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

Gynecological Tuberculosis

Volume XII | Friday, May 9, 1941 | Number 25

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

Volume XII | Friday, May 9, 1941 | Number 25

INDEX

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: May 2, 1941

Place: Recreation Room
Powell Hall

Time: 12:15 to 1:15 p.m.

Program: Movie: "Donald's Vacation"

Primary Virus Pneumonitis
John M. Adams
Northrop Beach

Discussion
Irvine McQuarrie
W. P. Larson
C. A. Evans
Robert G. Green
John L. McKelvey
W. W. Spink
Leo G. Rigler
Edith Boyd
Northrop Beach
Gaylord Anderson

Present: 137

Gertrude Gunn
Record Librarian

- - -

II. MOVIE

Title: "Put-put Trouble"

Released by: R-K-O

- - -

III. ANNOUNCEMENTS

1. BABIES

Mary Catherine Milhaupt, daughter of Dr. and Mrs. Emmet N. Milhaupt, born April 22. Weight - 7 pounds, 3 ounces. Congratulations!

- -

2. MINNESOTA PATHOLOGICAL SOCIETY

The University of Minnesota
Medical School
Institute of Anatomy
Tuesday, May 13, 1941, 8:00 PM

President's Address:
"The experiments of nature"
and clinical investigation.
Dr. Irvine McQuarrie

3. THE ALUMNI ASSOCIATION

Of The University of Minnesota Medical School is planning a social get-together before dinner on Wednesday, June 4, 1941 at the Convention of the American Medical Association at Cleveland. This is to be held at the Hotel Cleveland from 5:30 P.M. to 7:30 P.M.

J. Richards Aurelius, M.D.

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4. ALUMNI ATTENTION!

The Annual Banquet of the Minnesota Medical Alumni will be held in connection with the State Meeting in St. Paul in May.

It will be a buffet supper held in the Casino Room of the St. Paul Hotel on Monday evening, May 26th. The speaker will be Mr. Clifton M. Utley, Director of the Chicago Council on Foreign Relations and his subject will be, "America in a World at War." Mr. Utley has appeared frequently on the University of Chicago Round Table Broadcasts and is internationally known as an authority on foreign affairs. We consider ourselves fortunate in obtaining him as guest speaker and are anticipating a large attendance at the banquet. The price of admission will be $1.50 per person. Tickets are on sale in St. Paul and Minneapolis, Rochester and Duluth, and will also be on sale at the registration desk at the convention.

Gordon R. Kamman, M.D.

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5. THE MINNESOTA MEDICAL FOUNDATION

Will have an exhibit at the Convention of the Minnesota State Medical Association in St. Paul.

Stop in and pay a visit.

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6. CORRECTION

We are sorry - It was a typographical error.

Some of the covers spelled it "Pneumonitus."

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IV. GYNECOLOGICAL TUBERCULOSIS

Albert F. Hayes

Introduction

The treatment of pelvic tuberculosis in the female may be considered from three points of view - medical, surgical and radiological. We shall in this discussion dismiss from consideration the medical management since most authors agree that the general hygienic measures appropriate for tuberculosis elsewhere are valuable adjuncts but not adequate primary treatment for pelvic tuberculosis. Since the introduction of deep roentgen therapy by Bircher, in 1908, as a therapeutic agent in tuberculosis of the pelvis, opinion has been divided as to its efficacy. Whether radiation therapy should be used primarily and to the exclusion of surgery, or whether as an adjunct to surgery, is a subject arousing considerable discussion at the present time. Probably much of the criticism in the use of radiation therapy is due to lack of familiarity with this method of treatment and the results one may obtain with it. Our experience in the treatment of pelvic tuberculosis in the University Hospitals is limited as to the number of cases and the length of the follow-up period. Nevertheless, sufficient material has passed through the clinic in the past $2\frac{1}{2}$ years to justify some tentative conclusions as to the existing methods of therapy. During the years 1939, 1940, and 1941 to the present, we have had on the gynecological wards here, nine patients with pelvic or peritoneal tuberculosis. The diagnosis was confirmed, in most cases, histologically.

Incidence

Accurate statements as to the incidence of pelvic tuberculosis are difficult, if not impossible to obtain. Figures vary from those of Schlimpert, of 8.5% in 3,514 autopsies, to the most reliable figures in this country, those of Jameson who reported an incidence of 1% genital tuberculosis in the female in a large series of consecutive postmortem examinations carried out in a general hospital. In female patients dying of tuberculosis the determined incidence of pelvic tuberculosis rose to 10%. Naturally a clinical diagnosis of pelvic tuberculosis will be made much less frequently, as is reflected in our relatively small series of cases. The incidence of the disease, as might be anticipated, has its greatest frequency between the ages of fifteen and forty-five, with the peak years lying between twenty and thirty, when tuberculosis elsewhere is most prone to appear. Our own experiences have borne out this statement, for seven of the nine patients were in the age group from twenty to thirty years.

It might be pointed out that experiences here and the figures quoted above refer to adolescent and adult patients. Jameson's reports refer to adult population with tuberculosis.

History

With but one exception all nine cases presented symptoms or findings of tuberculous infection from eight months to sixteen years prior to admission to the hospital. Four of our patients had been under treatment for pulmonary tuberculosis for periods varying from six to ten years. One woman's infection had begun sixteen years ago with a tuberculous cervical adenitis. In four patients with peritoneal tuberculosis symptoms of intermittent abdominal distention and diarrhea had been present for from six months to ten years. One patient had had lupus erythematosis for seven years as her only evidence of tuberculosis before developing pelvic tuberculosis. The one exception noted above was an entirely unsuspected tuberculous endometritis which was found during a diagnostic curettage for severe menorrhagia.

Without exception those patients with

pulmonary tuberculosis had received sanatorium care for varying periods. The symptoms leading to a diagnosis of the pulmonary pathology had been the usual complaints, i.e., weight loss, cough, night sweats, etc. The predominant symptom in the patients with abdominal tuberculosis was distention and diarrhea. In three women the abdominal enlargement was associated with the "wet" form of the disease, with varying amounts of ascites. Two patients operated upon were found to have the plastic form of the tuberculous peritonitis as a cause of the distention.

But two of the nine patients had positive family histories of tuberculosis. Source of the infection was known in two others.

The two menstrual abnormalities most commonly found in the patient with pelvic tuberculosis in contradistinction to the non-tuberculous are amenorrhea and menorrhagia. Three of the patients had entirely normal menses as judged by the usual standards. Periods of amenorrhea from one to three months prior to a diagnosis had been noted in three women. One had gone through an uncomplicated menopause three years previously. Two women had noted varying degrees of menorrhagia. Other disturbances in menstrual cycle or rhythm were absent.

Physical findings

One-third of the patients had no abnormal pelvic findings to palpation. The remaining six had varying degrees of abnormalities. Four of the patients had unilateral adnexal masses equally divided between the right and left sides. The largest of these masses was a secondarily infected tubo-ovarian tuberculous abscess which rose two-thirds of the way to the umbilicus. In the remainder the masses were smooth, somewhat cystic, partially mobile and varied in size from 5-8 cm. in diameter.

Several patients were found to have bilateral adnexal disease at laparotomy in whom the findings on pelvic examination were confined majorly to one side with only suggestive thickening in the opposite adnexa.

Positive findings on abdominal examination were charted in three patients. All three had varying degrees of ascites. In one of these the palpatory findings were more suggestive of the plastic form of tuberculous peritonitis than the ascitic form. Abdominal examination suggested the plastic form of the disease, in spite of the fact that free fluid was obtained on paracentesis. Postmortem examination, however, confirmed the original clinical impression of the plastic form.

Laboratory data:

Patient	Temperature		Weight		Blood WBC & Diff.	Mantoux	Sputum	Sed.Rate	Urine for TBC	Gastric Washing TBC	X-rays	Extent TBC
	Prior to Rx	Post Rx	Prior to Rx	Post Rx								
	98⁶-100⁴ (R)	99°	158#		6,400 Pmn 62 Lymph 37 Mono. 1		Neg.	1 hr.48 mm. 2 hr.95 mm.	Neg.	Neg.	Incipient bilat. pulm., Neg.G.I.	Pulmonary Plus Pelvic
(death)	100°-104° (R)	No change	91#	88#	6,200 Pmn 81 Lymph 17 Mono 2		Neg.	1 hr.70 mm. 2 hr.104 mm.	Neg.		Far advanced bilateral; pyelograms and G.I.neg.	"
	98°-99⁶ (R)	98° (R)	100#	110#	7,700 Pmn 83 Lymph 14 Mono 3		Neg.	1 hr.52 mm. 2 hr.84 mm.		Positive	Bilateral Pulm.with right pneumo.; Pyelogram neg.	"
	98⁴-100° (R)	99° (R)	160#	166#	5,800 Pmn 60 Lymph 28 Mono 6			1 hr. 3 mm. 2 hr.11 mm.	Neg.	Neg.	Old fibrotic in apices; Pyelogram neg.	"
	98°-99° (R)	99² (R)	135#	150#	6,900 Pmn 75 Lymph 22 Mono 3	Positive		1 hr.28 mm. 2 hr.63 mm.			Shows only right pneumo.	"
....	98⁴-103° (M)	98⁶ 99⁴	81#	110#	14,000 Pmn 81 Lymph 18 Mono 1	Positive			Neg.		Neg.chest	Lupus erythematosis plus pelvic

Laboratory data (Cont.)

Patient	Temperature		Weight		Blood	Man-toux	Sputum	Sed.Rate	Urine for TBC.	Gastric Washing TBC	X-rays	Extent TBC
	Prior to Rx	Post Rx	Prior to Rx	Post Rx	WBC & Diff.							
	99-100° (R)	98⁶ (M)	180#	178#	8,700 Pmn 65 Lymph 31 Mono 4	Pos.		1 hr.11 mm 2 hr.37 mm	Neg.	Neg.	Neg. chest; Neg. pyel-ogram	Abdominal and Pelvic only
	99-99⁶ (R)	98⁶ (M)	98#	128#	8,400 Pmn 74 Lymph 25 Mono 1	Pos.		1 hr.57 mm. 2 hr.97 mm	Neg.		Neg. chest; Neg. pyel-ogram	"
	100°-102° (R)	98°-99° (R)	101#	76#	7,500 Pmn 76 Lymph 24	Pos.		1 hr.59 mm	Pos.	Neg.	Neg. chest; Neg. pyel-ogram	Abdominal plus pelvic plus renal

*In this patient tubercle bacilli were cultured from pus obtained at colpo puncture.

Diagnosis

Too often an unsuspected pelvic tuberculosis is discovered at laparotomy or curettage. In years past when there was more frequent resort to laparotomy in suspected acute and subacute salpingitis, tuberculosis of the pelvis was found in 10% of those patients operated upon for pelvic inflammatory disease. With the more recent conservative attitude in not subjecting patients with these forms of salpingitis to laparotomy, the accidental discovery of pelvic tuberculosis has diminished. Diagnosis is still occasionally made in the course of diagnostic curettage for some form of menstrual abnormality when tuberculosis has not been suspected. One patient in this category has recently been cared for in this clinic.

There are also those cases with pelvic or abdominal symptoms who have had long standing pulmonary tuberculosis. In these patients a diagnosis of pelvic tuberculosis may be arrived at on the basis of symptoms and findings on pelvic examination, coupled with a demonstration of the disease elsewhere. One of these nine cases belong in this group. In the remaining four patients with known pulmonary pathology, histologic evidence obtained at exploratory laparotomy conclusively demonstrated the presence of tuberculous pelvic disease.

A diagnosis of pelvic tuberculosis may then be made by assumption, i.e., pelvic pathology of inflammatory nature with evidence of tuberculosis elsewhere. Several of our patients with moderate to marked ascites had paracentesis done with a view toward diagnosis. In none of these was a positive diagnosis made by this procedure.

Obviously the most desirable method of diagnosis is one in which histologic evidence is forthcoming. The difficulty of even a presumptive diagnosis is emphasized by the fact that exploratory laparotomy was required in four of our cases before a diagnosis was made. The remaining method of diagnosis consists in the recovery of specific tubercles in the endometrium at curettage or by endometrial biopsy.

The use of endometrial biopsy is certainly worthwhile as a diagnostic measure and may be readily carried out because of its simplicity. If an attempt is being made to demonstrate tuberculous endometritis, curettage or biopsy material should be secured during the latter half of the menstrual cycle rather than too soon after the endometrium has been cast off in a bleeding period. Doubtless the routine use of endometrial biopsy in patients with pulmonary pathology would reveal an unsuspected number of patients with tuberculous endometritis. This is suggested by recent experience here with this method of diagnosis. It is very desirable that these patients with minimal symptoms, due to uterine tuberculosis, be discovered because of the ease of employment and satisfactory results which follow treatment with x-ray.

The hospitalization of all patients with suspected pelvic tuberculosis for complete patient study is necessary. Adequate information regarding tuberculosis elsewhere and evaluation of the patient's status both with respect to the extent of tuberculous disease and the best methods of therapy can be made only after hospital study.

Case Histories

1. This 24 year old nulliparous patient developed symptoms of pulmonary tuberculosis in 1935. Pneumothorax was instituted on the right side when a cavity was discovered and has been maintained to the present time. She was then discharged as "arrested" in 1937, but developed abdominal distention and diarrhea in March, 1939. Laparotomy was carried out and a diagnosis of peritoneal tuberculosis was made. Grossly it appeared that the patient had a right tuberculous salpingitis. Nothing other than exploration was done. The patient continued to have intermittent right lower quadrant pain and was referred to the University Hospitals on 11-21-39, because of a slightly tender right adnexal mass 6-8 cm. in diameter. Examina-

tion was otherwise negative save for the evidence of a right pneumothorax. The only positive laboratory finding was a mild elevation of sedimentation rate. The patient received the usual course of deep roentgen therapy as an ambulatory patient. The only untoward symptom encountered following the radiation was a frequent vasomotor reaction suggesting the menopause. The menses, however, were apparently regular each month although the cycle was not as regular as prior to treatment. Meanwhile the pelvic mass has entirely disappeared and no further abdominal pain has been noted since March, 1940.

2. This 42 year old woman had had one pregnancy sixteen years previously. General health had been normal until June, 1940, when she noted the onset of intermittent attacks of abdominal distention or "bloating." These symptoms were distressing enough to require hospitalization for decompression by enemata until ultimately an exploratory laparotomy was carried out elsewhere. Biopsy material removed at laparotomy confirmed diagnosis of peritoneal tuberculosis.

The patient had experienced no abnormalities of the menses, but as a matter of interest, endometrial biopsies were taken which revealed a tuberculous endometritis. Inquiry into her past history revealed a previous hospitalization for a pleural effusion in June, 1936. No evidence of tuberculosis other than pelvic and peritoneal could be elicited at present, however. Laboratory examinations were negative save for moderate elevation of sedimentation rate and a positive Mantoux. She was given a course of x-ray to the pelvis over the usual six weeks period. The patient has had a radiation menopause induced with no menstrual bleeding since October, 1940. Since discharge from the hospital her complaints have been directed toward the vasomotor reactions following castration. She has gained thirty pounds in weight. Subsequent repeat biopsies from the endometrium on 2-25-41 again demonstrated tuberculosis.

3. This 29 year old, para 2, was admitted to the University Hospitals on 9-9-40 with a complaint of severe, prolonged menorrhagia since March, 1940. There was no disturbance in the cycle but the patient had monthly bleeding lasting from 16-18 days. Physical examination was entirely negative save for a third degree retroversion of the uterus. Pelvic examination was otherwise normal. A diagnostic curettage revealed an unsuspected tuberculous endometritis. More intensive study of the patient then revealed no evidence of tuberculosis elsewhere. The only significant laboratory finding was a positive Mantoux test. Radiation therapy was given. Following one month's amenorrhea the menses have been entirely normal to the present with a 5-6 day period of bleeding in average amount. Her weight and temperature have remained normal.

4. This 21 year old nullipara was admitted to the University Hospitals on 10-28-40. A diagnosis of peritoneal tuberculosis had been made in 1930, at the time of an appendectomy. Pulmonary tuberculosis was not discovered until September, 1939, at which time she was institutionalized for a year. No collapse therapy was carried out. Three years prior to the present admission she had developed intermittent lower abdominal pain with dysmenorrhea as well. Menses were regular but increased definitely in amount in the last twelve months and slight increase in duration appeared, i.e., 6-7 days. Laboratory data was entirely negative. Pelvic examination showed normal pelvis. Diagnostic curettage yielded a tuberculous endometritis. Patient was given the usual radiation therapy. Follow-up study reveals six pound weight gain and some diminution in the lower abdominal pain and amount of bleeding. These symptoms persist, however, although diminished and it is possible that another course of radiation therapy will be required at a later date.

5. . This 29 year old para 0, was admitted to the University Hospital on 3-18-40. She had been hospitalized

at Ah-Gwah-Ching from 1931-1936 because of bilateral pulmonary tuberculosis which was treated by right pneumothorax maintained to the present time. She was first seen in the Gynecological Clinic in July, 1939, complaining of backache. A mass 6-8 cm. in diameter in the right adnexal region was found and assumed to be inflammatory in nature. Three months prior to present admission, gradual progressive abdominal enlargement was noted. She was admitted with a diagnosis of peritoneal tuberculosis of ascitic type. 4200 cc. of fluid were removed by paracentesis. No acid fast bacilli were found. Repeated sputum examinations were negative for tubercle bacilli, however, gastric washings were positive for acid fast bacilli. There had been no menstrual irregularity whatever and endometrial biopsy failed to reveal evidence of tubercles in the endometrium. The patient was given a course of deep x-ray over six weeks. During this period there was a rapid reaccumulation of ascitic fluid and on 4-11-41, 8,000 cc. were removed. Patient has been advised to return to a sanatorium but has refused.

6. This 25 year old para 6 was admitted to the Gynecological Service on 12-17-40 from Walker Sanatorium. She had apparently developed bilateral pulmonary tuberculosis in 1934, at which time she was three months pregnant. During the succeeding four years she delivered four more full-term infants. After delivery of the last child, in July, 1940, an unsuccessful attempt to institute pneumothorax was made. Later attempts at collapse therapy by means of pneumoperitoneum were carried out. Ultimately in November, 1940, she developed definite evidence of peritoneal tuberculosis and repeated paracentesis was done with varying amounts of ascitic fluid being obtained. X-ray examination of the chest on admission showed extensive bilateral involvement. Physical examination revealed a chronically ill woman with abdominal examination suggesting a plastic form of tuberculous peritonitis and in addition a vaguely defined suprapubic mass assumed originally to be a secondarily infected tuberculous tubo-ovarian abscess. Significant laboratory data included a rather marked secondary anemia and markedly elevated sedimentation rate. Small doses of deep x-ray to the abdomen and pelvis were started but not completed. The patient expired on 1-18-41. Autopsy showed extensive peritoneal and pelvic tuberculosis. There was complete obliteration of the pleural spaces with tuberculous infiltration throughout both lungs.

7. This 24 year old woman was admitted on 7-5-38 with a history of weakness and lower abdominal pain for eight weeks prior to hospitalization. She had had three attacks of pleurisy with effusion in 1931 and had had lupus erythematosis for seven years. The patient had a large left sided pelvic mass on admission, rising two-thirds to the umbilicus and presented a picture of sepsis, secondary anemia and hectic type temperature curve. She continued to lose weight following admission and her general status failed to improve on prolonged supportive treatment. It was assumed that she had a secondarily infected tuberculous tubo-ovarian abscess. Ultimately on August 16, 1938, a colpotomy was done and pus obtained. The patient's status failed to improve and one month later laparotomy was carried out and bilateral tubo-ovarian abscesses removed. The postoperative period was complicated by development of a fecal fistula which had closed spontaneously by January, 1939. Marked fluctuations in temperature continued and small doses of deep x-ray started November 1, 1938. Temperature gradually returned to normal limits within sixteen days and the patient was discharged. The patient has been entirely well since. X-ray examinations of the chest have been repeatedly negative.

8. This 48 year old nullipara was admitted to the Gynecological Service on 1-24-40. She gave a long history of tuberculosis with onset in 1915, at which time a cervical lymphadenitis was present. Minimal pulmonary tuberculosis was later found and she had symptoms suggesting peritoneal or gastrointestinal tuberculosis in 1927. A positive diagno-

sis was established in 1936 at the time of exploratory laparotomy. Since March, 1939, the patient had been partially ambulatory largely on the advice of her physician. Further abdominal pain several months prior to admission was noted. An incipient tuberculosis in both apices was found. It was assumed that a mild persistent temperature elevation was due to activity of the peritoneal tuberculosis. This was treated with small doses of x-ray with a satisfactory response to date.

9. This 20 year old Mexican girl was originally admitted to the University Hospitals in September, 1938, at which time a cholesteatoma of the brain was removed. Mantoux was positive but chest x-ray negative at that time. Shortly before her readmission on 2-12-41 there had been very rapid abdominal enlargement over a week's time with marked lower abdominal pain. The abdomen was tensely distended by ascites. It was felt that the patient had either an infarcted ovarian cyst with twisted pedicle or tuberculous peritonitis. Exploratory laparotomy revealed the latter. The patient received the usual course of deep x-ray to the abdomen and pelvis. Her immediate postoperative course was complicated by elevated temperature which continued for two months and culminated in drainage from the abdominal wound. The temperature returned to normal at this time. Inasmuch as the radiation was completed at the same time as the drainage from the wound the results of therapy are difficult to evaluate. The patient still has no evidence of pulmonary tuberculosis but has early bilateral renal involvement. She is still hospitalized at the present time.

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Treatment

General medical or hygienic care should, of course, be employed in those patients with pelvic tuberculosis as with tuberculosis elsewhere. Furthermore, it is desirable that sanatorium care be provided for those with evidence of activity of the pelvic tuberculosis as demonstrated by temperature elevation, weight loss, or other evidence of toxemia.

Prior to the early part of the century the only method of therapy used was surgery. Many advocated so-called conservative therapy, removing only that tissue which macroscopically appeared diseased. The inadequacy of this form of surgical treatment is at once apparent if one considers the frequency of bilateralness of tubal involvement and the very frequent association of uterine tuberculosis as well. If one is to employ surgery as the method of choice, complete removal of tubes, ovaries, and uterus should be done if possible. This "radical" surgical treatment is most logical on the basis of the distribution of pelvic disease noted above. Furthermore, most writers have noted a 10% higher salvage rate among those patients treated by radical surgery, as well as a lower primary mortality.

The part to be played by deep roentgen therapy in the treatment of pelvic tuberculosis is gradually being established. When this method of treatment was first introduced by Bircher and used by others, it was employed only in those patients who were inoperable for one reason or another. Its use was suggested in patients with adhesive or plastic tuberculous peritonitis in which operation was technically difficult and in which little at best was added by surgery. He also felt that radiation therapy should be employed in cachectic patients and in those with minimal disease. Later its use was advised as an adjuvant to surgery in patients in whom there was rapid reaccumulation of ascites, in whom fecal fistulae developed, or in those in whom symptoms persisted despite surgery.

Advocates of radiation therapy may be divided into two groups - those employing dosages in amounts sufficient to produce temporary or permanent castration and those giving substerilizing doses of deep roentgen therapy. For a brief summary of the specific amounts of radiation and technique of application the reader is referred to Jameson's monograph on Gynecological and Obstetrical Tuberculosis, 1935.

It is the policy of this clinic to treat all patients with pelvic and abdominal tuberculosis by means of radiation therapy. Resort to surgery is had only in those patients with secondarily infected tuberculous processes or for the purpose of establishing a diagnosis.

The importance of surgical removal of secondarily infected tuberculous tubo-ovarian processes as a preliminary to radiation therapy is well illustrated in one patient in this series. It was noted that the patient's course over a period of months was gradually downward until removal of the infected masses. Complete recovery did not follow nor did a fecal fistula close until radiation therapy had been given.

The technique which is employed here is the administration of 10% E.S.D. diffusely throughout the abdomen and pelvis through anterior and posterior portals. Treatments are repeated at intervals of two weeks for four treatments, thus delivering in the neighborhood of 40% E.S.D. depth dose in divided dosage over a six weeks period. The occasional patient may require an additional series of treatments after a lapse of three or four months or more. This amount of irradiation is insufficient in most instances to cause interference with ovarian function to the extent of even temporary amenorrhea. The radiation factors employed are: 220 K V P, 15 ma, 70 cm. focal skin distance, 1 mm. Cu filtration with a H.V.L. of 1.72 mm. Cu.

It will be seen that with this proposed method of therapy an attempt is made to deliver somewhat less than a sterilizing dose of radiation to the ovaries. It will be recalled that the usually estimated sterilizing dose in terms of single dose therapy lies somewhere between 40% and 50% E.S.D. delivered to the ovaries. Although the total depth dose delivered, 40% E.S.D., lies close to the amount required for permanent interference with ovarian function, the natural recovery rate of the irradiated ovaries over the six weeks period prevents castration.

This proposed method of treatment was carried out in seven of our patients. Only one patient had continuous amenorrhea following therapy. This patient was a 42 year old woman in whom the etiology of the amenorrhea is open to some doubt. In one other patient there were complaints suggestive of menopausal vasomotor reactions but no interference with the menses developed.

In two patients not treated as outlined, the proposed plan could not be carried out in one because of death from an extensive tuberculosis and in the other essentially the same depth dose was used but treatments were given over a much shorter time interval than the usual six weeks.

It is difficult to evaluate the results of therapy in our own series because of the short time which has elapsed since treatment was instituted. Furthermore, interference in the form of laparotomy was carried out on several occasions. Critical review of the case histories shows, however, that improvement definitely attributable to the radiation was present in three of the nine patients. Two of the patients have been treated so recently that no conclusion as to the value of radiation can be drawn at this time. Two other patients had operative procedures carried out which may have contributed equally with the radiation in bringing about the improvement noted. In one patient the findings and symptoms were of such unusual character that to attribute the continued relatively normal status of the patient to the radiation would be unjustified. Finally, in the one fatality in the series, autopsy showed that with the extent of the disease present, radiation therapy could not be expected to have been of value.

Some variation in the response to radiation therapy in the various forms of pelvic and peritoneal tuberculosis is to be expected. The most favorable response is probably seen in the ascitic form of the disease. This may be more apparent than real, however, for it is

an old clinical observation that some little improvement often follows simple removal of the fluid at laparotomy. Those patients with established tuberculous fistulae would be expected to have the poorest response to radiation. Our own experience with one case refutes this assumption, however. The presence of a fistula often would predicate a more severe degree of pelvic tuberculous infection, possibly with secondary pyogenic infection, in which radiation response would be expected to be slower and less complete.

Conclusions

1. A brief review of the problem of pelvic tuberculosis as seen on the gynecologic service of the University Hospitals during the period 1939, 1940 and 1941, is given.

2. Radiation therapy definitely benefited three, or 43% of the seven patients suitable for analysis of results.

3. Radiation therapy probably was responsible for the improvement of two other patients.

4. Surgical treatment should be reserved for those patients with secondarily infected tubo-ovarian inflammatory processes.

5. Radiation therapy is the treatment of choice in tuberculosis of the pelvis in the female.

V. GOSSIP

It's medical meeting time in Montana and midquarter time at Minnesota. The train moves steadily westward. Air travel is speedier but those who have tried both insist that the train is more restful. A lazy breakfast toward mid-morning, the immediate aftermath of complete relaxation. It is strange how quickly one can drop the old routine when away from familiar surroundings. Desultory conversation with fellow travelers, getting off at station stops, until great fatigue again causes me to stretch out this time for an afternoon nap. The conductor is now poking me to deliver a telegram. Maurice Shillington, chief surgeon, N.P.B.A. Hospital, Glendive, has invited me to dinner. I am instructed to get off at Wibaux, 30 miles this side of Glendive to ride in with him. Because of fairly long station stops, this will be possible. It has been raining for some time, but now it is beginning to pour. The conductor and porter assure me that it is doubtful that I will be met. They are wrong, and off we go to Glendive. The cars are few and far between, but all are going west and all are in the middle of the road. I am assured that most people out here drive in the middle of the road because there are so few cars. This is the bad lands country and unusual formations greet us on every turn. A lonely figure is playing golf on a wind-swept course. On our right is a ranch where most of the horses owned by the townspeople are kept. Stu Olson, '35, whom I later see at dinner, is said to have one of the finest riding horses in this vicinity. Stu will be married in the late spring to a fine girl from the town. Dr. Lemon, nephew of our Dr. Lemon of Rochester, is also with the hospital staff in Glendive. Dr. Shillington has a fine dinner for us and we leisurely eat as the train comes into town. Later, we go to the station where we get aboard with plenty of time to spare. It is still raining. This country has a bad habit of collecting water on the surface. It may suddenly converge in the small streams in the hills and sweep across the country with devastating effects. It was such a cloudburst in the hills which caused the Milwaukee wreck a few years ago. As I recall this, the exact bridge which went down is pointed out on an adjacent track. Our train suddenly comes to almost a complete stop, and as we pick up speed, a cow and calf amble off the right of way. The engineers have learned that when a farm animal is struck price inflation occurs very rapidly, so it is cheaper to slow down the train. In the small town we are just passing, goats tied out to a stick look up. I have never seen any one near these railroad track goats, but I assume some one owns them, in fact, I am told that their milk is actually used for food. A ranch mare with a spotted coat is near the fence. In a shack on the other side of town four enormous white rabbits run around the yard although there is no fence to keep them in. With miles and miles of open territory before them, I assume they like to stay near their owner. Terry, Montana with the famous Kempton Ranch in the distance, where an oasis is found in the open country. I remember this as a place where once I spoke at a medical meeting. Terry is also noted for its cowboy band. In the next small town a brand new brightly painted tractor of considerable size is plowing a small potato patch. At home, the teamster used to stop in after work to do this job for us. The tractor plow and arrangement is apparently more interesting, for a crowd of small boys follow behind, marching in fairly orderly style. The hills are just beginning to bloom with flowers. The shrubs and pines are green in the distance. It is now clearing, and the sun will soon shine brightly. They are developing more irrigating projects in this country, and dams are being constructed to water the sheep. With all this territory in which to play, children still fall in the ditches and drown. We arrive at a small town before the boy who has charge of the mail bag has finished his supper. He is now running out the front door wiping his mouth with the back of his hand as he swings a very light mail bag over his shoulder. Shortly he returns carrying an equally light bag, this time in no hurry at all. All day long, a woman and her sister (they look alike) have been holding a reception for every railroad employee along the line. On trains and in stations, they are greeted with great gusto. I learn later that they were formerly employed as waitresses

in one of the railroad restaurants down the line and this is the reason for their many acquaintances. They are now married to railroad men and are paying a return visit to the country they know so well. The western influence is now beginning to touch us as woman after woman on the train and in the villages is seen to be wearing slacks. After another stop we walk up to look over the engine. Dr. Shillington who joined me at Glendive to continue on to Missoula is explaining the type of engine, when suddenly we are doused with a shower of water. We have been standing near the water pipe which is now swung out of position. The attendant always swings it from the tender with great splashing. We decide to retire, and again -- a long restful night with a lazy breakfast. It is Helena in the heart of the mining country, and the capitol of Montana. Here are colleges and apparently a fairly good looking town in the distance. Near the tracks, however, it resembles all the other stops we have been making since yesterday noon. We prepare to go over the divide. The pusher engine is hooked on behind, and shortly we climb to the tunnel entrance. There is a wait as the tunnel is said to be clearing of smoke. Next we climb thru and quickly reach the peak. From then on it is down grade into Missoula. We are met by the first citizen, Dr. Edward S. Murphy, himself, with his retinue. We go to his palatial home, formerly owned by a senator. His family greets us and off we go to visit his offices, jammed with patients, as usual. His associate, "Chick" Sale, a Cornell graduate, has just become the proud father of a son -- his first. Apparently the proud father in percussing his infant's abdomen struck a note slightly too tympanitic. There was quite a discussion about this point, but finally we settle it. Visitors from adjoining offices appear, as we are taken to a luncheon meeting of the Montana State Dental Association. Dr. Joseph A. Pettit of Portland, Oregon is the main speaker. He tells us of the work he has done in reconstructive surgery. After luncheon we go to see a woman with a tumor of the jaw. Next to the NPBA Hospital with regret that chief surgeon Allen R. Foss is medical visiting in Boston and good George Jennings is gone. Next a tour of the town with stops at the homes of friends of our genial host and then to the Murphy manor for apertifs. A splendid dinner has been arranged by the local medical society, and there, among many others I saw Fredrickson, Haas, Hall, Hesdorffer (who presided), Lowe, Ritchey, Sale, Brewer and Malee, and Kargacin (Anaconda). A good dinner talk, then a medical talk, followed by a long discussion of Minnesota personalities. A visit to several homes and finally to bed. In the morning, to the University of Montana to address the Newman Club. In the afternoon we depart for Billings. At Butte, we are joined by Malee and Shillington, Dean Murphy having escorted me the entire distance. In Billings a meeting of the Yellowstone Valley Medical Society. In the morning we go to Deaconess Hospital for movies, case reports and a clinical pathological conference. Billings has become quite a medical center with two excellent hospitals, an alert profession, and a full time radiologist (John H. Bridenbauth) and full-time pathologist (Geo. J. McHeffey). We had lunch at the hospital and then went to see Mickey Hanley's stable of 17 riding horses. The doctors in the west have certainly taken up horses as their main avocation and it apparently can become a profitable one. Mickey's best horse is valued at $5,000 and many others in his stable are priced in proportion. Billings is in a wonderful country and looks like an attractive place to live. In the afternoon there is a symposium of papers on malignancy. Dr. John Hynes, '32, gave a dandy on "Malignancy of the Uterus." After dinner at the Country Club I spoke on "Tumors of the Breast," after which a Minnesota reception was held. There were many there including Phil Griffin, John Hynes, Arthur J. Movius, John Graham and William Richards. In Montana hospitality is dispensed with a lavish hand. Those whose morale is low should visit this State where nothing is taken too seriously except the comfort and convenience of their guests. Scenery unsurpassed is found on every side, lakes and streams full of trout, even the trains seem to be regretful as they leave this remarkable part of our country. Another day of rest and much pleasant conversation with David Winton (Lumber), and Bob Radl, who is bringing his mother back to Sleepy Eye after a successful operation in Bismarck. And so to work.....