

Staff Meeting Bulletin
Hospitals of the . . .
University of Minnesota

Urogenital
Tuberculosis

STAFF MEETING BULLETIN
HOSPITALS OF THE . . .
UNIVERSITY OF MINNESOTA

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Published for the General Staff Meeting each week
during the school year, October to May, inclusive.

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William A. O'Brien, M.D.

I. LAST WEEK

Date: October 29, 1936

Place: Recreation Room
Nurses' Hall

Time: 12:15 - 1:28

Program: Movie: Volcanoes in Action

Abstract: The Treatment of
Gastric and Duo-
denal Ulcer

Present: 111

Discussion: L. G. Rigler
C. J. Watson
M. Wetherby
J. A. Layne
J. Spano
R. Johnson
A. L. Herman
B. A. Watson

Gertrude Gunn
Record Librarian

II. MOVIE

Title: Brittany

Released by: French Steamship Line

* * * * *

III. HOME COMING

All-medical, dental, nursing, medical technology, dental hygiene, medical social work - homecoming celebration will take place in Nurses' Hall lounge and recreation room Saturday, November 7, immediately after the game. Refreshments will be served and an orchestra will play for dancing in the recreation room. The hospital staff is urged to come and extend a cordial welcome to our returning alumni.

IV. ABSTRACTUROGENITAL TUBERCULOSIS

A. Keller Doss

Tuberculosis is rarely, if ever, to be considered as a primary lesion of the urogenital tract. The lesion is a secondary manifestation of active or healed extra-urogenital tuberculosis.

Incidence

From January 1, 1894 to January 1, 1918, 85,000 patients were operated on at the Mayo Clinic. The incidence of surgical renal tuberculosis was 0.8% (532 cases). Henline comments that 0.5% of all surgical operations and 27 to 30% of all kidney operations are performed for renal tuberculosis. In a review of 1,724 patients with urological lesions, 10% had renal tuberculosis. Kapsammer, in 20,000 autopsies, found 191 cases (1%) of renal tuberculosis. The incidence of infection in the ureters and the bladder depends for the most part on renal disease. One occasionally finds reference in the literature to a primary ureteral or vesical lesion, but the validity of such reports in each instance is universally questioned.

Age and Sex

Renal tuberculosis is essentially a disease of early adult life. Braasch, in studying a series of 532 cases, found 68% (365 cases) were between 20 and 40 years of age. Henline noted that 70% of 97 cases of nephrectomy for tuberculosis fell within this age limit. Sex seems to play no significant part.

Bacillemia and Bilateral Renal Involvement (?)

It is generally accepted that a bacillemia precedes renal tuberculosis and many investigators claim that in each instance the renal involvement is bilateral in its incipency. Medlar is

one of the chief exponents of this view. In examining 30 patients who died of pulmonary tuberculosis, bilateral infection was the rule in every instance in which both kidneys were examined, i.e. 16 cases. Band examined both kidneys of 5 patients who had bacilluria, finding no evidence of gross involvement in any instance, but demonstrated bilateral lesions on microscopic examination. A large number of investigators adhere to the theory of bilateral involvement during the presence of an active bacillemia (Harris, Thomas and Chute). Most of the proof offered is based on data obtained from terminal cases of tuberculosis or on the experimental animal subjected to an overwhelming infection. Those taking issue with these opinions do so on the basis that such evidence is in no way comparable with that found in the usual clinical case. There seems to be little hope of settling this question until a detailed study is made of renal diseases in cases of incipient renal tuberculosis dying during some intercurrent infection. Wildbolz states that in a series of more than 1,000 cases of advanced renal tuberculosis he found bilateral involvement in only 12% of the cases.

Pathology

Medlar and Sasano, using rabbits and guinea pigs as experimental animals, described three types of early renal lesions.

1. Cortical:

Start in a glomerulus or a small capillary between tubules in the cortex. These lesions resemble early tuberculosis in the human. There is little tendency to necrosis unless numerous bacilli are present. As a rule, the amount of fibrous tissue is increased with an attempt to wall off the lesion. Such lesions are usually discrete and could be spread by wandering phagocytes. No connection with the medulla could be found in these instances and it was doubted that bacilli from these lesions could reach the urine, unless by extensive necrosis.

2. Pyramidocortical type

Represented by a can-shaped lesion closely resembling infarcts. These lesions begin in the region of the arcuate arteries and are associated with extensive necrosis in which tubercle bacilli are easily demonstrated. The neighboring collecting tubules contain leucocytes and bacilli. The cortical part of the lesion frequently shows numerous tubercles. The tubercles present are found to be solitary or conglomerate. Most of the lesions apparently start in the outer part of the medulla. This type is described as leading to the greatest amount of kidney destruction with ultimate cavity formation. The spread in all directions is thought comparable to that seen in the human kidney.

3. The pyramidal type

Had no connection with the cortex and seems to arise either from infected vessels in the pyramid or from a tubercle bacilli carried down through the lymphatics and tubules from ulcerating cortical lesions which may have become quiescent. This type is rare but when present leads to marked renal destruction.

Medlar, in examining 367 definite but small tuberculous lesions in the human found 277 (75%) were cortical; 40 (11%) were medullary; and 50 (13%) were cortico-medullary.

Wildbolz is convinced that the first renal lesions develop about the calyces and papillae.

Band did work which agrees essentially with that of Medlar. He stated that the earliest lesions were made up of epithelioid and mononuclear cells and that the larger lesions contained lymphocytes attracted by beginning caseation.

The pathological picture present in these early lesions is often spoken of as that characteristic of the preclinical stage.

The clinical-pathological picture is

characterized by the usual miliary, nodular, nonspecific inflammatory or caseocavernous types. The largest number of cases fall within the latter group.

Pathology of Tuberculosis of Ureter

(Hinman)

Relatively early tubercle bacilli are carried down the ureter setting up ulcerations first at the lower end of the ureter and then later these become diffuse and involve the ureter in its whole length.

Halle and Motz have described four stages of ureteral involvement:

(1) Tubercle formation first in the mucosa, spreading from this to the muscularis and periureteral tissues, associated with contractures and occasionally true stricture formation, with dilation of the ureter above.

(2) Dilation of the ureter associated with caseation causing complete destruction of the mucosa and muscularis. The whole wall of the ureter becomes thickened.

(3) If the kidney is still functioning, there appears the stage of canalization, i. e. the breaking down and washing out of caseous material, forming a dilated ureter with walls of fibrous and laminated tissue.

(4) "The late stage results in the transformation of the entire ureter into a fibrous cord without a lumen and a dead kidney above."

Vesicle Pathology

According to Kaufman, the earliest lesion may be merely a vague change in the vascular bed of the bladder with no change in luster of the bladder mucosa. The picture commonly seen in any form of cystitis may be present. The presence of a bright red, slightly edematous, "cracked" meatus, associated with a sharply defined erythema, often fan-shaped, extending downward and outward from the aperture usually involving only a part of the trigone is fairly characteristic of vesical tuberculosis. The meatus may be gaping and

retracted. The degree of cystitis varies from a poorly defined and limited redness to involvement of the whole bladder. Extensive destruction of the mucosa and muscular coat together with perivesical infiltration may take place, greatly reducing the bladder capacity and markedly increasing the bladder irritability.

Symptoms of Urinary Tuberculosis

The insidiousness of the onset together with the fact that the initial symptoms are not alarming causes patients to seek medical attention relatively late. In the majority of instances, bladder symptoms appear first and because these symptoms are frequently intermittent and usually respond to topical applications, the significance is likely to be overlooked. Henline, in a series of 34 cases, found that symptoms had been present from 2 months to 7 years before medical advice was sought. All but 5 of these had vesical symptoms. Munro, in 160 cases of extragenital urinary tuberculosis, found 22 with tubercle bacilli and pus in the urine who gave no symptoms. Harris noted, in a series of patients suffering from systemic tuberculosis, 9 (57%) of the adults and 8 (90%) of the children had laboratory evidence of renal tuberculosis without any of the usual symptoms. This emphasizes that early tuberculosis of the kidney is asymptomatic.

Pus in the urine is undoubtedly the first indication of renal tuberculosis. This is soon followed by symptoms of bladder irritability, the latter occurring in 75% of 108 cases studied by Caulk.

Approximately one-fifth of all cases of hemorrhage from the upper urinary tract are caused by tuberculosis. About 40 to 50% of the cases of renal tuberculosis bleed at one time or another. Henline found in 34 cases of renal tuberculosis that 65% complained of pain referred to the renal area and in many this was the primary symptom, and in still others this was the only complaint.

Bacilluria

Within recent years, there has been much discussion as to whether or not a normal kidney can excrete tubercle bacilli in the absence of definite renal pathology (Helmholz et al).

Lieberthal and von Huth comment, "If true, physiological excretion occurred, we should expect the organisms to be excreted regularly by the kidneys under the same conditions." "One would expect to see an accumulation of the organisms in the renal tissues, as occurs in the secretion of other substance by the kidneys." It would also be expected that tubercle bacilli would be found concentrated in the urine as compared with the blood; this however is not found to be the case.

Kirkpatrick investigated the matter of bacilluria using rabbits as experimental animals. He concluded, "The results indicate that permeation of the normal kidney is not a mechanism in the product of bacilluria under natural conditions."

Helmholz, et al, Allen and Montgomery were also unable to demonstrate bacilli in urine in the absence of renal lesions.

One sees the statement in the literature that tubercle bacilli are never found in the absence of pus. This speaks strongly for the presence of a destructive renal lesion before excretion of bacilli takes place. There are some who do not accept these statements.

History and Physical Examination

Braasch, in 300 cases of urogenital tuberculosis, found by roentgenography of the chest 84 cases (28%) of active pulmonary lesions. Search by means of history, physical examination and laboratory methods is necessary to determine the presence, degree and severity of the process elsewhere.

Urine

Tubercle bacilli are seldom, if ever,

demonstrated in the absence of pus cells. Pus in a sterile urine should make one strongly suspicious of the presence of tubercle bacilli.

Culture, Stain and Guinea Pig

Eisendrath gathered from the literature studies which had been made comparing the efficiency of the stain of sediment and culture in determining the presence of tubercle bacilli.

<u>Author</u>	<u>No. Cases</u>	<u>Cul- ture</u>	<u>Stain</u>
Eisendrath	30	30	20
Hohn	13	13	0
Fescher and Urgoiti	81	81	0
Brechmann	5	5	0
van Riehsdyk	5	5	0
Norton, Thomas & Brown	18	18	0
von Huth & Lieberthel	50	50	0
Seidman (2 series)	14	0	14
	14	14	0

Eisendrath quotes Carvalho as stating that to obtain a positive culture the presence of only a few tubercle bacilli is necessary. To find the bacilli by staining methods, a number varying from 10,000 per c.c. to a maximum of 100,000 per c.c. of sediment is necessary.

The disadvantages of the guinea pig method are:

1. A wait of 6 to 8 weeks for result.
2. Due to the irregular elimination of tubercle bacilli, too few bacilli for positive results may be injected.
3. Certain types of tubercle bacilli are not pathogenic for guinea pig.
4. A certain number of guinea pigs die of intercurrent infection.
5. Pseudo-tuberculosis in the rabbit and guinea pig is frequently noted, the gross lesions being identical with those produced by tubercle bacilli, necessitating the use of microscopic sections for definite diagnosis.

For these reasons, Eisendrath, von Huth, and Lieberthel prefer the culture method as a check on the smear. The medium used by each investigator is essentially an egg medium with various modifications. On these media, microscopic colonies can be demonstrated as early as the 7th and 8th day. Macroscopic colonies appear in the majority of instances from 15 to 19 days. Aside from the convenience and accuracy of the cultural method, positive results are attainable much sooner than with the guinea pig.

On the other hand, Thomas and Kinsella have obtained by guinea pig inoculation positive evidence of tubercle bacilli in 91% of cases. The high percentage of positive cases is attributed to the method of inoculation of the pigs. A voided specimen, if free from pathological elements, is chosen. If much debris and pus cells are present in the voided specimen, a "tube specimen," i.e. one in which the meatus in both male and female has been carefully prepared and the patient asked to void in a sterile test tube. If this specimen is still filled with debris and elements suggesting disease, a catheterized specimen is obtained. This is done once a week for a period of six weeks, injecting the same pig with each weekly specimen. Six weeks following the last inoculation, if the animal is not dead, it is killed and studied in the usual manner.

At the University of Minnesota Hospitals, the procedure is as follows:

The 24 hour urine is stored in the icebox during the period of collection. It is allowed to stand over night. About 50 to 75 c.c. of the sediment is removed and centrifuged for 3 hours at high speed. Smears are made of this sediment. The remainder of the total 24 hour specimen is sent to the State Board of Health where the total amount is centrifuged and the sediment injected into 2 guinea pigs (duplicates).

Roentgenology

Calculi

Eisendrath collected from the

literature 35 cases of renal and ureteral calculus associated with tuberculosis and added 5 cases of his own. The pre-operative diagnosis in 26 cases was as follows:

Renal or ureteral calculi with infection	13
Same and renal tuberculosis	1
Non-tuberculous pyonephrosis	2
Renal tuberculosis only	8
Suspected renal tuberculosis	1
Suspected renal tuberculosis and calculus	1

Crenshaw describes the types of calcification seen associated with tuberculosis:

- (1) Multiple scattered small areas of lime deposits, usually singly or scattered over the kidney.
- (2) Single or few localized areas:
 - (a) Shadow irregular in outline--less dense than the typical renal stone being 1 to 4 cm. in diameter.
 - (b) Shadow characterized by great irregularity in consistence and outline.
 - (c) Definite shadows with density and contour suggestive of stone.
- (3) The large, irregular, diffuse areas involving a large portion or the entire kidney. Shadows--large, round, variable density and putty-like consistency in section of the kidney.

In the 28 cases, Crenshaw found a total absence of symptoms. Caulk found calcification associated with renal tuberculosis in 10% of 108 cases.

Urography

Intravenous urography aids considerably in diagnosis of renal tuberculosis; however, normal visualization on one or both sides by no means excludes the diagnosis.

Braasch comments, "When any of the following signs are observed in excretory urography, namely, absence of or marked delay in visualization, irregular pyelectasis or ureterectasis, or failure of visualization of one or more calyces with irregularity of the pelvis, or definite necrosis on one side and a normal pelvis and ureter on the other, the diagnosis of renal tuberculosis often can be inferred."

Thomas found the pyelogram to be the first means of positive localization of a lesion in 56 of 170 cases.

Cystoscopy

The presence of disease in the bladder previously described should be looked for. Often the diagnosis of renal tuberculosis is made by inserting the scope and making only a few observations. One usually finds the capacity of the bladder decreased, considerable bleeding on very slight distention and a hyperirritable bladder.

Caulk makes the statement that 78% of his 108 cases were definitely diagnosed by cystoscopy. Routine catheterization of both ureters should be done in every case. In approximately one-fifth of all cases, catheterization of the ureter on the involved side is impossible.

Little or no evidence is advanced to prove that the uninvolved kidney became involved by implantation following catheterization. In order to prevent securing a false positive test resulting from contamination of the catheter in the bladder before it is introduced into the renal pelvis, it is always well to fill the catheter with water and plug the end with a phonograph needle. The needle is removed when the catheter has reached the renal pelvis. This obviates contamination as far as possible.

The question of reflux up the ureter which is said to exist in 1 to 2% of all cases may be settled by using the technique above mentioned and in addition placing methylene blue in the irrigating fluid within the bladder. If dye comes down the catheter which is now in the kidney pelvis, into the specimen tube,

reflux is definitely proven.

Treatment

"Nephrectomy for renal tuberculosis must be preceded by sanatorium treatment in some instances, and must be followed in many instances if clinical arrest of all lesions is to be accomplished" — Thomas.

The demonstration of tubercle bacilli in a ureteral specimen by no means indicates that nephrectomy should be done routinely.

Medical Treatment

Possibly the very early preclinical lesion, i.e. the one before development of symptoms is noted, should be given a thorough trial of sanatorium treatment before surgery is considered. This is advocated by Thomas, Thomas and Kinsella, Harris, and others. However, the recognition of such cases of renal tuberculosis is quite rare.

Wildbolz urges that time should be taken to definitely diagnose the nature of the lesion before surgery is instituted. If the presence of a fibrotic or indurative lesion is established, i.e. one in which there is no cavity, no caseation, and no tubercle formation, conservative treatment should be considered as frequently such lesions terminate in fibrotic healing.

Cases of advanced tuberculosis outside the urogenital tract must of necessity be handled medically. Again medical treatment is necessary when renal lesions are bilaterally advanced with poor function on each side. The cases of advanced renal calcification amounting to autonephrectomy in the absence of symptoms do well under medical treatment.

Requisites for Surgery

1. Caseocavernous lesion with an adequate renal function on the contralateral side.

2. Failure of a preclinical lesion to respond to medical treatment.
3. Exact localization of the lesion.

Contra-indications

1. Bilateral advanced renal tuberculosis with poor renal function (except in instances when removal of one kidney might prolong life).
2. Preclinical tuberculosis, bilateral or unilateral.
3. Extra-urinary tuberculosis in which there is no hope of prolonging life.
4. Very young or very old patient (response to surgery in each instance is poor).

Results

Medical Treatment

The results are gratifying only if the diagnosis is established early and proper therapy instituted. Parsons showed that 85% of patients treated medically, i.e. as a group, were dead within 5 years. Wildbolz, in 316 cases, treated medically, showed 58% dead within 5 years and only 6% living more than 10 years. Thomas and Kinsella, Harris and others have reported encouraging results using medical therapy in early lesions.

Surgical Treatment

When nephrectomy is done prior to vesical involvement, there is almost 100% cure but after the bladder becomes involved the probability of cure drops to 60%.

The immediate operative mortality is variously reported as 1.3% to 2.5%. Of 341 cases reported by Wildbolz in which 270 could be traced from 10 to 15 years postoperatively; 40% were dead and one-half of these died from involvement of the remaining kidney or from pulmonary tuberculosis. The third most common cause of death was miliary tuberculosis. Not less than 15% of deaths were due to intercurrent

disease. Of the entire number of patients operated upon, 59% were alive 10 years or longer and, with the exception of 3, were in good health. The 3 remaining with symptoms had a focus in the bladder. Coincident tuberculosis of the bladder healed within 2 to 5 years following nephrectomy if tuberculosis of the remaining kidney did not occur. Nearly all of the patients in whom cystitis did not spontaneously subside within a short time after nephrectomy were treated intensively by methylene blue and intravesical injection of iodoform, guaiac oil or gomenol. Some were treated with tuberculin and roentgen rays.

The presence of pyonephrosis with the tuberculous infection increases the mortality materially. Lumbar sinuses were reported to have developed in 23 out of 34 cases with complete closure of the sinuses occurring on an average of 4.2 months.

GENITAL TUBERCULOSIS (Male)

General Points:

In genital as in renal tuberculosis, one often finds the statement in the literature that a certain number of cases represent primary involvement of the genital tract. The basis is usually the failure to demonstrate the presence of a primary lesion elsewhere.

Frequency of Association with Tuberculosis Elsewhere:

Barney, in 154 cases of tuberculosis of the epididymis, noted tuberculosis in other parts of the body in 55.8% of the cases (lung involvement in 22.7%). In another series, 112 of 175 surgical cases, all verified by microscopic examination, no signs of tuberculosis other than in the urogenital tract were demonstrated. Of 63 other cases, 9 had healed or questionably healed pulmonary tuberculosis, 19 showed active tuberculosis in bones or joints, 8 had lymphatic involvement--54.8% total in which associated tuberculous lesions were demonstrated.

Bumpus and Thompson, in a series of 300 cases of genital tuberculosis, found associated renal tuberculosis in 110 (30%).

Origin of Infection in Genital Tract

In 1927, the chief topic of discussion in the International Society of Urology, held at Brussels, was that of genital tuberculosis. Much discussion was entered into as to whether the prostate, seminal vesicles, epididymis, or the testis was the primary focus in the genital tract. The matter was left unsettled and seems to remain in this state.

Young believes the primary focus to be located in the seminal vesicle, spreading to involve the remainder of the tract from this point.

McKenna and Sweany believe the primary lesion occurs more often in the prostate than is suspected.

A brief review of the literature shows that all parts of the genital tract have been considered as the primary focus.

Diagnosis

Diagnosis, for the most part, is entirely based on presumptive evidence obtained through the usual means of history, physical examination and laboratory methods. Usually no absolute confirmatory proof is available.

Stevens concludes, "Double epididymitis found on examination slightly favors a diagnosis of tuberculosis. A prior orchidectomy or epididymectomy almost invariably means tuberculosis. A scrotal sinus of over a month's duration is probably tuberculous (but it may be due to a gumma). Tuberculosis elsewhere in the body means genital tuberculosis in over 90% of such cases." These statements apply to cases presenting themselves for examination one month following epididymal swelling. If symptoms are present longer, "The older the lesion, the more does definite involvement of the prostate and vesicles point to tuberculosis; after 6 months, this becomes a very marked factor in favor of tuberculosis.

Keyes suggests that a lesion, if suspicious, should be carefully watched for 3 months. If tuberculous, it will likely be as large or larger than when originally noted; if inflammation is due to the presence of non-tuberculous involvement, the lesion will likely have decreased in size. One should not be misled by this however as simple inflammatory changes of the epididymis may last as long as tuberculosis.

Treatment

This varies from simple observation and supportive treatment at one extreme to complete excision of practically the entire genital tract at the other extreme. The procedure of choice is governed not so much by the extent of disease as by the views of the surgeon in whose hands the case happens to fall.

Results

Conservative treatment

Barney	11 cases, 6 dying of tuberculosis
Keyes	24 cases, 30% cure
Lelongst	70 cases, 33% cure, using tuberculin
Lee	11 cases, 6 apparently inactive, 1 apparently active, and 4 died of tuberculosis.

Surgical Results (Lee)

Simon	107 cases (orchidectomy), 57% cure; no period of time listed.
Burns	111 cases, 40% cures, 3 to 33 yrs.; 60 of 78 cases had other side infected in 4 months.
Boguljuboff	166 unilateral cases; recurrence rate 76%.
Berger	Recurrence in 60.4% (Number of cases not listed).

Barney	40 cases (orchidectomy); opposite side involved within 3 years.
Keyes	60.9% recurrence in opposite side.
Young	85 cases simple orchidec- tomy. 46% remained well or improved. 31% recurrence in oppo- site epididymis. 3.5% recurrence in pro- state or seminal ves- icles. 20% remote mortality Operative mortality, nil.
Lee	62 orchidectomy or epididec- tomy; gross recurrence in 40.3%; recurrence in opposite side, 40.7%.

Radical Surgical Treatment

Young	Alive and well (up to 9 years after operation). Recurrent in opposite epididymis 42% Remote mortality 20% Operative mortality 4%
Baudet	58 cases; 78% cures 1 to 6 years.
Quinby	7 cases; good immediate results, but no follow- up.
Whiteside	22 cases; poor results; followed no longer than 2 years.

Bumpus and Thompson conclude that surgery, in view of high incidence of recurrence, is seldom indicated unless it is done in an attempt to remove a sinus.

Summary

1. Tuberculosis of the genito-urinary tract is secondary to a primary systemic focus in the majority of cases.
2. Operations for renal tuberculosis make up .5 to 1% of all surgical procedures.

3. Renal tuberculosis is essentially a disease of early adult life, approximately 70% of the cases occurring between the ages of 20 and 40.
4. That bacillemia exists prior to renal involvement is accepted, but whether early renal infection is always bilateral is disputed.
5. Whether the primary renal lesions are cortical, pyramidocortical or pyramidal seems to be unsettled.
6. A caseocavernous type of renal lesion is found in the majority of cases of surgical tuberculosis of the kidney.
7. Ureteral and vesical pathologic changes are described.
8. Complaints of vesical irritation are the first symptoms of renal tuberculosis in the majority of instances.
9. Hematuria is present at some time in renal tuberculosis in 40 to 50% of all cases. Tuberculosis is a cause of 20% of all cases of hematuria originating in the upper urinary tract.
10. It is improbable that renal tuberculosis ever exists in the absence of pyuria. Pyuria in the presence of a sterile urine culture demands that tuberculosis should be ruled out.
11. The excretion of tubercle bacilli in the absence of renal disease is questionable.
12. Urine culture for tubercle bacilli in the hands of those thoroughly acquainted with the technique is a decisive factor to early diagnosis; Eisendrath's survey indicating that cultures are so much more apt to be positive than studies of stains and sediments are questionable (?).
13. Probably 1 to 2% of upper urinary

tract "calculi" are associated with tuberculosis.

14. Urography aids materially in the positive diagnosis of urinary tract tuberculosis, but a negative urogram is by no means conclusive.
 15. Cystoscopic examination and ureteral catheterization need not be feared in urinary tract tuberculosis; on the contrary, it is an indispensable aid in the localization of the lesion.
 16. Medical treatment doubtlessly has its place in treating the so-called early "preclinical lesion" and in those instances where advanced systemic tuberculosis is present.
 17. Surgery is the treatment of choice where a caseous lesion is found even in the presence of bilateral renal involvement if the remaining kidney is thought capable of maintaining normal function.
 18. 100% cure is claimed if surgery is instituted before vesical involvement develops; 60% cure if surgery is done in the presence of vesical complications.
 19. The point of secondary origin of tuberculosis in the genital tract is unsettled.
 20. The diagnosis of genital tuberculosis, i.e. at least in its early phase, is presumptive for the most part.
 21. Conservative measures, both medical and surgical, seem as effective in the cure of genital tuberculosis as the more radical surgical procedures.
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V. CASE REPORTS

1. — - 53 years of age.
Hosp. No. 636734

Case followed from date of admission 3-18-36 through clinic until diagnosis by cystoscopy 3-29-36.

History

Hematuria and dysuria of 3 months duration, frequency for 2 years, loss of 50 lbs. in 3 to 4 months prior to admission, urinary incontinence (?) several months prior to admission.

Physical Examination

Fairly well-developed, poorly nourished, white female. Blood pressure 130/80. Temperature 99.2. Pulse 88. Lungs, clear. Suprapubic tenderness. Kidneys not palpable. Moderate cystocele.

Laboratory

Urine - many red blood cells and white blood cells, heavy cloud of albumen. Blood - hemoglobin 80%, Nonprotein nitrogen, 30.8. P.S.P., 70%. K.U.B. negative. (Later data not available to those examining patient and expressing first opinion.)

Tentative Diagnoses

Referring physician: bleeding from bladder.

Dispensary clerk: Malignancy of bladder; malignancy of uterus.

Urology consultant: Bladder carcinoma with metastases to lumbar spine.

Intern on Urological service: Cystitis; bladder tumor.

Gynecological consultant: Ruled out carcinoma of uterus.

Cystoscopic Examination

Tuberculosis of bladder; right renal

tuberculosis, probably. (Confirmed by finding tubercle bacilli and by aid of retrograde pyelograms.)

Note: This case is given merely to suggest that tuberculosis is probably not considered in the differential diagnosis often enough.

2. _____ - Hosp. No. 640304.

Chief Complaint

Dysuria, hematuria.

Past and present illness

Noted cloudy urine and one attack of hematuria 2 or 3 years ago. No further trouble, up until present admission 7-11-35. Five months ago, frequency, urgency and dysuria were noted. During the past 5 months, hematuria has been constant.

Diagnosis

Right renal tuberculosis with contracted tuberculous bladder.

Note: Would the diagnosis have been established if an attempt to rule out tuberculosis had been carried out at the onset of hematuria?

3. _____ - Hosp. No. 50653.

- (1) 12-16-30 - Specimen obtained.
Bladder urine - reported positive 1-28-31.
- (2) 12-27-30 - Specimen obtained.
Bladder urine - catheterized, reported positive 2-2-31.
- (3) 2-11-31 - Specimen obtained.
Right kidney - reported positive 3-26-31.
- (4) 7- 0-31 - Specimen obtained.
Left kidney - reported positive 8-25-31.
Right kidney - reported negative 8-22-31.

- (5) 10- 8-31 - Specimen obtained.
Left kidney - reported negative 12-22-31.
Right kidney - reported negative 12-22-31.
- (6) 1- 6-32 - Specimen obtained.
Left kidney - reported positive 2-29-32.
Right kidney - reported positive 2-29-32.
- (7) 6-12-34 - Specimen obtained.
Right kidney - reported negative 7-26-34.
Left kidney - reported negative 7-26-34.

Note: Brings up the questions of: faulty technique in collecting specimen, failure of tubercle bacilli to be excreted at time specimen was obtained, immunity of guinea pig, and any number of speculations together with healing of lesion at the time of the last examination.

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VI. GOSSIP

Last Monday evening, it was 9:50 P.M. when the audience at the Hennepin County Medical Society meeting rooms relaxed and for the first time noticed the clock and aching muscles. Since 8 P.M. without allowing their attention to wander for a moment, they had listened to Richard Hermann Jaffe, famed Chicago pathologist, discuss the reticulo-endothelial system. Connected with the Departments of Pathology at Rush and Illinois and Pathologist to Cook County Hospital, Dr. Jaffe is a graduate of the University of Vienna. He has the ability to enthusiastically interest and instruct at the same time. Even those who did not completely under-

stand his language could read his gestures. The illustrations at the end of his talk were so well chosen that if he had not yet explained his ideas they would do it for him. He skillfully drew together by way of comparison, jaundice, infection, tuberculosis, rheumatic fever, Hodgkin's disease, lymphosarcoma, leukemia, reticulo-endotheliosis, Gaucher's disease, Nieman-Pick's disease and Schuller-Christian's disease to mention some, to explain the physiology of the reticulo-endothelial system. A salute to Dr. Jaffe, one of Medicine's most pleasing and effective teachers.....

.."Surgery," a monthly magazine devoted to the Art and Science of Surgery will soon appear under the editorial direction of Doctors Blalock (Nashville), Oschner (New Orleans), Rienhoff (Baltimore), Wangenstein (Minneapolis) and a large group of collaborators. It has been reported that it will follow the terse style of the popular news magazines. Local interest in the new venture is intensified by the presence of Chief Surgeon Owen Harding Wangenstein of the University of Minnesota and some of our other men on the Editorial Board. It has been reported that several articles of local interest will be found in the first issue. Congratulations and best wishes.....

Line Coach Extraordinary George W. Hauser is receiving universal recognition for having built the great lines which made possible the Golden Gophers' record of 28 games without a defeat. A University of Minnesota graduate in forestry, football coaching drew him into medicine. Genial, efficient, self-effacing, George Hauser is one of those rare coach-physicians who never lets anything interfere with medicine, even during the football season. Idolized by his men, respected by his fellow coaches and medical associates, he is a man's man in every sense of the word. We are proud to number him as one of our staff members.....

Karl Wilhelm Stenstrom, Chief Irradiation Therapist of the Hospitals of the University of Minnesota, is President of the Swedish Society of Minneapolis and St. Paul. Dr. Stenstrom recently returned from an extensive tour of the Scandinavian countries, after visiting the leading Cancer Institutes and giving lectures on his American experiences. It comes as

a surprise to many to know that the Swedish Society includes members from St. Paul.....In a recent study, it was learned that the Medical School ranked second to the College of Science, Literature and the Arts in "teaching contributions" to the other schools of the University of Minnesota. Large numbers of students not registered in the medical school are taught various courses by the divisions of anatomy, bacteriology and immunology, physiology, physiological chemistry, pharmacology, pathology, preventive medicine and public health to name but a few. The Law School, last in "University Service" teaches only law for law students. The study was made by Assistant Dean of Education Alvin C. Eurich who is best known as the co-compiler of the general information tests periodically published by the news magazine, "Time"

Surgeon Leslie W. Tasche of Sheboygan was a recent hospital visitor. Dr. Tasche, since receiving his degree in Surgery from the University of Minnesota, has been practicing with his father in Wisconsin. All was well with him as he seemed more anxious to talk about his son and daughter than about the monumental problems of medicine. It was good to see Dr. Tasche and his charming frau.....

A. Keller Doss, who contributed the program for today's Staff Meeting, is one of Tulane's boys away up yonder in the "frozen north." Along about the time Minnesota looked to Tulane's coaching staff for help in teaching football, the Hospital opened relations with the Medical School of Tulane for intern personnel. Dr. Doss is a splendid example of the high type of the medical man who have come to us under this arrangement. Married and the proud father of a son born last year, Dr. and Mrs. Doss have made many friends in the Twin Cities. Meticulous, discriminating effort characterizes Dr. Doss's contribution today, and his work of last year on Hematuria. We appreciate it.....

Adios.