

GENERAL STAFF MEETING
UNIVERSITY HOSPITALS
UNIVERSITY OF MINNESOTA

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I. DIFFERENTIAL STAIN FOR CANCER?

Early Diagnosis of Cancer of the Cervix Uteri.

At the second Frauenklinik of the University of Vienna, a method has been used during the last eighteen months which makes it possible to recognize in the earliest stages one of the most frequent forms of cancer of the uterus. The portio is brought into view with the aid of a speculum and is painted with an aqueous solution of iodine. The normal mucous membrane is colored a deep brown in a few seconds, but if there is a cancerous area it remains colorless and thus forms a distinct contrast with the surrounding healthy tissues. With the aid of a magnifying apparatus introduced with the speculum, the tiniest spots awakening a suspicion of cancer by reason of their colorless appearance can be discovered. With a curet some of the tissues comprising the colorless spots are removed and examined microscopically. This diagnostic method is based on the observation that the normal cells of the uterine mucosa contain a form of sugar that is stainable with iodine, whereas the sugar substance, and hence the stainability, is absent if the epithelium becomes cornified or degenerates owing to the presence of cancer. The microscopic examination reveals whether the colorless condition of certain areas is due to harmless cornification or to a cancerous change. Dr. W. Schiller, a physician of the Frauenklinik, stated that this diagnostic method is now applied systematically to all women who are admitted to the clinic. In many cases it has been possible to discover an incipient cancer that would otherwise have escaped diagnosis, which enabled the examiner to recommend an operation that offered the most favorable prospects for a lasting cure. The method permits, for the present, only the diagnosis of cancer of the portio; that is, of a limited part of the genital tract. Nevertheless, the relative frequency of cancer of the portio region justifies the importance that is ascribed to this method in the Frauenklinik.

Ref: Vienna Correspondent J.A.M.A. 97: 1315 (Oct. 31) 1931.

II. CASE REPORT

TUBERCULOSIS OF LUMBAR SPIRE, AND LUNGS. BILATERAL PSOAS ABSCESSSES. Path. Randall.

This is a case of a white male, 31 years of age, admitted to the University Hospitals 6-24-31 and died 8-9-31 (46 days).

Pain

1924 - Pain in back on motion. Free from pain for five years. Spring 1929 - Pain recurred while riding a tractor. Fall - 1929 - Another attack of pain.

Abscess?

12- -30 - Pain in back and right hip. Pain began in medial side of middle third of the right thigh and went upward into hip. Swelling on thigh noted which subsided.

Deformity

2- -31 - Deformity of spine noted. No history of exposure to tuberculosis or pulmonary disease.

6-16-31 - Aspiration of abscess of thigh and pus obtained.

Hospital

6-25-31 - Admitted to University Hospitals. Complaints: 1. Swelling on medial aspect of right thigh. 2. Pain in right thigh and right hip. 3. Lumbago. Past History: Abscess in right ear in 1923. Infrequent headaches. Gastrointestinal system - negative. Genito urinary system - negative. Cardio-respiratory system - no cough, sputum nor dyspnea. Extremities - no history of injuries or infection. Usual weight 160#, best weight 172# (1924), present weight 131#, lost 30# in last 9 months. Family History: Father has valvular heart disease. Mother died of carcinoma of stomach.

Physical Examination

Reveals a white male, 31 years of age, shows some loss of weight. Mouth - dental caries and pyorrhea. Chest - negative. Heart - protodiastolic murmur on inspiration. Abdomen - negative. There is a knuckle back deformity in the region of the last dorsal and first lumbar vertebrae; slight swelling and pain

to right of deformity; some limitation of movement, antero-posterior and lateral.

Extremities - fluctuant mass inner on anterior aspect of right thigh which reaches its height at about the middle of the upper half of the thigh. It extends to the first part of the distal half of the thigh. It is not red, hot, tender or painful. Pain in right hip region on dorsal flexion and extension.

Impression: Probable Pott's disease and psoas abscess of the spine. Probable tuberculosis of right hip with burrowing abscess. Rule out pulmonary infection.

Laboratory

Urine - few wbc's. Blood - Hb. 78%, wbc's 7,300, rbc's 3,520,000, Pmn 70%, L 29%, E 1%. X-ray of chest - conclusion - moderately advanced tuberculosis, bilateral with cavitation, left. Pott's disease of lumbar spine with probable abscess. Progress: General diet. Weight 131#. T 99, P 90 and R 22.

Fever

7-3-31 - Patient has been running a low grade fever everyday, - temperature ranging from 99 to 100. Pulse from 70 to 80 to 90. Respirations 18 to 20. X-ray of chest - pulmonary tuberculosis, moderately advanced, bilateral with cavitation, left.

7-7-31 - Consultation from Tuberculosis Division. Advises spine fusion at this time.

Spinal fusion

7-8-31 - Spine fusion today. Preoperative diagnosis: Pott's disease of the second and third lumbar vertebra; fluctuating abscess on the medial aspect of the right upper thigh, probably from a dissecting ilio-psoas abscess. Also bilateral apical pulmonary tuberculosis. Spinal anesthesia. Procedure: An incision was made over the upper lumbar vertebra and a regular Hibb's fusion made in the customary manner, wedges of bone being brought down from the spinous processes and imbricated in the usual fashion. A posterior moulded plaster shell was then made.

7-9-31 - Vital capacity 2700.

Ileus? Better

7-12-31 - Patient had some distension after operation. Relieved by pituitrin.

Some eructation and vomiting, relieved by gastric lavage. Now feeling well and appetite good. Temperature down. Now being turned, back rubbed twice daily. Small pressure sore noticed over coccyx yesterday. Some better today. Patient ran fever on the second day post-operative up to 101, pulse to 130; but now almost normal.

7-13-31 - Vital capacity 2375.

7-20-31 - Vital capacity 2775.

7-27-31 - Condition continues most satisfactory.

7-29-31 - Vital capacity 3100.

Meningitis?

7-31-31 - Temperature 99, pulse 80 and respirations 18. Cod liver oil oz. 1/2 t.i.d. 7:45 A.M. - Emesis of greenish fluid, 150 cc. Complains of eyes being sore. 9:30 P.M. gastric lavage. Sodium bicarbonate, 10%, used.

8-1-31 - Temperature 100, pulse 60, respirations 18. Note by Intern: For three days, patient complained of headache and nausea with occasional vomiting.

Neck questionably stiff. No true Kernig's but neck not able to be completely extended when thighs are fully flexed. Babinski normal. Pseudo-clonus on right. Meningitis considered. Eye grounds normal. Gastric lavage last night gave considerable relief. Today has some headache but no nausea. Appetite better. Gastric lavage returned about 500 cc. dark greenish material and fluid. Temperature 100 today. Urine - albumen 1+, Blood - Hb. 75%.

8-2-31 - Vital capacity 2850. Temperature 100 to 101, pulse up to 90; respirations 18. Appetite poor. Complains of pain in eyes, muscles and jaw. Given aspirin and phenacetin for headache.

Puncture

8-3-31 - Temperature up to 103.2, pulse 90, respirations 18. Neurological consultation: Patient is negative neurologically as far as can be determined in the light of the patient's poor cooperation except as follows: 1. Patient is moderately confused. 2. There is a questionable right lower facial paresis. 3. Deep reflexes moderately reduced. 4. Moderate rigidity of neck. Tuberculous meningitis most likely. Since lumbar puncture is out of the question because of the spinal fusion, cisternal

puncture should be done. Spinal puncture:
 fluid slightly cloudy, Nonne positive,
 Noguchi positive, No report on Wasserman
 (St. Board or Larson), cell count 250,
 differential - pmm 15%, L 85%, gram stain
 no bacteria, tubercle bacilli stain
 negative, pellicle formation slight.
Blood - 12,000 wbc&s, Morphine Sulphate
 gr. 1.6 (H), twice daily. 12:30 P.M. -
 patient very restless and irrational.
 Seems in dazed condition. Restrained with
 sheet. 8:10 P.M. - hypodermoclysis of
 1500 cc. normal saline, 8:45 P.M. - hypo-
 dermoclysis discontinued. 9:45 P.M. -
 patient much better. 10:15 P.M. - some-
 what restless. Said he gets too tired if
 he lies still all of the time.

Worse

8-4-31 - Transferred from orthopedics
 to neurology. Condition is practically
 the same. Neck is a little more rigid.
 There is an internal strabismus of right
 eye. About 75 cc. of cloudy fluid was
 removed by cisternal puncture. Patient
 is being kept comfortable by morphine.
 11 A.M. - hypodermoclysis of 1000 cc.
 normal saline with 5% glucose. 9:50 A.M. -
 Cisternal puncture. Cheyne-Stokes respira-
 tions. Patient pulled out hypodermoclysis
 needle several times. Very restless.
 Hands and feet restrained. 4:00 P.M. -
 hypodermoclysis discontinued. 6:20 P.M. -
 Intravenous of 1000 cc. of 10% glucose.
 7:00 P.M. - 1500 cc. of 10% glucose started.
 Spinal fluid - cells 750 wbc&s.

8-5-31 - Patient seems slightly im-
 proved this morning. Lies quietly in bed
 without narcotics. Apparently rational.
 Takes fluids well by mouth.

Drainage

8-7-31 - Condition unchanged. Patient
 is rational most of time. Does not com-
 plain. Takes fluids well by mouth. Note
by Intern: Daily cisternal taps being
 done. 40 to 60 cc. fluid withdrawn each
 time. Highest cell count 750 per cmm,
 with lymphocytic preponderance. Cell
 count yesterday reduced to 340 cells.
 Patient more rational and appears improved.
 Takes nourishment and fluids quite well.
 No bacterial found in spinal fluid.
 Cultures and guinea pig inoculations have
 been done. Centrifuged sediment of
 spinal fluid showed no tubercle bacilli.

8-8-31 - Morphine sulphate gr. 1/6 (H),
 twice today. Talks irrationally at times.
 Antagonistic to treatments, Cisternal

puncture being done every day.
 Strabismus in both eyes more marked.
 Beginning nystagmus. Breathing regular,
 fairly deep. Pulse, quality good.
 Temperature 100.8 to 102.8. Spinal
 fluid - 200 wbc's. Differential -
 Pmm 20%, L 80%. Blood chemistry - 655
 mg. Sodium chloride to 100 cc. of
 spinal fluid. Urine - negative.

Exitus

8-9-31 - Note by Fellow: Became
 stuporous last night and cannot be
 aroused now. Has clonic contractions
 of both upper extremities. Very slight
 strabismus this morning. Neck rigidity
 is less marked than previously. Biceps
 and triceps reflexes are hyperactive.
 Knee jerks and ankle jerks normal.
 Babinski negative. Bladder distended
 and reached nearly to umbilicus. Note
by Intern: Took sudden turn for worse
 during night. Is in deep stupor from
 which cannot be aroused. Eyes are fixed,
 glassy; strabismus and nystagmus almost
 completely gone. Neck rigidity less
 marked. Breathing rapid and shallow. P
 Pulse is thready. Is having almost
 continuous contractions and twitchings
 of muscles of arms and legs. Bladder
 was distended with urine, catheterized.
 Given 2000 cc. of 10% glucose, intrav-
 enously. Cisternal puncture done,
 about 45 cc. of cloudy fluid removed.
 Pressure increased greatly. Patient
 sinking rapidly. 7:50 P.M. - patient
 expired.

Autopsy

The body is that of a well-developed
 somewhat poorly nourished, white male,
 31 years of age, measuring 175 cm. in
 length and weighing approximately 130#. There
 is an area on the medial side of
 right thigh extending from perineum
 down to middle third that is fluctuant.
 The left leg is negative. Rigor is
 present. Hypostasis is purplish and
 posterior. There is no edema or
 jaundice. There is slight cyanosis of
 finger-tips. The pupils measure 4 mm. in
 diameter, right and left.

The surface of the Peritoneal Cavity
 is smooth, moist and glistening. The
 organs are in normal relationship to
 one another. The spleen and liver are
 not enlarged. The Appendix is free
 and normal.

There is no increase in fluid in the

Pleural Cavities. There are adhesions at the right apex and to a lesser extent at the left apex. The organs are in normal relationship to one another. The surface of the Pericardial Sac is smooth. There is no increase in fluid.

The Heart weighs 350 Gm. and is firm in consistency. The myocardium is reddish-brown in color. There is no evidence of increased fibrosis. The epicardium is smooth. There are no valvular defects. The coronaries are smooth. The Root of the Aorta is negative.

The Right Lung weighs 700 Gm., Left 300 Gm. The surfaces are smooth except at the apices. There is no evidence of consolidation. On section, there is some congestion in both lungs. In the apex of the left lung, there is a small tubercle, measuring about 1.0 cm. in diameter, cuts with increased resistance and on section appears to be an old, healed tubercle which is calcified. There is no evidence of cavitation, necrosis or caseation in the lung. There is no bronchopneumonia. Upon later section of the lungs, there are numerous caseous pinpoint areas from which a yellow exudate may be expressed. These areas are quite numerous in both upper lobes. (Diagnosis: Pulmonary tuberculosis, active.)

The Spleen weighs 250 Gm., is firm and cuts readily. On section, the pulp is quite firm. The malpighian corpuscles and trabeculations are distinct.

The Liver weighs 1500 Gm. The capsule is smooth. On section, the lobulations are distinct grayish-brown in color, no congestion.

The Gall-Bladder and Gastro-Intestinal tract are negative.

The Pancreas weighs 100 Gm.

The Adrenals are two in number and essentially normal.

The Right Kidney weighs 200 Gm., Left 175 Gm. The capsule strips easily and cuts readily. On section, the cortex and medulla are distinct. The glomeruli are distinct.

The Genital Organs are normal.

Retroperitoneal tissues. In both psoas regions, there are large suppurating areas. The muscle is distended and on inspection there is no evidence of pus. Upon excising the muscle of the left side, there is a large amount of pus obtained, about 200 cc. of foul, greenish-yellow, thick, purulent material. This extends

down to Poupart's ligament. On the right side, there is about twice as much pus, the process is much more extensive and extends down below Poupart's ligament. On pressure of the above mentioned abscess, the medial aspect of the thigh, pus is obtained along the psoas muscle and above. These abscesses arise from the region of the second and third lumbar vertebrae. These vertebrae are removed and noted to be quite soft and contain purulent material.

Head. The scalp and calvarium are normal. The vessels of the cortex and brain are injected. There is no evidence of pus. The brain is removed and noted that there is some clotted blood along the base and in the medullary cerebellar region there is another localized sub-arachnoid hemorrhage about 2.0 cm. in diameter. There is only a very small amount of fibrinous exudate over the base. No evidence of tubercles seen. The brain is not incised but sent to Dr. Myers' office for final examination.

Diagnosis:

1. Post-operative spinal fusion (clinical).
2. Tuberculous meningitis (?).
3. Bilateral psoas abscesses.
4. Healed tubercle in apex of left lung.
5. Congestion of lungs.
6. Congestion of liver, spleen and kidneys.
7. Active pulmonary tuberculosis.

Microscopic: Lungs - Tuberculous pneumonia.

III. CASE REPORT

ARACHNOIDACTYLY: SCOLIOSIS, CARDIAC HYPERTROPHY.

Path. Shimonek.

The case is that of a white female, 12 years of age, admitted to the University Hospitals 7-6-31 and died 8-1-31 (26 days).

Nine weeks old.

1919 - Patient at this time (9 weeks old), patient had poliomyelitis or meningitis. The history is not clear as to just what it was.

Delicate

1919 to 1930 - Patient was always a delicate child and had never gained weight. She was mentally alert. Patient was fairly active and played with other children in a normal way.

Heart Disease

Early 1930 - Patient became dyspneic. At this time, it was noted that she was becoming round-shouldered and also short of breath. During the course of a routine examination at school, it was discovered that she had marked cardiac hypertrophy of either a congenital or rheumatic origin.

Hospital

7-6-31 - Admitted to the University Hospitals. Physical examination reveals a white female child, 12 years of age, with highly colored cheeks and highly colored lips which are suggestive of a slight cyanosis. Patient is very thin, markedly underweight, and of an asthenic habitus. There is marked scoliosis of the dorsal spine with the apex directed to the right. Examination of the heart reveals marked hypertrophy to the left and a very loud systolic blowing murmur heard chiefly over the apex but also in the entire chest wall anteriorly.

Eyes - has worn glasses since the age of 5: pupils react to light and accommodations. Abdomen - liver not enlarged; spleen not palpable; negative. Progress: General diet. Laboratory: Hb. 76%, rbc's 4,350,000, wbc's 8,650, Pmn 63, L 36, E 1.

X-ray

7-7-31 - X-ray - dorsal spine, hands and feet, sella tursica, 6 ft. heart and esophagus-- Conclusions: Marked scoliosis and kyphosis of dorsal spine, structural in type. Cardiac enlargement, probably congenital. No displacement of esophagus. Pleuro-pericardial and pleural adhesions. Negative sella. Electro cardio-gram - Sinus arrhythmia. P₂ split. Sinus tachycardia. Patient seems nervous and excited. Fairly good day.

Well

7-8-31 - Urine - occasional wbc's. No complaints.

7-9-31 - Blood pressure 108/70. No complaints.

7-11-31 - Patient feels better. Wishes to go home. Blood pressure 108/62.

Culture

7-13-31 - Blood pressure 125/72. Blood culture (taken 7-7-31) - gram positive cocci in clumps. Staphylococcus. Probably contamination. Put up in lateral opposed traction on Bradford frame in fracture bed for reduction of spinal scoliosis.

7-15-31 - Temperature, pulse and respirations are normal. Patient feels comfortable.

Traction

7-17-31 - Still in frame with traction but does not maintain traction very well. Condition good.

7-18-31 - Blood pressure 104/58. Urine specific gravity 1.018, 15 - 25 pus cells per high power field, 1-2 rbc's per high power field, occasional epithelial cells. Temperature, pulse and respirations are normal. Cod liver oil with orange juice, three times daily.

7-23-31 - Still in traction. Cod liver oil. Orange juice. Good day. B.P. 110/70.

Consultation

7-24-31 - Patient seen with respect to advisability of operation for correction of the scoliosis. As to whether her heart condition warrants an operation-- patient has marked cardiac enlargement with loud, blowing, systolic murmur and thrill with P₂ sounds slightly greater than the P₁. Considering all factors, such as blood pressure, electrocardiogram and esophagram, it is not possible to say for sure whether the condition is congenital, acquired or explained on the basis of the scoliosis. She is now well compensated, but no matter what the cause is, the present condition of scoliosis will undoubtedly cause continued embarrassment to the heart. The ultimate prognosis in her present condition is not good and as long as the present condition is quite satisfactory, it is believed that an operation is indicated.

Spider fingers and toes

7-25-31 - Urine - few wbc's, no rbc's. Good day. It was mentioned by the Pediatric Staff that this girl showed symptoms of syndrome known as arachnodactylia (that is, the long fingers and toes, abnormally long bones in hands and

feet) indicated a growth disturbance, prolonged ossification of the epiphysis and also that in this condition muscular weakness is a prominent factor which probably is the basis for her scoliosis and kyphosis.

7-27-31 - Cast on in two days. Condition same. S.S. enema - expelled with good results.

7-31-31 - Urine - specific gravity 1,022, some oxalate crystals. Patient turned twice daily. Surgically prepared.

Fusion

8-1-31 - 6:30 A.M. - sodium amytal gr. 1-1/2. S.S. enemagiven - expelled with good results. 7:30 A.M. - Morphine sulphate gr. 1/8 and atropine sulphate gr. 1/200. 7:45 A.M. - to operating room, where a combined Hibb's Albee spinal fusion was done. 9:35 A.M. - returned from operating room in good condition. Patient conscious. Pulse fairly strong. Color in face fading. 11:30 A.M. - Quality of pulse is poor. 11:35 A.M. - patient in shock. External heat applied. 12:15 P.M. - Intravenous of 10% glucose started. 1 P.M. - hypodermoclysis of 10% glucose started. 1:10 P.M. - hypodermoclysis discontinued. 1:30 P.M. - complaining of difficulty in breathing. 2:40 P.M. - ephedrine 1/2 cc. (H). 2:45 P.M. - intravenous of saline attempted - not successful. Respirations becoming labored. 2:55 P.M. - Patient expired.

Autopsy

The body is that of a white female, 12 years of age, appearing to be excessively tall and thin for her age, measuring 160 cm. in length and weighing approximately 100#. Rigor is present. Hypostasis is purplish and posterior. There is no edema, cyanosis or jaundice. Each pupil measures 3 mm. in diameter. There is marked scoliosis of the thoracic spine. There is an extensive operative incision along the thoracic spine about 16 cm. in length.

The Peritoneal Cavity is normal.

The Pleural Cavities contain no fluid and are normal in appearance. The surface of the Pericardial Sac is smooth and shiny and contains a normal amount of fluid.

The Heart and Lungs are removed intact and careful dissection is done for pos-

sible detection of patent ductus arteriosus but none was discovered, however. The Heart weighs 300 Gm. The Left heart is apparently somewhat hypertrophied. The foramen ovale is closed and the intraventricular septum shows no patency. There is some thickening of the tricuspid valve. The Root of the Aorta is normal. The coronaries are normal.

The Right Lung weighs 250 Gm., left 200 Gm. No gross pathology is found.

The Spleen weighs 100 Gm. and is apparently normal.

The Liver weighs 675 Gm. and is normal.

The Gall-bladder and Gastro-intestinal Tract show no change.

The Right Kidney weighs 75 Gm., Left 100 Gm. Both are apparently normal.

The Thymus weighs 20 Gm.

The Head is not examined.

Diagnoses:

1. Arachnodactylia.
2. Scoliosis of thoracic spine.
3. Operative incision (recent spinal fusion).
4. Cardiac Hypertrophy.

IV. ABSTRACTS

1. OPERATIVE FUSION OF THE TUBERCULOUS SPINE. Henderson, M.S., J.A.M.A. 92:45-48, Jan. 5 (1929). Abstractor - Shimonek.

1. General statement: The mortality rate (end) for this operation is high but there is also a high potentiality for permanent disability. Hibbs and Albee, first published in 1911 on "Methods of Fusion of Spine." In the former, a fusion instead of a graft is used. Ref.: (1) N.Y. M.J. 93:1013-1015. 1911. (Hibbs). J.A.M.A. 57: 885-886 (Sep. 9) 1911. (Albee).

2. Review of recent literature.

Gardlestone (19 and 22) reported 100 cases from England and showed that various writers favored the operation for adults but not for children.

Stone (1920) reported thirty-three cases in children with thirty-two controls for comparison. Conclusion: Ankylosing operations in children (for tuberculosis) should not be recommended.

Committee of American Orthopedic Association (1921) were evidently favorable to the method but recognized its limitation and the difficulty in prognosing end results in such a chronic disease.

Wheeler (1922), 27 cases, recommended conservative treatment for children and in absence of contra-indications fusion operation for adults.

Calvé and Galland (1922), 16 cases (adults). Conclusion: Not necessary for well-to-do adults who do not have to do manual labor. Conservative measures usually adequate.

Waldenstrom (Scandia), 80 cases, reported favorable results, some in children, provided that deformity is first corrected and then the graft is done.

Sisler (1924) (Willis Campbell Clinic) recommends conservative treatment for children and operation for adults.

Kidner and Muro (1927), 14 cases, paired seven cases for operation and seven for mechanical fixation. Attempted to get same type of cases in both series, using Hibbs' method. Recommends conservative treatment as the result of their experience.

Henderson (1917) and Meyerding (1920), Mayo Clinic, avoid the operation for children but recommend it for adults.

Hibbs (American Orthopedic Association) (May 1928) reports 286 cases with follow-ups (over seven years). More than 80% of the series were children. Report 75% cured (careful follow-up and repeated observation done.) Mortality rate in traced cases was 26%. (7 to 15 years after operation), other forms of tuberculosis usually cause death. Operative mortality 0.9%.

3. Material: Present report from Mayo Clinic uses as only criterion for successful restoration of function.

Group 1, practically well and fully returned to duty, - relieved of all symptoms, no abscess, no increase in deformity.

Group 2, able to earn living (light work) marked improvement, some pain and weakness, no increase in deformity.

Group 3, part-time work, increase in deformity or abscesses, some improvement.

Group 4, incapacitated, no improvement, deformity increased, abscess may be present.

Group 5, deaths from all causes.

4. Method of Selection of Cases.

Operated on cases in which the pulmonary involvement was cured or the patients were well on the way to recovery; no renal involvement. Draining abscesses may be present, provided they are not in the field of operation. Few before puberty. Albee operation in most cases. If general anesthesia was contra-indicated, used local anesthesia and Hibbs' operation. Postoperative care was: a. rest on a Bradford frame for six weeks,

b. brace or cast for one year from the time the symptoms cease,

c. heliotherapy in the summer or lamp in the winter,

d. general regimen.

5. Sex - Age

301 cases (269 bone graft, 32 Hibbs' plastic) (1912 to 1925). 196 females, 105 males, average age (28) as follows: 1 to 10, 16; 11 to 20, 18; 21 to 30, 147; 31 to 40, 80; 41 to 50, 33; 51 to 60, 7.

6. Lesions

Tuberculosis was present elsewhere in 101, (65 had pulmonary involvement), 1 cervical spine, 121 dorsal spine, 45 dorsal lumbar, 134 lumbar. 11 had more or less paraplegia, 1 being in group 1, 3 in group 2, 3 in group 3, 1 in group 4, (1 died and 2 not traced).

7. Results

Operative mortality, 1.0%.

Authors comment: Usually two to three year convalescence necessary. Closer to two than one, often three. Useless to submit patients with advanced pulmonary tuberculosis to operative procedure (urinary tuberculosis also a contra-indication). It must be remembered that the operation is only a splint and does not eradicate the disease. It seems to be better in the lumbar spine than elsewhere, although Hibbs' state that it was better in the dorsal region.

Summary: Results: Group 1, cases 39, 34%. Group 2, 48 cases, 18%. Group 3, 41 cases, 16%. Group 4, 52 cases, 18%. Group 5, 54 cases, 20%. Definite improvement in 69% (first three groups), 53% in groups 1 and 2. Definitely of value if no contra-indication exists. Comments follow: (Allison) 20 years ago, Bradford

said that his frame had reduced mortality in Pott's disease from 75 to 50%. According to Henderson's report, another cut is now available to 20%. At the Massachusetts General Hospital, they had 73% successful fusions, 50% in adults getting patients back to work, death rate 24%. All figures about the same as Henderson's. H. P. Thomas (Chicago) stated that children can be operated with success, providing careful selection is made.

2. THE BONE GRAFT OPERATION FOR TUBERCULOSIS OF SPINE. (20 years experience). Albee, F.H., J.A.M.A. 94: 1467 to 1471 (May 10) (1930).

1. General Statement

Tuberculosis of joints is never cured until ankylosis sets in. Emphasizes necessity of blood supply for operative treatment by starting operation above and continuing it below to the normal vertebra. By using fresh grafts, osteogenic factor is secured (this is lowered in diseased spinal tissue). Also, believes there is less shock in his operation and says that he can do one in 9 minutes in a favorable case.

2. Indications

Operates on any patient regardless of age, if the risk is good. This depends on general condition of patient. Contra-indication - high temperature due to bacteremia (not a contra-indication when due to tuberculosis), paraplegia, psoas and paravertebral abscess are added indications. Multiple lesions are not a contra-indication. Presence of sinuses not serious even in the field of operation as they may be sealed with collodion before the procedure is started. Children should be operated early (note this).

3. Material

Clinical summary of 865 cases (20 year period). Age-- Under 10, 181, 10-19, 158; 20 to 29, 197; 30 to 39, 173; 40 to 49, 83; 50+, 73. Duration of disease-- under 1 year, 165, 1 to 2 years, 158, 2 to 5 years 255, 5+ years 285.

4. Results

Excellent 631, 73%; good 148, 17%; fair 69, 8%; death 17, 2%. These patients were followed as follows: Under 1 year, 30 cases; 1 to 5 years, 550 cases, 5+ years,

285 cases.

Comments by Author:

"Fusion of spine has been accepted by surgeons in the treatment of tuberculosis and other diseases of the spine. An operation (statement by Allison) the purpose of which is to create bony union between several vertebrae) is indicated when either injury or disease has caused or is causing a destruction of one or more vertebral bodies."

Authors do not all agree on indications for fusion or method of accomplishment. Albee believes, however, that after viewing certain cases, if operations were done earlier they could have been soared years of invalidism. If one could foresee, one would operate in the great majority of cases. Since one cannot foretell, there is only one attitude to adopt toward a given case and that is to consider that it may be unfavorable and to operate in every case. To be sure a certain number of cases respond to any kind of treatment. It is this small percentage which has encouraged some surgeons to use conservative methods and to prolong conservatism even in the face of clear evidence that the case demands more radical treatment.

Impressions:

1. The Albee and Hibbs operations were both originated in 1911.
2. Both hope to achieve spinal fusion (ankylosis).
3. Reports of extended follow-ups are now available (large series), i.e., Hibbs - 286 cases, Albee - 865 cases. Henderson (Mayo Clinic) 301 cases.
4. Definite criteria for success of operation have been formulated (Mayo).
5. The operation is indicated in every case of spinal tuberculosis (in good condition) or in cases with healed or healing pulmonary tuberculosis, and no renal changes in adults, or in adults who have to earn their own living, or never, always, sometimes in children or after first correcting deformity or not all (conservative treatment).
6. Immediate mortality is 1.0%.
7. Remote mortality (failure usually due to advance of disease elsewhere) is 20%, 24%, 26% and (2%) Albee? Last series not the same as others (follow-up).
8. Disease occurs in all age periods

and may be present some time before operation is done.

9. End results are excellent in 69%, 73%, and 75%.

V. ABSTRACT

ARACHNOACTYLY. Abstractor Shimonek. Young, E., Arch. Dis. of Childhood 4: 190-214 (Aug.) 1929.

1. General Statement

Disease first described by Marfan (1896). First seen in America by Piper and Irvin-Jones. Ref. Amer. J. Dis. of Child. 31: 832 (1926). Achard (1902) first used present term.

2. Cause

a. Muscle

Thursfield (1917) favored dystrophic view-point. Author regards atony and poor development of entire musculature as one of main features of disease. Review of literature indicates that disease is definite clinical entity but etiology is still questionable. 22 cases are on record, 4 are reported by the present author.

b. Heredity

2 cases reported by author are brother and sister. Mother also had disease and all three showed other defects, suggesting hereditary or constitutional basis.

c. Endocrine

of 26 cases, 16 were present at birth; others were probably present at this time but were overlooked (our case?). This is exceptional since other anomalies dependent on endocrine defects, do not appear until later (thyroid). In 2 cases doubtful lesions were found in pituitary gland. In radiograms taken in present series, changes were found to some degree in the sella of each. In spite of this, the author does not believe that the condition is due to any endocrine disturbance.

d. Mental defect

Condition is allied to Mongolism but the mentality in his cases and most of the cases taken from the literature is normal. This idea is therefore unpermitted.

e. Cartilage

Hyper-chondroplasia suggested because of activity of epiphyseal cartilage shown in the x-ray. But later cases have not shown this change.

f. Dystrophy

i.e., Primary muscular dystrophy. Thursfield is first to stress atony and poorly developed musculature. He thinks that it is closely allied to amyotonia congenita.

3. Sex

61% were females.

4. Clinical Picture

Laxity of ligaments is a feature in 18, not mentioned in 8. Contractures in 8. Muscular symptoms present in 20 of 26. Blood pressure low, pulse pressure high. Abnormal lengthening of hands and feet, especially fingers and toes, abnormally tall but hands and feet still relatively larger. Thinning of the bones. Slenderness of fingers, accentuated by deficiency of soft tissues. Height is greater, weight is less, due to the deficient musculature and loss of subcutaneous fat. (See our case). Mentality-- 90% normal. Teeth, usually normal. Speech, occasional impairment. Head and face, skull commonly abnormal (2/3). In 6, the shape was dolichocephalic. Thorax, abnormal, 42 (funnel-shaped 1/4). Spine, kyphosis common 1/2, may also have scoliosis or combination of the two (result of muscular weakness?). 17 of 26 cases shows abnormality of the external ear. Eyes, 1/4 congenital dislocation of lens. Lungs, liability to disease because of chest deformity. Heart, 9 cases; 5 were supposedly congenital; 2 had patent foramen ovale and 3rd patent inter-auricular septum.

5. Treatment: No mention of any.

Impression:

Congenital defective development involving muscles, bones, ligaments, lens, ears, heart, resulting in abnormally tall, thin individuals with spider-like hands and feet, probably on an heredity basis.

VI. ABSTRACT:

RESULTS OF THE TREATMENT OF SCOLIOSIS

Ref.

Flagstad, A.E., J.A.M.A. 93:1623 to 1625 (Nov. 23) 1929. Reports in private practice 100 cases, Gillette Hospital 150 cases. 70% females, 30% males.

Cause: 63% idiopathic, 27% due to poliomyelitis. As a general rule late cases were seen. Conservative treatment should be tried first, usually poor operative risks, attempts should be made to correct the deformity before operation.

Ref. - Scoliosis treated by the fusion operation and end results: Study of 360 cases. Hibbs¹, R.A., Risser, J.C., and Ferguson, A.B. J. of Bone and Joint Surg. 1391 - 1394 (Jan. '31).

Material

360 cases (427 operations). Operative mortality 7 cases, 1.6%, as follows: Postoperative pneumonia, 2 cases. Shock 2, one had 13 vertebrae involved, 1 septicemia, one pleurisy and pneumonia, and one 13 weeks afterward from an intestinal condition not related to the operation.

Etiology

228 females, 63%; 132 males, 37%. 24% poliomyelitis. 4% congenital anomalies. 2 cases empyema. Remaining 184 were of undetermined etiology.

Comment:

This emphasizes the idiopathic nature of scoliosis. In 56%, the curve was first noted from 5 to 15 years of age. Fusion of part of the posterior element was found in 28 cases (8%), natural fusion found in 36% of congenital anomalies. Longest fusion was an involvement of 15 vertebrae.

Types

Age 10 to 20 years, 88%; of these, 40% were from 11 to 15. Believes operation should be done earlier as it is easier to prevent than to correct them. Over 20 were operated for pain. The oldest patient was 45, the youngest 1 year and 11 months.

Follow-up

245 were examined and x-rayed. 13 were examined but not x-rayed, 4 were not examined but answered questionnaire; 23 examined some years previously, making

79% examined. Remaining 21%, 17 were dead and 58 were not available. Elapsed period--16 patients 10 to 15 years, 113 patients 5 to 10 years, 156 patients 2 to 5 years.

Criterion - x-ray in sitting posture dropped line from beginning to lower aspect of curve. Measured angle to the apex of curve. (Pre- and post-operative measurement.)

Results of 285 cases examined--

24% maintained correction 5 to 15 degrees; 3% maintained correction of 15+ degrees. Not including the above, 50% showed no increase in curvature. No case 17 or older showed an increase of curvature. The younger the patients are at the time of operation, the greater the chance of developing more curvature afterward. Females complete their vertebral growth from 14 to 16 years, males from 15 to 17 years. 33 cases of series were pre-adolescent and therefore may show an increased curvature some time in the future. The end results subtracting these are: 2% maintained 15+° correction; 21% maintained 5 to 15° correction; 47% (exclusive of above) showed no increase in curvature; 70% total showed no increase. It was increased in 30% probably due to short or inaccurately selected fusion areas.

Impression

1. Scoliosis is more common in females (63-70%).
2. Most are idiopathic (63%-72%). Other causes are poliomyelitis (24%-27%), congenital (4%), empyema, etc.
3. In over half the curve is first noticed from 5-15 years.
4. 88% are operated from 10 to 20 years (reported series).
5. Natural fusion may be present (8%).
6. As result of operative fusion 70% showed no increase in curvature. Increased in 30%. In 23% curvature remained overcorrected (5 to 15+°)
7. No cases older than 17 showed increase in curvature (growth has stopped).
8. The younger the patients at time of operation the greater the chance of increased curvature.