Staff Meeting Bulletin
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University of Minnesota

Roentgen Therapy

Volume XVI | Friday, February 23, 1945 | Number 17

STAFF MEETING BULLETIN
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INDEX

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William A, O'Brien, M.D.

I.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
CALENDAR OF EVENTS
February 26 - March 3,1945

No. 60

Monday, February 26

9:00 - 10:00 Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.

9:00 - 11:00 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; Interns Quarters, U. H.

12:30 - 1:30 Pathology Seminar; Intracranial Vascular Tumors and Malformation; H. H. Noran; 104 I. A.

Tuesday, February 27

9:00 - 10:00 Roentgenology-Pediatrics Conference; L. G. Rigler, I. McQuarrie and Staff; Eustis Amphitheater, U. H.

11:00 - 12:00 Urology Conference; C. D. Creevy and Staff; Main 515 U. H.

12:30 - 1:30 Pathology Conference; Autopsies; Pathology Staff; 104 I. A.

12:30 - 1:30 Physiology-Pharmacology Seminar; The Evaluation of Human Physical Fitness and the Central Role of the Cardiovascular System, H.L.Taylor; 214 M.H.

4:00 - 5:00 Physiological Pathology of Surgical Diseases; Physiology and Surgery Staffs; Todd Amphitheater, U. H.

4:30 - 5:30 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; Station 54, U. H.

4:00 - 5:00 Pediatrics Grand Rounds; I. McQuarrie and Staff; W-205 U. H.

4:30 - 5:30 Ophthalmology Ward Rounds; Erling Hansen and Staff; E-534, U. H.

5:00 - 6:00 Roentgen Diagnosis Conference; L. P. Anderson, S. M. Bergh, 515 U.H.

Wednesday, February 28

9:00 - 11:00 Neuropsychiatry Seminar; J. C. McKinley and Staff; Station 60 Lounge, U. H.

11:00 - 12:00 Pathology-Medicine-Surgery Conference; Chronic Glomerulonephritis; E. T. Bell, C. J. Watson, O. H. Wangensteen and Staff; Todd Amphitheater, U. H.

12:30 - 1:30 Pediatrics Seminar; The Effects of Radiation in Pediatric Conditions; Dr. Stenstrom; W-205 U. H.

12:30 - 1:30 Physiological Chemistry Literature Review; Staff; 116 M. H.

4:30 - 5:30 Neurophysiology Seminar; Pyramidal Lesions in the Monkey; Helen Safford; 214 M. H.

Thursday, March 1

9:00 - 10:00 Medicine Case Presentation; C. J. Watson and Staff; Todd Amphitheater, U. H.

4:00 - 5:00 Pediatric Journal Club; Review of Current Literature; Staff; W-205 U.H.

4:30 - 5:30 Bacteriology Seminar; Immunity Problems in Gas Gangrene; Nora Larson; 214 M. H.

4:30 - 5:30 Ophthalmology Ward Rounds; Erling Hansen and Staff; E-534, U. H.

5:00 - 6:00 Roentgenology Seminar; Soft Tissue Shadows of the Gastro-Intestinal Tract; T. B. Merner; Roentgenograms of the Urinary Tract; H. O. Peterson; M-515 U. H.

Friday, March 2

9:00 - 10:00 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater,U.H.

10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; E-214 U. H.

10:30 - 12:30 Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Otolaryngology Department, U. H.

11:45 - 1:15 University of Minnesota Hospitals General Staff Meeting; Local Health Service; Haven Emerson; Powell Hall, Recreation Room.

1:00 - 2:30 Dermatology and Syphilology; Presentation of Selected Cases of the Week; Henry E. Michelson and Staff; W-206, U. H.

1:30 - 3:00 Roentgenology-Neurosurgery Conference; H. O. Peterson, W. T. Peyton and Staff; Todd Amphitheater, U. H.

Saturday, March 3

8:00 - 9:00 Surgery Journal Club, O. H. Wangensteen and Staff; M-515 U. H.

9:00 - 10:00 Pediatrics Grand Rounds; I. McQuarrie and Staff, Eustis Amphitheater, U. H.

9:15 - 10:30 Surgery Roentgenology Conference; O. H. Wangensteen, L. G. Rigler and Staff; Todd Amphitheater, U. H.

9:00 - 10:00 Medicine Case Presentation; C. J. Watson and Staff; M-515 U. H.

10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.

11:30 - 12:30 Anatomy Seminar; Review of the Fiber Connections of the Nucleus Ruber; R. N. Winger; Inflammation in the Central Nervous System, R. A. Good; 226 I. A.

II. ROENTGEN THERAPY

1. TREATMENT OF MALIGNANT TUMORS OF TESTIS.

G. M. Kelby

Incidence of testicular tumor is estimated by Cade as 1 to 1½% of all malignant tumors in males, and about 3% of neoplasms of genito-urinary tract.

At Memorial Hospital, New York, Pack and LeFevre reported cases of malignant tumors of the testes in 16,565 patients with malignant disease - incidence of 1%.

Tanner (1922) found testicular tumor occurred once in every 2000 male admissions.

In 1935, Dean reported incidence of 2.09% of testicular tumors in all malignant tumors in males.

One hundred cases of malignant tumors of the testis were treated at the University of Minnesota Hospitals from 1926 to 1943 inclusive. 34 cases were not classified as to type, 37 were seminomas, and 29 were carcinomatous mixed tumors.

Etiology

Average age in our series was, for seminoma 37.6 years, for carcinomatous mixed tumors, 29.4 years. Seminomas have a slightly higher age incidence. Cade states teratomatous group occurs chiefly between 20 and 40 and the seminomas between 30 and 50.

History of trauma was obtained in 15% of our our cases. This is somewhat lower than reports of other authors. Russel Howard obtained history of trauma in 5 cases out of 27, Nash and Leddy 21 out of 103. Some authors quote figures as high as 50%.

Cryptorchidism was present in 8 cases in our series. Nash and Leddy reported an incidence of 8.7% and Dean 35 cases in a series of 245 or 14.3%.

Hydrocele was observed in 6 patients, and malignant tumors of the testis were discovered in 3 of these cases during the operation for hydrocele.

Classification

Classification of malignant tumor of the testis is a confused subject, and opinions vary greatly.

At the University of Minnesota Hospitals we follow E. T. Bell's classification. Bell states: "Testicular tumors may be divided into 3 groups: adult teratomas, carcinomatous mixed tumors and seminomas.

1. Adult teratomas may be typical dermoid cysts containing hair, fatty material, teeth, etc. or they may consist of many small cysts separated by solid tissue. These tumors are rare, develop slowly over many years, and offer relatively good prognosis.

2. Carcinomatous mixed tumors are soft cellular growths consisting chiefly of epithelium in form of cysts or solid masses of carcinomatous structure. Cartilage and myxomatous tissue may be found scattered through the tumor.

3. Seminoma is the most common form of testicular neoplasm. It consists chiefly of rounded or polyhedral clear cells arranged in thick solid cords and bearing some resemblance to testicular tubules. Little or no cartilage is present."

When the present series of cases was discussed with Dr. Bell he emphasized that true testicular teratomas are rare and that the diagnosis could not be made unless the whole tumor was carefully studied. None of the cases in this series examined by him fell into this group and he did not believe that there was enough evidence to classify any of these as adult teratomas. Because of the uncertainty of classification all available slides were re-examined by Drs. Bell and McCartney. Only those definitely classified by them were typed and the

others are included in the unclassified group.

Symptoms

Onset of the disease is characteristically insidious. One of the first symptoms observed by the patient is enlargement of the involved testis, and the tumor is often accidentally found. An injury in many cases calls the patient's attention to the mass, while in other cases the tumor is discovered during a routine physical examination.

The tumor mass is usually painless during the early stages, but as the disease advances, dull pain and discomfort was experienced by a number of our patients.

Backache, a feeling of fullness, nausea, and at times vomiting, usually were associated with metastasis to the retroperitoneal glands. Chamberlain and Jamison state that excretion urograms often demonstrate evidence of abdominal mestastases before there is any clinical evidence.

Dyspnea, cough and enlarged supraclavicular nodes usually indicate metastasis to lungs and mediastinum.

Metastases

Metastases were known to be present in 65% of our series.

The most common site of metastasis was the retroperitoneal glands.

Thirty patients had palpable abdominal masses at the beginning of irradiation. Most of these patients presented the usual symptoms of backache, feeling of fullness, nausea and abdominal discomfort.

Metastasis to the inguinal region was next in frequency. Eighteen patients showed involvement either of the inguinal nodes or a more superficial mass in the scar from the previous incision. Metastasis to the inguinal nodes is an advanced finding and indicates perforation of the capsule of the testis.

Twelve patients had metastasis to the lungs and 6 cases showed mediastinal masses without demonstrable lung involvement.

We have record of 6 cases in whicha left supraclavicular node was enlarged.

Four cases had clinical evidence of metastasis to the brain.

Metastasis to the retroperitoneal nodes cannot be established until large masses are present. Early involvement of these nodes cannot be palpated and it does not show directly or indirectly on x-ray film. It is probable that undiagnosed metastatic nodes are present in most of the other patients, particularly in those with highly malignant seminomas. It is for this reason that radiation therapy is given routinely to the retroperitoneal chain of lymph nodes in all patients in whom a diagnosis of seminoma has been made following simple orchidectomy.

Metastasis to the mediastinum, lungs and superficial nodes can be demonstrated before they have become too large for adequate treatment.

As irradiation to all these areas would mean considerable hardship for the patient, we have applied x-ray therapy only for proven involvement in these areas.

Diagnosis

Early diagnosis is of the utmost importance.

In our series of cases, 65% had developed evident metastases when they reported for irradiation. Dean states that within 3 months of first symptoms, 67% have metastasis.

A diagnosis of testicular tumor should be made from clinical examination. The physical examination should be complete and include blood test for syphilis and biological tests for gonadotropic hormones. Biopsy for histologic study should not be done.

Testicular tumors should be differentiated from conditions like hematocele, gumma, benign tumors, tuberculosis and hydrocele.

Treatment

The treatment of malignant tumors of the testis was at first surgical, and consisted of simple orchidectomy. The result was not encouraging.

Hinman reported 258 cases with 5.6% five year cures. This result has been verified by both American and European authors.

Radical surgery was next advocated by Chevassu and Hinman. The procedure consisted of removal of the primary site of lesion, and the lymphatics from the testis, including the retroperitoneal glands.

Hinman, in 1933, reported 100 cases where radical surgery had been performed, with 17% five year cures. In 1938 he again reported a series of 59 cases in which radical operation was performed in only 3 cases.

The present day treatment of testicular tumors in the various clinics, consists of simple orchidectomy followed by irradiation. Pre-operative irradiation is advocated by some.

It might be well to call attention to the method used by Hinman and others in performing a simple orchidectomy through an inguinal incision. The spermatic cord is clamped and cut with a cautery, followed by removal of the testicle.

It seems advisable to classify the tumors carefully and use different methods for each of the 3 types. It is our opinion that carcinomatous mixed tumors should be treated by radical dissection if the patient's condition permits, and that seminomas be treated by simple orchidectomy and postoperative irradiation to the retroperitoneal glands. Adult teratoma should be treated by simple orchidectomy only.

The plan of treatment followed at the University of Minnesota Hospitals is simple orchidectomy followed immediately by irradiation.

Factors used: 220 KVP, 15 ma., 1 mm. cu. and 1 mm. Al filter, HVL 1.7 mm.cu., target skin distance 70 cm.

Patients without clinical evidence of metastasis were treated through 2 fields to the abdomen, 1 anterior and 1 posterior. The size of the field depended on the case. The field covered an area from the xiphoid process to the pubis through a central field about 15 cm. wide, and a corresponding posterior field.

About 2000 r/air was given to each field over a period of 3 weeks. Average daily dose was 200 r/air.

If a large abdominal mass is present, intense treatment is at first directed to that area only; later on other areas may be treated if local response has been obtained and patient has recovered from the debilitating effect of the therapy.

The usual measures were taken to reduce radiation sickness to a minimum.

Results of treatment

The classified group consisted of 66 cases in which a histologic diagnosis had been verified. Thirty-seven or 56% were seminomas. 65% of the seminomas had metastasis at the start of irradiation.

The average period of time elapsing between surgical operation and the start of irradiation was $3\frac{1}{2}$ months. Orchidectomy was performed by local surgeons in many of our cases, and the patient often failed to report for follow-up treatment.

All but two cases of the seminoma group had simple orchidectomy performed, followed by irradiation. Two patients had orchidectomy, Hinman's dissection and irradiation. One survived 10 years and when last heard from in October,

1943, had no evidence of recurrence. The other survived 2 years.

In the group of seminomas 56% survived 5 years or more.

To show the radiosensitivity of seminomas we cite the following case.

, age 48, was examined at the University Hospitals Jan. 26, 1943.

First seen by his physician Sept.1942. His complaints were: swelling of right testicle, which the patient had noticed first in July 1942, backache, nausea, feeling of fullness, 30 pounds weight loss, and weakness.

Diagnosis of right hydrocele was made and surgery advised.

On Nov. 10, 1942, the patient was subjected to operation. It was discovered that patient had a tumor of right testicle, and a simple orchidectomy was done. A histologic study of the tumor showed that it was a seminoma.

On Jan. 26, 1943 the patient came to the University Hospitals for x-ray therapy.

Physical examination revealed a well developed but emaciated white male, age 48. No lymph nodes were palpable. The upper mediastinum seemed to be widened. There was dullness, diminished breath sounds and increased fremitus at the base of the right lung posteriorly.

The heart was slightly enlarged to the left, and there was a loud systolic murmur at the apex.

There was a large hard mass in the epigastrium about 10 x 14 cm. in xize - extending below and to the right of the umbilicus. The mass was fixed posteriorly.

The liver and spleen were not palpable.

There was some shifting flank dullness. Prominent veins were seen extending up over the abdomen to the chest. No peripheral edema was observed. A draining sinus was seen in the right scrotum, and the right testicle was absent.

Urine negative. Hgb. 10.4 grams per cent. Leukocytes 5,280 - 89% neutrophils, 7% lymphocytes and 4% monocytes. Film of the chest showed marked elevation of right diaphragm. This elevation might be due to the large abdominal mass.

A review of the histologic slide from the removed tumor verified the diagnosis of seminoma of the testis.

The patient was then referred to the x-ray therapy department for treatment.

Irradiation was directed to the abdominal mass and 2200 r/air was given to each of two fields, one anterior and one posterior.

This series of treatment was started on Jan. 26, 1943, and completed Feb. 24, 1943. The mass was quite resistant to irradiation and receded very slowly. The patient was given a 10-day period of rest so he might recuperate from the effect of irradiation. He was then to return for examination and further treatment if needed. However, he did not report back until May 5, 1943. The examination now showed a palpable left supraclavicular node, extensive metastases to the mediastinum. He had gained 12 pounds in weight.

Irradiation was again started and 1100 r/air was given to each of 2 fields, anterior and posterior, to the mediastinum, and completed in 14 days.

X-ray film July 8, 1943 was negative and subsequent x-ray examinations have revealed no recurrence of metastases to mediastinum or lungs.

There was no palpable mass in abdomen at the last examination on Oct. 26, 1944.

The patient returned to his former occupation over 1 year ago, and he has been in good health since. He has regained his normal weight.

Carcinomatous mixed tumors. There

were 29 cases in this group. 25 had metastasis at the start of irradiation. Only 1 patient survived 5 years. This group was radioresistant and in our experience irradiation is of little value.

The unclassified group consisted of 34 cases. In 28 of these a microscopic diagnosis of malignant tumor was made. A clinical diagnosis was made in 6 cases. 24 patients in this group had metastasis at the start of treatment. Six cases with extensive metastasis had no operation but were irradiated. None of these cases survived 5 years.

29% of this group survived 5 years. It is likely that many of these cases were seminomas.

If all the patients with testicular tumors are considered as 1 group, we had 65 patients treated more than 5 years ago. Of these patients 18 or 29% survived 5 years or more. This low survival rate may be accounted for by the fact we had few seminomas before 1932.

29 Cases of Proved Carcinomatous Mixed Tumors of the Testis

Year	No. of Cases	Years of Survival					
		1	2	3	4	5	6
1926	1	1	1	0	0	0	0
1927	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0
1929	2	0	0	0	0	0	0
1930	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0
1932	3	1	1	0	0	0	0
1933	2	1	0	0	0	0	0
1934	1	0	0	0	0	0	0
1935	2	1	0	0	0	0	0
1936	2	1	0	0	0	0	0
1937	3	3	3	1	1	1	1
1938	3	1	0	0	0	0	
1939	1	1	0	0	0		
1940	2	1	0	0			
1941	3	0	0				
1942	2	0					
1943	2						
No. cases	29	27	25	22	20	19	16
No. living		11	5	1	1	1	1
Per cent		41	20	5			

34 Cases of Malignant Tumors of Testis Unclassified

Year	No. of cases	Years of Survival									
		1	2	3	4	5	6	7	8	9	10
1926	1	1	0	0	0	0	0	0	0	0	0
1927	1	1	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0
1929	3	1	0	0	0	0	0	0	0	0	0
1930	2	0	0	0	0	0	0	0	0	0	0
1931	1	1	0	0	0	0	0	0	0	0	0
1932	4	1	1	1	1	1	1	1	1	1	0
1933	0	0	0	0	0	0	0	0	0	0	0
1934	4	4	1	1	0	0	0	0	0	0	
1935	4	2	1	1	1	1	1	1	1		
1936	3	3	3	2	2	2	2	2			
1937	2	2	2	2	2	2	2				
1938	3	3	2	2	2	2					
1939	2	2	2	2	2						
1940	2	0	0	0							
1941	2	2	2								
1942	0	0									
1943	0										
No. cases	34	34	34	32	30	28	25	23	20	16	12
No. living		23	14	11	10	8	6	4	2	1	0
Per cent		68	41	34	33	29	24				

37 Cases of Proved Seminoma of the Testis

Year	No. of cases	Years of Survival									
		1	2	3	4	5	6	7	8	9	10
1930	1	1	1	1	1	1	1	1	1	1	1
1931	0	0	0	0	0	0	0	0	0	0	0
1932	1	1	1	1	1	1	1	1	1	1	1
1933	6	6	4	3	3	3	3	3	2	2	2
1934	2	2	1	0	0	0	0	0	0	0	
1935	1	1	1	1	1	1	1	1	0		
1936	2	2	2	2	2	2	2	2			
1937	1	0	0	0	0	0	0				
1938	2	2	1	1	1	1					
1939	5	4	4	4	4						
1940	3	2	2	2							
1941	1	1	0								
1942	6	3									
1943	6										
No. cases	37	31	25	24	21	16	14	13	11	10	8
No. living		25	17	15	13	9	8	8	4	4	4
Per cent		81	68	62	62	56					

Conclusions

1. Tumor of the testis is frequently found in patients with hydrocele, and this should be kept in mind constantly.

2. As in all malignant tumors, early diagnosis is of utmost importance.

3. A differential diagnosis should be made (histologically) so that each testicular tumor can be classified correctly.

4. Seminoma is a malignant tumor which forms metastases rapidly.

5. Seminomas of the testis are radiosensitive. The patient should have the benefit of x-ray therapy regardless of the stage of metastasis present.

6. There should be no delay in instituting irradiation following simple orchidectomy.

7. Frequent follow-up examinations should be done.

8. Simple orchidectomy followed by irradiation is the treatment of choice in seminomas.

9. Carcinomatous mixed tumors should be treated by radical dissection, and adult teratoma by simple orchidectomy.

Summary

1. An analysis has been made of 100 cases of malignant tumor of the testis seen at the University of Minnesota Hospitals from 1926 to 1943 inclusive.

2. Bell's classification of malignant testicular tumors has been used in this report. Thus the group consisted of 34 unclassified cases, 37 seminomas and 29 carcinomatous mixed tumors.

3. Seminoma has a slightly older age incidence than carcinomatous mixed tumors.

4. Metastasis was known to be present before irradiation was started in 65% of the seminomas, 86% of carcinomatous mixed tumors and 70% of the unclassified group.

5. Therapy consisted of simple orchidectomy and irradiation in 90 cases, irradiation alone in 6 advanced cases, and Hinman's operation and irradiation in 4 cases.

6. Results of therapy can be summarized as follows: In seminomas of the testis the 5 year survival is 56%. In carcinomatous mixed tumor group only 1 case survived 5 years, while in the unclassified group, 29% survived 5 years.

7. There were 4 cases in which the combination of Hinman's dissectionand irradiation was used, with one 5-year survival. 6 advanced cases were treated with irradiation alone, with no 5-year survival.

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2. ROENTGEN THERAPY IN ACUTE MASTITIS

Solveig M. Bergh

Roentgen therapy in small doses has been used for many years in treatment of infections. In 1936 Hodges[4], in discussing the effects of irradiation,

stated: "Leukocytic infiltration is an important feature of inflammations and it is well known that polymorphonuclears and especially lymphocytes are very radiosensitive. They are destroyed by small doses. The early destruction of the leukocytes provides more adequate amounts of the vital substances, ferment, antibody, or what not, which are contained within the leukocyte for defensive purposes. As a rule, the more marked the leukocytic infiltration in the tissues, the quicker and more marked the response to irradiation will be."

In 1937, Desjardins' gave substantially the same explanation. He further states: "The following facts have been observed after treatment of acute inflammations by radiotherapy: (1) the prompt relief of pain and the rapid resolution of the lesions when treated early, as well as by the acceleration of suppuration in lesions treated later; (2) that acute inflammations of different kinds respond at about the same rate to a given dose when treated at a corresponding stage, and (3) by the circumstance that a small dose of rays is sufficient to produce this effect."

Pendergrass,[7] on the other hand, believes the vascular responses to irradiation to be more important in controlling acute infections than leukocytolysis. He states: "Dilatation of the capillary network and subcapillary plexus stands out as a uniformly characteristic response to small doses of radiation. Under optimum conditions, inflammation ought to produce so much vascularization and engorgement that irradiation could do little more. This does not militate against the fact that irradiation may do good. Experience has taught radiologists the desirability of irradiating infections through portals large enough to extend beyond the border of infection. This induces an increase in blood flow not only in the periphery of the lesion, but, what may be more important, in the larger area of normal tissue underlying the infection. It would seem, therefore, that what was originally an area of passive hyperemia had been transformed into an area of active hyperemia as the result of the irradiation. We believe this active hyperemia to be of considerable importance in radiation therapy of infections. It not only increases the temperature and local concentrations of electrolytes by increasing blood supply, but also decreases edema by increasing lymphatic flow, all of which increase the efficiency of antibodies."

In regard to the effect of irradiation on normal immunological responses, Pendergrass further states: "Most authorities agree that antibodies are specialized globulins which appear in blood serum or body fluids in response to an irritant with which it reacts specifically. There is evidence that irradiation increases the globulin in colloidal serum protein. Until more is known concerning the exact character and mode of origin of true bactericidal globulins, one might postulate that the altered albumin globulin ratio produced by irradiation enhances antibody formation. Whether this is a factor in the favorable reactions observed following roentgen therapy still remains to be proved."

A considerable number of articles have been written concerning roentgen therapy in inflammations but very few concerning puerperal mastitis. Elwood and Dadek[2] review some of the foreign articles in their paper as well as reporting 25 cases under their own observation.

Fifty-six cases of puerperal mastitis were given x-ray therapy in our department from 1940 to 1944.

The patients ranged from 15 to 39 years of age, the average being 23 years, and the median age 21 years.

The presenting symptoms included pain and tenderness in the breast, redness of the skin over the involved area, fever, occasionally chills, and in most cases, areas of induration. In 9 cases, fluctuation was present, and a definite abscess required incision and drainage as well as x-ray therapy. In these cases in which abscesses were present, symptoms had usually been present from 1 to 3 weeks. The duration of symptoms

in the other 47 cases varied from about 8 hours to 4 days.

The mastitis occurred 2 to 3 weeks postpartum in the majority of cases, however, the range in the entire group was anywhere from a week to 5 months postpartum. Only 1 case in our group occurred antepartum, this one being a 20 year old Mexican girl who was 8 months pregnant.

Elwood and Dadek state the invading organism is the staphylococcus aureus in most cases. They believe the most frequent avenue of infection to be fissured nipples. These may be microscopic or apparent. If suspected or obviously present, they should be treated to promote healing. A 5% solution of silver nitrate, frequent cleansing with boric acid solution, and glass shields or temporary discontinuation of nursing have been the methods used by Elwood and Dadek.

Our method of treatment consists of daily dosages of 75 r to 150 r with an average of 100 r. We use 140 K.V. with $\frac{1}{4}$ mm. Cu. and 1 mm. Al filter, or 2 mm. Al filter. The dosage depends somewhat on the extent of the involvement in the breast as well as the acuteness. Occasionally we may use only 50 r but give this dose twice a day. The target-skin distance is 30 cm. Size of the field varies in each individual case to include the area of inflammation plus some normal tissue around it.

In practically all of our cases, some sulfa drug (sulfanilamide, sulfathiazole, or sulfadiazine) has been given along with the x-ray therapy. This makes it difficult to evaluate the results. The usual response in our cases is a marked drop in temperature from 102° or 103° to almost normal in one or two days. We do have 2 cases in which no sulfa drug was given and these also show the prompt drop in temperature. This fact tends to make us believe that the x-ray treatment is the most important factor in the rapid improvement of these cases. We would, however, like to run a control series.

The two cases mentioned above in which no sulfa drug was given, will be presented:

1. Patient 20 years of age.
   Delivered 4-5-41.

Symptoms: developed chills, fever and pain in the left breast on 4-12-41, 7 days postpartum.

Involvement: redness, tenderness, and induration of upper part of left breast.

She came into the hospital on the day the symptoms began, and treatment was given the same day.

	4-12-41	4-13	4-14	4-15
Fever	103.2	98.6	98.6	98.6
X-ray	100 r	150 r	-	-

The temperature dropped from 103.2° to 98.6° the following day and remained normal. She was dismissed from the hospital in 4 days with the breast normal and it remained so during her follow-up in the clinic.

2. Patient 20 years of age.
   Delivered 8-1-41.

Symptoms: fever for 4 days and painful right breast for two days. These symptoms began on 8-8-41, one week postpartum.

Involvement: redness, tenderness and induration of the right breast below the nipple.

She came into the hospital on 8-12-41, four days after the onset of symptoms.

	8-12-41	8-13	8-14
Fever	103°	98.4	97.
X-ray	100 r	100 r	-

Here again there was a prompt drop in temperature to normal in one day. The symptoms disappeared, the patient was discharged, and there was no recurrence of the mastitis.

In a few patients, the mastitis flared

up again after a few days and a second series of treatments had to be given. For that reason, we now prefer to give 1 or 2 treatments after the symptoms have disappeared and treatments are often given on four successive days.

The total dosage varies in each individual case but the usual is 300 r to 400 r.

Five cases showed bilateral involvement. One of these 5 had both breasts involved when she was first seen. Two patients developed infection in the opposite breast while under treatment for the first one. This happened in spite of sulfa drug therapy and is another reason for assuming the local x-ray therapy is the main factor in the rapid improvement. The other 2 developed the mastitis in the other breast a week after treatment had been completed on the initial area of involvement. As soon as pain was noticed in the opposite breast, these patients came in for treatment. None of these patients developed any complication such as abscess formation.

Rarely we have a patient in whom the response is slow, requiring daily treatments for 6 or 7 days. This is more apt to occur in patients with little or no fever and minimal skin reaction.

In summary, our method of x-ray therapy in acute mastitis has been presented. Pain, swelling, redness, induration, or fever are indications for treatment which should be instituted immediately. The importance is not the number of treatments, but how early the treatment has been started. Prompt relief of pain and a rapid drop in temperature occur as well as an erythoma which invades the healthy surrounding tissues. This is due to hyperemia, which is an important factor in healing. When used early enough, x-ray therapy tends to abort the infection and prevents abscess formation.

It is well known that some patients will show rapid improvement without any form of treatment. Unfortunately we have not found any statistics to indicate the frequency of spontaneous recovery without abscess formation or the average time of persistence. We do believe, however, that early x-ray therapy in small doses will hasten recovery and prevent complications.

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III. GOSSIP

Lt. Colonel William A. Noble, Senior Medical Officer and Chief Surgeon of the Salvation Army, Catherine Booth Memorial Hospital at Nagercoil, State of Travancore, India, will speak to the senior medical students, Monday, February 26, 8:00 A.M., room 15 Medical Sciences Amphitheater. He is a native of Scotland who came to America by way of South Africa. Following World War I, he entered the Salvation Army training college in New York. Later he married a salvation army officer, and they have been working in India up to the present time. In addition to a General Hospital, he operates an institution for lepers....Minnesota Cancer Society is sponsoring a special school of instruction for lay workers, Center for Continuation Study, February 26, 27, 28....Dr. Frank Strong, University of Wisconsin, Department of Bio-chemistry is a faculty member for the course in Clinical Dietetics, March 5, 6, and 7. Dr. Ancel Keys and his associates are making a major contribution to this program. His participants include: Austin Henschel, Joseph Brozek, Marietta Anderson, Olaf Mickelsen, Henry Longstreet Taylor, and himself. Other participants will be Edward H. Rynearson, Mayo Clinic, Richard Varco, and Clyde H. Bailey (Agricultural School staff). Each year at this time Dr. Bailey makes his forecast of available foodstuffs for the month ahead. He is gloomy at the present time as he looks into the future. The meat industry has just developed a motion picture on the use of meat and meat products which fairly makes your mouth water. Right after that Dr. Bailey will tell of our slim chances of having much meat this summer....At the last session of the legislature a bill was passed requiring all teacher training institutions to give prospective teachers special courses in Alcohol and Narcotic Education. For the past year a committee from the College of Education and the School of Public Health have been compiling information in this field. Dr. Haven Emerson, visiting professor and noted authority on this subject has been most helpful. In order to help other institutions faced with the same problem, the Center for Continuation Study is giving a special course on Alcohol and Narcotic Education, March 9 and 10, 1945. Anne Roe of the Yale University alcohol study group will come to tell of her evaluation of alcohol education materials. Raymond N. Bieter and Carl J. Potthoff have developed the material in their respective specialties....March 19 to 24 there will be a special course in the management of Poliomyelitis at the Center for Continuation Study arranged primarily for a group of army officers, but civilian physicians are also welcome. ...At the Music in Industry course this week, the old stage favorite, Billy B. Van told of his experience in morale boosting in certain industries. He will be recalled as a favorite stage comedian of just a few years back....On Wednesday of this week to speak to the Community Health Council in Winona, on "Immunization Against Smallpox and Diphtheria." Minnesota is one of 7 states which has prohibitive legislation covering this requirement of smallpox vaccination. For this reason it is necessary for us to constantly stress these subjects... The Journal Lancet has just issued an outstanding 75th Anniversary number, edited by Dean H. S. Diehl. It contains an excellent summary of Public Health achievement in our day. Outstanding contributors have written good articles on the various phases of the subject... ..To speak to a Father and Son dinner at a Lutheran church in St. Paul, and I enjoy these meetings because no where else do men sing better than at Lutheran Brotherhood meetings. My good friends, the Nelsons, were also on the program. He is a former instructor of music at the Breck School and is a musical comedian. A singing evangelist demonstrated his method of softly singing to the sick as he was his own accompanist on a zither. Many a lonesome Scandinavian has amused himself with one of these instruments which still can be purchased at any mail order house....To Chicago to discuss course planning with the American Hospital Association by the American College of Hospital Administrators. The number of people traveling seems to be about the same, but sooner or later there will probably be a change but there is no evidence of it now..... From our office window we can watch the pheasants and other birds which are fed through the generosity of Ella Smitka of the West Operating Room Staff.....