30 A.M.-120 cc. normal saline subcutaneously. Ox. 1 5% glucose by roctum retained. 5 P.M.-Continuous suction using catheter in nose. 11:30 P.M.-100 cc. 5% glucose in normal saline subcutaneously. Seems more comfortable since suction in nose begun. 4 P.M.-To deep therapy for x-ray treatment of parotid glands. Patient cyanotic all morning. Oxygen started.

3-8-31- 2 P.M.-475 cc. 5% glucose and normal saline subcutaneously. 4 P.M.-Large amount of yellowish mucus from nose. 7 P.M.-Seems quite comfortablo. 9 P.M.-Voided small yellow stool. 11:30 P.M.-Resting quietly. T 97-100.

Operation: (5th Day) 3-9-31- 12:15 A.M.-Restless. 5 A.M.-Slept most of night. 11:20 A.M.-To O.R.
Report of operation: Patient has gas in intestine and stomach. There must, therefore, be some communication between trachea and distal esophagus. The latter, however, appeared imperforate at level of trachea. Mucus in throat is troublesome and is being aspirated. X-ray treatment of salivary glands has been done to allay secretion. X-ray therapy and continuous suction in throat may avert pneumonia from mucus aspiration from above. However, death may result from regrugitation of stomach contents upwards into the trachea via communication between distal esophagus and trachea. Procedure:Through high short left rectus incision the stomach was drawn up into the wound and anchored to the peritoneum without being opened. On suture was placed in the apex of this portion of the stomach and sutured to the skin. A little fluid was present in the peritoneal cavity . 12:30 P.M.-Atropine sulph. gr. 1/300 (H). 1:15 P.M.-Returned from operating room in good condition. 4:30 P.M.-Continuous suction started. Condition good. 11 P.M. Mucus streaked with blood through suction. Sleeps a great deal.

3-10-31 - 10:30 A.M.-Stomach opened and catheter inserted and left in place. 12:15 P.M.-20 cc. whole blood into the buttocks. Methylene blue injected into the stomach through the catheter. Blue mucus from nose. Mouth swabbed with glycerine. 3:20 P.M.- 10cc. mother's milk every hour via the catheter given. 5:20 P.M.-Cyanotic. Considerable mucus from suction. 7:20 P.M.-Breathing labored. Feedings stopped. 11:30 P.M.-Respirations shallow. 3-11-31- 4 A.M.-Condition improved. Slept at intervals. 6 A.M.-Stronger. Color better. 7:03 A.M. Respirations ceased.

Autopsy: The body is that of a well developed, fairly well nourished female infant, 35 cm. crown rump, 53 cm. crown heel, weighing approximately 3,000 grams. Rigor is present. Hypostasis is purplish and posterior. There is a purplish discoloration over the left arm and shoulder and base of the neck. There is no jaundice. Pupils are 3 mm. in diameter. The diaphragm is at the 5th rib right and left. The anterior fontanelle is 4 x 4 1/2 cm. the posterior fontanel is closed? There is an incision 5 cm. long midway between the xyphoid and the umbilicus in the upper portion of which there is a small catheter. The abdomen contains 25 cc. of blood. The ileum and a portion of the colon contain a dark material which looks like old blood? The APPENDIX is small and free.

Peritoneal Cavity: On opening the incision no signs of infection were present. The catheter was found to pass through the anterior wall of the stomach near the antrum.

The Pleural Cavities are lined by amooth, glistening pleura. The Pericardial Sac contains a small amount of straw-colored fluid. The Esophagus, Aorta, Trachea and Lungs were dissected free from the cervical region and pulled downward and anterior. When a small probe is passed through the trachea, it is found to pass downwards posterior to the bifurcation of the trachea through the portion of the esophagus which communicates with the trachea near the bifurcation posteriorly, and to pass downwards into the stomach. A probed passed through the upper part of the esophagus is found to stop in a blind sac 1 cm. proximal to the tracheal bifurcation. The aorta is opened from behind and the ductus arteriosus found to be widely patent. The lower left lobe, the right middle and lower lobes of the lungs are firm and dark purple. On section they have a grandular appearance and look like liver, and the upper lobes of the lungs are light pink, soft and crepitate on palpation. The lungs, heart, esophagus and trachea and aorta are not sectioned or separated except as given above. They are kept as a specimen.

The Spleen weighs 7 grams. The Liver weighs 155 grams. Both are congested. The Gallbladder contains a small amount of bile. The bile ducts admit a probe with ease.

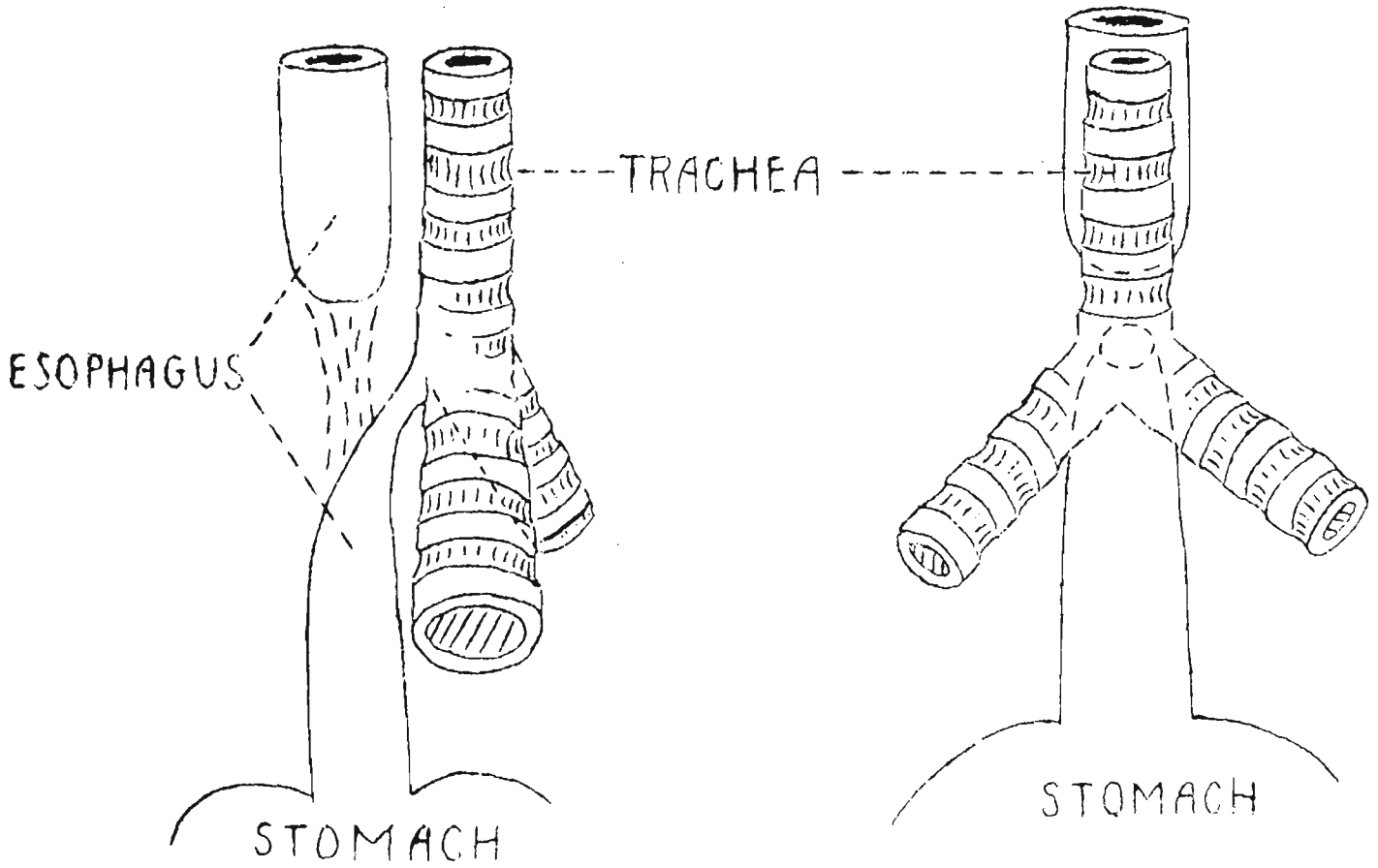
The Adrenals weigh 4 grams each.

The kidneys weigh 16 grams each. They appear normal. Near the beginning of the ileum there are 3 oval, brownish patches in the wall of the gut which are found to be elevated on the inner surface of the mucosa. They are about 2" apart and sections are taken for microscopic study. The Genital organs are normal and removed intact. The Bladder is opened and appears normal.

The Head is not examined.

DIAGNOSIS:

1. Congenital atresia of the esophagus with a tracheal esophageal fistula to the lower portion of the esophagus.
2. Bronchopneumonia.
3. Gastrostomy.
4. Atelectosis
5. Chronic passive congestion of the liver, and spleen.
6. Patent ductus arteriosus.
7. Hematoperitoneum.



Comment: Note normal parents and pregnancy - more normal persons than abnormal have abnormal offspring because there are more normal than abnormal persons. Note cardinal sign of obstruction from first recorded observation (inability to swallow oral secretions). Operation is rarely if ever successful because of communication with gastro-intestinal tract below and regurgitation above. Atresia may occur at any point in tract including duodenum (to be

differentiated from pyloric stenosis by early appearance of symptoms.) Case reported is usual type (rare for communication with proximal segment.) Always fatal? One case lived 6 weeks after operation!

IV. CASE REPORT:

MALIGNANT THYMOMA - MULTIPLE METASTASES. Path. Henrikson.

The case is that of a white female housewife, 30 years of age, admitted to the University Hospitals 3-4-31 and died 3-17-31 (13 days).

1920 Tonsillectomy.

Pregnancy

1926 Pregnancy accompanied by marked nausea and vomiting. Delivered a baby boy who is now living and well.

Dyspnoea

6-0-30 Slight weakness and dyspnea.

8-0-30 Dyspnea increases. Ingrown goiter considered by physician.

Nodes

10-0-30 Developed lumps in left supra-clavicular area and abdomen. Painless swelling of left hand and arm.

10-2-30 The normal menstrual period ended.

Mediastinal shadow

11-4-30 Patient was sent to the Swedish Hospital for a roentgenological examination. Temperature 99.2 X-ray: Marked enlargement of the upper half of mediastinal shadow with nodular margins on both sides. Shadow apparently free from blood vessels in this region of mediastinum. Lateral view esophagram shows backward displacement of esophagus. Impression: Hodgkin's disease or lymph-sarcoma.

X-ray Treatment

11-8-30 X-ray treatment begun at Swedish Hospital. 11-8-30 No. 1, 20X20 cm. diam., 1/2 cu. 1 al. mm. filter, 50 cm. distance, 150 ma. min., 5 ma., 30 min., Position P. A., Mediastinum region: 11-10-30 No. 1, 20X20 cm. diam., 200 K. V., 1/2 cu. 1 al. mm. filter, 5- cm. distance, 150 ma. min., 5 ma. 30 min., Position P. A., Mediastinum position. 11-11-30 No. 1, 20X20 cm. diam., 200 K. V., 1/2 cu. 1 al. mm. filter, 50 cm distance, 150 ma. min., 5 min., 30 min., Position P. A., Mediastinum region. 11-12-30 No. 2, 20X20 cm. diam., 200 K. V., 1/2 cu. 1 al. mm. filter, 50 cm. distance 150 ma. min., 5 mm., 30 min., Position A. P., Mediastinum region. 11-14-30 No. 2., 20X20 cm. diam., 200 K. V., 1/2 cu. 1 al. mm. filter., 50 cm. distance., 150 ma. min., 5 ma., 30 min., position A. P., Mediastinum region. No menstruation in November. Developed marked nausea and vomiting. Felt she was pregnant. Improved somewhat but began to weaken and lose weight.

Mediastinum normal

1-16-31 Re-entered the Swedish Hospital. Weight loss of 25#. Jaundiced. Liver enlarged. Icteric index 42. Stools normal. Temperature 97.2 to 99.4. Hemaglobin 54; wbc's 8,300; rbc's 2,600,000. X-ray of chest: Mediastinal shadow perfectly normal. No evidence of glandular enlargement in either hilum. Lung fields normal.

1-17-31 - Discharged. Temperature 98. Re-entered Swedish Hospital.

Abortion

1-20-31 Because of poor general condition, therapeutic abortion was performed (about 4 months pregnant).
1-20 to 26-31 Temperature not above 99. Mother states later for two weeks she had temperature going as high as 111 !!

1-27-31 Wbc's 6,200. Icteric index 6 units. Nausea and vomiting ceased. Anorexia.

1-30-31 Hemoglobin 50; rbc's 2,700,000.

2-2-31 Hemoglobin 53.

Liver

2-4-31 Barium Meal: Showed spasticity throughout. Liver down to level of crest of ilium.

2-10-31 Hemoglobin 46; rbc's 3,160,000; wbc's 9,600.

X-ray

2-13-31 Second series of x-ray treatments to mediastinum and pelvis began at the Swedish Hospital. 2-13-31 No. 2; 20X20 cm. diam; 200 K. V. 1/2 cu. 1 al. mm. filter; 50 cm. distance; 300 Ma. Min; 5 Ma; 60 Min.; Position A. P. mediastinum region. 2-16-31 No. 3; 20X25 cm. diam.; 200 K. V.; 1/2 cu. 1 al. mm. filter; 50 cm. distance; 300 Ma. min; 5 ma; 60 min; Position A. P.; Pelvis region. 2-18-31 No. 2; 20X20 cm. diam.; 200 K. V.; 1/2 cu. 1 al. mm. filter; 50 cm. distance; 150 ma. min.; 5 ma.; 30 min.; Position A.P. Mediastinum region.; 2-19-31 No. 3; 20X25 cm. diam.; 200 K. V.; 1/2 cu. 1 al. 50 cm. distance; 150 ma. min.; 5 ma; 30 min. Position A. P.; Pelvis region.

2-18-31 Wbc's 9,800.

Itching

2-20-31 Nausea and vomiting again troublesome. Skin began to itch.

3-4-31 Entered University Hospitals complaining of nausea and vomiting, dyspnea and weakness. Family History: One grandmother died of carcinoma of hip and one of stroke. One grandfather died of carcinoma of stomach, one at 82 of a "bladder stone". Mother, father, five sisters and one brother are living and well. Maternal uncle had tuberculosis.

Physical Examination:

Greatly emaciated, cachectic, white female apparently suffering no pain but seems very ill. Skin deeply pigmented (brown) and hangs in loose folds. Head: Eyes - blue and normal color. "Eye grounds" -- (Eye consultation). Fundus yellowish as in anemia. Disc margins blurred slightly. On temporal sides of both discs are small white patches of exudate. Small hemorrhage on nasal side of left disc. Findings probably on basis of anemia. Mouth - Mucous membranes pale. Many white deposits resembling thrush on inner surface of right cheek. Tongue coated. Breath foul. Tonsils out. Neck: Anterior cervical and supraclavicular nodes on left side palpable as firm, freely movable masses. (Axillary nodes also palpable). Thorax: Breasts atrophic. Heart - rapid but regular, soft systolic at apex. Blood pressure 108/60. Abdomen: Slightly distended. Diffuse rigidity. Liver - 10 cm. below the costal margin in the midclavicular line. Spleen and kidneys were not felt. Pelvic organs: Normal. Temperature 99.6 to 103.4, first day; pulse 76.

Laboratory: Hemoglobin 30; rbc's 1,950,000; wbc's 1,400; L. 16; P. 84; slight anisocytosis; anochromasia and poikilocytosis. Blood urea nitrogen 12.62; Wassermann negative. Urine - trace of albumen in three specimens examined. P.S.P. 40 + 10 = 50% in two hours. Stool normal.

X-ray

3-5-31 X-ray of chest showed marked elevation of left diaphragm.

Blood

3-6-31 Transfusion of 650 cc. of unmodified blood. Temperature 102 to 98.6. Irritable.

3-7-31 Severe itching of legs. Calamine lotion locally. Dermatological consultation - Pruritis probably on constitutional basis (Hodgkin's). Hemoglobin 45; Rbc's 3,000,000; wbc's 2,500.

Cough

3-9-31 Elixir terpin hydrate with codeine gr. i every four hours for cough for one day. Emesis of 150 cc. watery fluid. Tired and listless. Blaud's capsules iii. Diluted Hcl gr. 1 t.i.d. with meals. Iron ammonium citrate gr. ss t.i.d. Codeine sulphate gr. ss (m). Pulse 102; temperature 98.8. Icteric index 10 units. Platelets 66,000.

Blood

3-10-31 Blood transfusion 600 cc. unmodified blood. Codeine sulphate gr. 1/4 every 4 hours for severe unproductive cough. Cervical smear too thin. Please repeat.

3-11-31 Responds poorly. Temperature 99.6 to 103. Seems worse. High caloric diet.

Cough

3-12-31 Hemoglobin 60; rbc's 3,400,000; wbc's 4,700. Coughs con-

siderably. Nauseated. Iron ammonium chloride and Hcl discontinued. Blaud's capsule iii t.i.d. Steam inhalations 1/2 hour every two hours. Seem brighter.

Pneumonia

3-13-31 Impaired resonance with bronchial breathing, fine rales, increased vocal fremitus over left base posteriorly. Blood pressure 100/60 to 116/73. Blood culture negative. X-ray of Chest- shows congestion at both bases, more marked on right, suggesting early patchy bronchopneumonia. Temperature 104.8; pulse 120. M.S. gr. 1/6 (Hypo) occasionally. Patient very tired. Perspires a great deal.

Oxygen

3-15-31 Oxygen started. Pulse 130-140, weak and hardly perceptible. Respiration shallow 24. Temperature 101.6. Enesis 50 cc. greenish fluid.

3-16-31 Patient much worse. Does not like oxygen tent but dyspnea is relieved somewhat by it. Coughs. Irrational. Slight diarrhea. Pulse 180, temperature 101.6.

Worse

3-17-31 3:20 A.M. hears imaginary noises. 4:00 A.M. M.S. gr. 1/6 (H); 8:00 A.M. Oxygen started. Air hunger greater. Respiration slower and more labored. 8:30 A.M. incontinent. Cafeine sodium benzoate gr. viixx (H). 11:00 A.M. much weaker. Finger tips cyanotic. Respiration gradually becoming slower and more labored. 11:50 A.M. oxygen discontinued. Temperature 101. pulse 130. 12:25 P.M. Exitus.

Autopsy:

Length 180 cm. Weight approximately 90#. The body is that of a well developed poorly nourished, white female, whose trunk is deeply tanned from the level of the clavicles to the distal portions of the pelvis. Rigor is present. Hypostasis is purplish and posterior. There is no edema nor cyanosis. Jaundice cannot be determined because of the deep tanning. The pupils are 7 mm. in diameter. The right diaphragm is at the 4th rib and left at the 5th rib. The nipples are prominent but the glandular portion of the breasts is atrophied.

Upon opening the Peritoneal Cavity a small amount of yellowish fluid is found. The Appendix is small and atrophic. Upon opening the thoracic cavity a small, lemon-sized, irregular tumor mass is found attached to the sternum opposite the 2nd and 3rd ribs slightly to the left of the midline. This is cut and pulled away from the sternum and dissected away from about the vessels coming off the aorta. Tissue is firm.

There is no fluid in the Pleural Cavity. The pleura is free and glistening. There are no adhesions except that the medial margin of both lungs is attached to the above tumor. Upon opening the Pericardial Sac no fluid is found. The tumor is in the anterior mediastinum but does not perforate the superior portion of the pericardium although it is attached to it.

The Heart weighs 280 Gm. The foramen ovale is open by a pin-point size opening. There is a small streak of yellow calcification at the base of the anterior leaflet of the mitral valve. The Root of the Aorta is normal.

The Right Lung weighs 700 Gm. and the left 750 Gm. The external surfaces are dappled by irregular gray patches measuring from 3 to 10 mm. in diameter, on a background of darker gray. The surfaces made by cutting are gray-red to yellow and have the consistency of liver in patches in the left upper lobe while the left lower, right lower and right upper lobes more densely involved. (metastases)

The Spleen weighs 160 Gm. The surface is gray. Only one small hazelnut size, yellowish nodule is found on the surfaces made by cutting. The pulp is dark red and fairly firm. (nodule)

The Liver weighs 1776 Gm. The margin is two fingers below the costal margin in the midclavicular line and five fingers below the tip of the xiphoid. The external surfaces are studded with gray-white nodules which look like drippings from a white candle. The

surfaces made by cutting are also studded by these tumor masses from millet seed to marble size. The centers are yellow and necrotic appearing. (Tumors)

The Gall Bladder shows slight cholesterosis. It contains a yellowish fluid in which are yellowish flecks. The common duct is markedly dilated and upon opening it to the duodenum at the ampulla of water there is a silver dollar size, firm, irregular, yellowish growth surrounding the orifice. There are firm, almond size, yellow-gray nodes along the ducts. The under surface of the diaphragm is also studded with gray-white macules similar to those found in the liver. The external surfaces of the stomach and intestine is smooth and glistening. Through the visceral peritoneum can be seem smooth, gray-white areas, .5 to 2 cm. in diameter of fairly firm consistency. The retroperitoneal nodes are fairly soft and vary in size from split-pea to large olive. The nodes along the lessor curvature of the stomach are similarly enlarged. Palpation of the stomach reveals marked thickening almost generally over the whole surface. On opening the stomach three, large, ulcerated patches 3 to 4 mm. in diameter with gray-white, slightly elevated, rolled wide, irregular margins are present near the central portions along the greater curvature. There are very large numbers of small papular tumors varying from .5 to 1.5 cm. in diameter with small ulcerations toward the center scattered diffusely over the mucosa of the stomach. The small .5 to 2 cm. size gray-white areas shining through the peritoneal surfaces of the small bowel are found to protrude 1 to 3 mm. into the lumen as yellowish, firm patches on opening into it. (growths)

The Pancreas weighs 90 Gm. and is fairly firm and adherent to the surrounding structures. On cross section the surfaces appear normal.

The Adrenals appear slightly larger than normal and appear to be involved by the tumor-like structures.

The Left Kidney weighs 360 Gm. and the Right 300 Gm. They are large and studded with gray to yellow, firm, fairly soft, waxy-appearing tumors varying from 1 to 2 cm. in diameter. On surfaces made by cutting these tumors practically replace the normal kidney structure. Some of the tumors have a semi-translucent appearance. The bladder is normal. The pelvic peritoneum is studded by papillary nodules as seen on the lower surfaces of the diaphragm and on cutting through the peritoneum posterior to the uterus it is found to be about 3 mm. thick. The ovaries, tubes and fundus of uterus are all involved by these macules. The ovaries are firm and on cross section contain yellowish, fibrous-like nodules. There are two slightly elevate papules 5 mm. in diameter present on the anterior surface of the cervix. There are few very small lymph nodes in the axilla.

The organs of the Neck. The thyroid is pulled down into view and appears to be normal. A small section of both lobes is taken for microscopic examination.

The Aorta is normal.

Diagnosis:

1. Malignant thymoma with metastasis to lymph nodes, lungs, diaphragm, liver, spleen, adrenals, kidneys, stomach, intestines, uterus, ovaries and tubes.
2. Emaciation.
3. Pigmentation of trunk.
4. Cholesterosis of gall bladder.

V. ABSTRACTS: Disease of Thymus - Thymoma. Abstr. O'Brien.

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(I) Definition Thymoma tumor of thymus - Term used because of difficulty in determining cell type (epithelial or connective tissue origin)

(II) Anatomy: paired organ arising from evaginations of 3rd bronchial clefts. Full development: stroma, reticulum, parenchyma, capsule. Stroma- fine, supporting. Fine from original epithelium which becomes elongated into fine reticulum which emeshes parenchymal cells. Hassal's corpuscles are collections of adult reticulum cells in medulla continuous with reticulum. Parenchymal cells resemble very small lymphocytes. Theories: 1. derivatives of reticulum (transition forms) early appearance, absence of outside infiltration, transformation of small cells into reticulum. 2. lymphocytic invasion (look like lymphocytes, inwandering in other organs, pathological behavior). Conclusion most observers believe later but organ never acts like simple lymphoid structure and fails to participate in other systemic lymphoid diseases.
Note: participation of gland in our case is presumptive evidence for true tumor and not Hodgkins disease.

(III) Diseases of thymus:
a. Accessory bodies in neck (in addition to cervical prolongation found in all new borns and 20% of adults).
b. Simple hypertrophy (status lymphaticus? Graves disease, occasional cases of leukemia - see leukemic blood reports in thymoma) Against widely accepted idea of thymic hypertrophy in status lymphaticus? is work of Scarmon and Boyd (Minn.) 1074 cases who died within 24 hrs. of illness of adequate pathology; weight of thymus at birth 13 gm., at puberty 35 gm., at 50 years - 15 gm. In 324 necropsies up to 15 years thymus was weighed in 174, weights were 13 gm. at birth, 20 gm. at 6 months, 35 gm. at 13 yr. The thymus of healthy children who died of accidents was larger than poorly nourished subjects. Growth of thymus parallels growth of other lymphoid tissues. In other words status lymphaticus is a sudden or unexplainable? death occuring in a well nourished child (Ref. Amer. Jour. Jr's Child Vol. 33)
c. Cysts - dermoid, simple, lymphangioma and Dubois abscess (not pathognomonic of syphilis).
d. Tumors - (thymoma, benign and malignant).

(IV) Benign thymoma: chiefly associated with myasthenia gravis. Ref. Nichols and Osanto, also Auerbach, L. Ztschr. f. klin. Med. 114: 388,1930. Associated disease - 25%. Bell - 50% (1917). Other structures may also show changes (bronchiogenic) thyroid and parathyroid. Changes in muscle (atrophy and lymphoid infiltration).

(V) Malignant thymoma: more than one hundred cases have been reported? (many are debatable!)
a. Types: 1. lymphosarcoma (diffuse growth of round, polyhedral and giant cells. Chief source probably reticulum. 2. Carcinoma from reticulum. 3. Spindle cell or myxosarcoma (Note our case showed spindle cells, round, polyhedral, giant and reticular cells, Hasall's corpuscles, while in other parts it showed Hodgkins disease? - necrosie).
b. Absolute requirement for diagnosis is involvement of thymus gland (not nodes) as organ is seldom if ever involved in other systemic disease.
c. Extension: 1. local invasion into mediastinum and may cause death by compression. Soft or hard. Go to deep and superficial nodes. Others show widespread metastasis often to kidneys (our case). Note: Herrimann and White are in error (1929) in saying their case is 4th on record with wide spread metastases. Carcinoma is also reported but many criteria are used by many authors for both. Jacobson's case

used as best example of carcinoma looks like bronchiogenic tumor with metastatic nodules in thymus. Use of term - thymoma like lymphoma seems best (Hodgkins, leukemia, aleukemia, lymphosarcoma). Ewing thinks it is an infectious granuloma? Involvement of chromaffin system causes pigmentation (our case).

d. Diagnosis based on finding of thymic tumor. Many are not discovered until autopsy. Rarely associated with leukemic blood. (Major).

e. Duration: unknown but probably varies a great deal.

f. Treatment: very radiosensitive (our case). Doub treated 5 proven cases: Result - 1 dead in 2 months. Other 4 are alive and well (5 yr. 4 mos.; 1 yr. 10 mos.; 11 mos.; 8 mos.) Note: one of few reports on treatment. Author states possible confusion with other diseases.

Summary:

1. Thymus is an epithelial organ with secondary infiltration of lymphocytes?
2. Main body develops from 3rd bronchial cleft.
3. Chief diseases are supernumerary bodies, hyperplasia? cysts and tumors.
4. Status lymphaticus is a doubtful entity?
5. Dubois abscess is not always syphilitic.
6. Organ rarely if ever participates in general systemic lymphoid disease.
7. Tumors are benign and malignant.
8. Thymic disease (cysts, hyperplasia, granulomatous nodules, benign tumor) is associated with myasthenia gravis (25-50%)
9. Relation of thymic disease to changes in muscles is not certain.
10. More than one hundred cases of malignant thymomata are now a matter of record.
11. May occur at any age (6 months up).
12. While many types are reported, all show tendency to similar cell structure.
13. Absolute requirement for diagnosis is involvement of thymus as histological picture of nodes or metastases may mimic other lymphoid disease.
14. Tumors may compress, locally invade or widely disseminate.
15. Skin lesions may be confusing (former case resembled smallpox).
16. Superficial nodes as well as deep may be involved.
17. Pigmentation is due to chromaffin involvement.
18. Duration is unknown as few cases have been diagnosed during life.
19. Some have shown leukemic blood changes.
20. Tumor is very radiosensitive (see our case).
21. Favorable results may be obtained by radiation? Too few to be sure.
22. Changes seen in sections are not unlike certain aspects of Hodgkin's disease (lymphosarcoma, leukemia, fibrous malignant characteristics) Ewing.
23. Bone metastases have been reported (post-mortem x-ray study of part of our case was negative).
24. Perforation of the chest wall has been observed.
25. Obstructive respiratory signs indicate x-ray examination for thymoma.
26. Axillary tumors of unknown origin should be considered thymic until ruled out.