

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

Neurosarcoma

STAFF MEETING BULLETIN  
HOSPITALS OF THE . . . .  
UNIVERSITY OF MINNESOTA. *University Hospitals.*

Volume VIII

Thursday, October 1, 1936

Number 1

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

Financed by the Citizens Aid Society

William A. O'Brien, M.D.

I. GENERAL STAFF MEETING - 1936-1937

Mailing List

Day

Each Thursday from October to May, inclusive, except on University holidays.

No charge is made for the bulletin. Those desiring a copy by mail each week are expected to supply the money for postage, which is one dollar per year. In addition, complimentary copies will be sent to interns and graduate students, and exchange copies are sent to educational institutions and libraries.

Time

12:15 P.M. to 1:15 P.M.

Place

Recreation Room, Nurses' Hall.

Program

According to the American College of Surgeons, a general staff meeting program should consist of: "(1) selected cases containing object lessons on improvement of technique of diagnosis or therapy; (2) group studies of various common diseases and injuries with special reference to end-results; (3) discussion of special reports from various clinical and scientific departments; (4) discussion of ways and means of elevating scientific efficiency of hospital staff." We attempt to follow this outline.

Luncheon

11:45 A.M. to 12:15 P.M. Please secure plate of food from buffet luncheon table in corridor and bring it to the meeting room. The tables at the side of the room are for your convenience. As soon as you have finished, will you please move to the front of the seat section and fill in toward the back of the room.

Bulletin

A bulletin will be published each week prior to the meeting. Copies for all staff members and guests will be available at the buffet table at 11:45 A.M. on the day of the meeting. The bulletin is published through the generosity of the Citizens Aid Society of Minneapolis, a group of public-spirited citizens who are interested in health education. The Citizens Aid Society, consisting of Mrs. George Chase Christian, Franklin M. Crosby, George P. Case, and William P. Christian, is making its contribution for the eighth consecutive year for which we are very grateful.

Abstracts

Reviews of recent literature pertaining to the subject under discussion have been assembled by various staff members for the past several years. We have the promise of continued support during the coming year. These abstracts represent a valuable contribution as for the most part they are compiled from the more recent contributions to knowledge in the field correlated with older experiences. We greatly appreciate suggestions and contributions. Every member of the staff is urged to take part.

Publishers

University of Minnesota Mimeograph Department. Copy is supplied to the central mimeograph service department of the University each week in advance of the meeting. As a general rule, all of the material must be in on Monday. It is possible to add short announcements up to 9:00 A.M. on Thursday.

Case Reports

It has been our aim to present illustrative case reports or group summaries of all subjects under consideration. In practically every instance, it is the individual case report or a study of a group of cases which determines the choice of the subject for discussion.

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### Departmental Reports

In our organization, the staff business proper is conducted by an administrative committee. We have welcomed departmental or general reports in the past because they have often given us information which promoted cooperation between the departments. The primary purpose of our meeting, however, is to approach our problems from the scientific standpoint.

### Movies

A single reel sound picture will be shown at the beginning of each meeting from 12:15 to 12:27 P.M. As a general rule, the selection will be made from non-medical scientific subjects if they are available. This service is supplied by the Department of Visual Education, University of Minnesota. We would like to show a scientific film for each subject, but, as a general rule, such pictures are not available. We would greatly appreciate learning from any staff member of any pictures they can recommend.

### Discussions

The discussions are the most important part of the meetings. An attempt is made to base them on the case reports, group studies and abstracts. Usually advanced copies of the bulletin are supplied to the persons most interested so that they may prepare their discussions in advance. In the past, this has proven very valuable but it must not be assumed that the discussion is limited to these staff members. It is our earnest hope that any person present will take part.

### Guests

Any practitioner, intern or graduate student is welcome. As a general rule, under-graduate students do not take part.

### Distinguished visitors

It has not been our policy to relinquish our meeting time for lectures by visiting physicians but we are most

anxious to have them join in our discussions. In 1935-36, the Minneapolis Surgical Society, St. Paul Surgical Society, Department of Surgery, University of Minnesota Committee on Convocations and others arranged the time of the visits of distinguished medical men so that they could share them with us. If we know of their coming for a reasonable time in advance, we can prepare meetings in fields in which they are interested. We wish to thank all who cooperated in the past and trust that they will assist us during the present year.

### Summary

This is meeting #231 of the series started by Paul Hill Fesler, Superintendent of Wesley Memorial Hospital, Chicago, who was formerly Superintendent of the University of Minnesota Hospitals. The volume of the bulletin will be the eighth. In conducting the meeting, it is the purpose of the Chairman to present an outline of the subject at the beginning. This will usually be a summary of the conclusions. Everyone who is in any way connected with the cases or preparation of the bulletin is expected to take part. It is not wise to extend the discussion time beyond 1:15 as many of our staff members have to return to their respective places in the institution. Last year, the average meeting time was 1 hr. 6 min. The total number of staff meetings was 30; the average attendance, 104. It is interesting to note that 455 scientific articles were studied in preparation of the material. Over 12,000 bulletins were issued and 51 cases were discussed. While the average number of staff members participating in the discussion was five +, the total was 160.

It is perfectly obvious that the success of this meeting depends upon the interest and cooperation of the entire staff. Everyone should feel that it is his meeting. We have made an enviable record in the past and there is no reason to believe that it will not be duplicated this year.

Summary (Continued)

William A. O'Brien, M.D.,  
Chairman and Editor.

Rudolph W. Koucky, M.D.,  
Associate.

Edward J. Semansky, M.D.,  
Associate.

II. MOVIE

Title: Living Jewels

Released by: RKO-Pathe'

III. WELCOME1. STAFF MEN

Harold S. Diehl, Dean of Medical Sciences, who has been relieved of his duties in connection with the Health Service and the administration of the Department of Preventive Medicine and Public Health, to assume full-time administrative problems. He is now a full-fledged elder statesman.

Raymond M. Amberg, Superintendent of the University of Minnesota Hospitals, who was promoted July 1st from his former position of Acting Director. An excellent choice because of outstanding administrative ability.

Charles Donald Creevy, Associate Professor of Surgery, Director of the Division of Urology, who was promoted July 1st to Associate Professor of Surgery, Director of the Division of Urology and Assistant Dean of the Medical School. Bearing up ably as the most be-titled man in our group.

Kenneth F. Maxcy, Director of the Department of Preventive Medicine and Public Health, who came to us from the University of Virginia where he was Head of the Department of Bacteriology and Public Health. Dr. Maxcy is a graduate of Georgetown and Johns Hopkins Universities and comes to us at a critical

time in the development of a new program of expansion in Public Health in Minnesota. Dr. Maxcy is expected to achieve the same success here that he has had elsewhere. He is a most welcome addition to our group.

Maurice B. Visscher, Head of the Department of Physiology, one of our own graduates, who has successively headed the Department of Physiology in the Universities of Tennessee, Southern California, and Illinois. Since getting his graduate degree at Minnesota, he has always been "tops," never having occupied a position lower than departmental head and professor.

Charles E. Shephard, Professorial Lecturer, Department of Preventive Medicine and Public Health, on leave of absence from the headship of Stanford University Student Health Service. One of the Shephard boys from Iowa, who with his brother, Bill, Educational Director of the Metropolitan Life Insurance Company of the Pacific Coast, has done much to spread the fame of Minnesota over the State of California.

Cecil J. Watson, Associate Professor of Medicine, to the position vacated by resignation of Hobart A. Reimann who was called to the Headship of the Department of Medicine, Jefferson Medical College, Philadelphia. Trained in Pathology, Chemistry and Clinical Medicine, Dr. Watson's elevation brings pleasure to all. Dr. Reimann's contributions in Clinical Bacteriology, as well as in other fields, will be sorely missed and Minnesota salutes Jefferson for making a "ten-strike" in building up its faculty.

2. INTERNS - 1936-1937

We welcome at this time our Resident Staff of Interns and Fellows. We point with pride to the group and wish them well.

Pediatrics

Bancroft, Paul - Lincoln, Nebraska  
 B.S. University of Nebraska  
 M.S. University of Nebraska  
 M.D. University of Nebraska - 1935  
 One year rotating internship,  
 University of Nebraska Hospital.

Surgery

Bellis, Carroll - St. Paul, Minn.  
 B.S. University of Minnesota- 1930  
 M.S. University of Minnesota- 1932  
 Ph.D. University of Minnesota- 1934  
 Three year fellowship, Dept. of  
 Physiology - 1930-1933.

Medicine

Boehrer, John - Minneapolis, Minn.  
 B.A. - University of Minnesota - 1931  
 M.D. - Johns Hopkins Medical School-1936.

Surgery

Cameron, David - El Paso, Texas  
 B.A. University of Arizona - 1931  
 M.D. University of Texas - 1935  
 One year John Sealy Hospital,  
 Galveston, Texas - 1935.

Medicine

Cottrell, Lillian - Hebron, Nebr.  
 A.B. Stanford University - 1924  
 M.D. University of Colorado - 1936.

Surgery

Hall, Harold D. - Minneapolis, Minn.  
 B.S. University of Minnesota - 1935  
 M.B. University of Minnesota - 1935  
 M.D. University of Minnesota - 1936

Two-Year Rotating

Hayes, Albert - St. Paul, Minn.  
 B.S. University of Minnesota - 1936  
 M.B. University of Minnesota - 1936

Two-Year Rotating

Hoffbauer, Fred - Minneapolis, Minn.  
 B.S. University of Minnesota - 1933  
 M.S. University of Minnesota - 1934

Surgery

Johnson, Carroll - Wilson, Okla.  
 B.A. University of Oklahoma - 1930  
 M.D. Tulane University Medical  
 College - 1936

Two-Year Rotating

Kaiser, George - St. Paul, Minn.  
 B.A. University of Minnesota - 1936  
 B.S. University of Minnesota - 1936  
 B.M. University of Minnesota - 1936

Surgery

Lind, Carl - Minneapolis, Minn.  
 B.A. University of Minnesota - 1933  
 B.S. University of Minnesota - 1933  
 B.M. University of Minnesota - 1933  
 M.D. University of Minnesota - 1934  
 One year rotating, Detroit  
 Receiving Hospital.  
 One year C.C.C. duty.

Surgery

McGuarrie, Irwin B. - Washington, D. C.  
 M.D. George Washington School of  
 Medicine - 1935  
 One year rotating internship,  
 Gallanger Hospital, Washington,  
 D.C.

Two-Year Rotating

Ransom, Robert - Annandale, Minn.  
 B.S. - University of Minnesota - 1932  
 B.M. University of Minnesota - 1936

Dental

Scholtis, Anthony - St. Paul, Minn.  
 D.D.S. University of Minnesota- 1936

Pediatrics

Schroepfel, John E. - Minneapolis, Minn.  
 B.S. University of Minnesota - 1934  
 B.M. University of Minnesota - 1935  
 M.D. University of Minnesota - 1936  
 One year internship, surgery,  
 University of Minnesota Hospitals.

Medicine

Skogland, John - Keewatin, Minn.  
 B.M. University of Minnesota - 1935

Two-Year Rotating

Sundet, Nere - Gary, Minn.  
 B.A. Concordia College - 1930  
 M.B. University of Minnesota - 1936

Two-Year Rotating

Thomas, Margaret Jane - Columbia, Mo.  
 A.B. University of Missouri - 1932  
 B.S. University of Missouri - 1934  
 B.M. University of Minnesota - 1936

Two-Year Rotating

Texter, Jerome - Minneapolis, Minn.  
 B.S. University of Minnesota - 1936  
 B.M. University of Minnesota - 1936

Two-Year Rotating

Wittels, Theodore - Minneapolis, Minn.  
 B.S. University of Minnesota - 1936  
 B.M. University of Minnesota - 1936

Ophthalmology & Oto-Laryngology

Ward, Harry - Hamilton, Ohio.  
 A.B. Miami  
 M.D. Cincinnati  
 Cincinnati General Hospital -  
 1925-1926  
 Practice.

3. TEACHING FELLOWS

Of the University of Minnesota  
 Hospitals, 1936-1937.

Pediatrics

Adams, John Milton - Minneapolis, Minn.  
 B.S. Princeton - 1929  
 Polyclinic Hospital, night service  
 8 months - 1932-1933  
 M.D. Columbia - 1933  
 Intern on Pediatrics, New Haven,  
 Conn., 1933-1934  
 Intern on Surgery, University of  
 Minnesota Hospitals - 1934-35  
 Resident on Pediatrics, Abbott  
 Hospital, Minneapolis.

Radiology

Abraham, Arden L. - Minneapolis, Minn.  
 M.B. University of Minnesota - 1927  
 B.S. University of Minnesota - 1927-28  
 Intern San Francisco City and  
 County Hospital - 1927-28  
 M.D. University of Minnesota - 1928  
 Private Practice, Gibbon, Minn. -  
 1928-34.

Pediatrics - Assistant Resident

Booth, Marguerite - Sewickley, Penn.  
 A.B. Smith College  
 M.D. Yale - 1935  
 Intern Pediatrics, Duke Univer-  
 sity Hospital, Durham, N. C.

Surgery

Bowers, Warner F. - Minneapolis, Minn.  
 A.B. University of Omaha - 1929  
 B.S. University of Nebraska - 1930  
 M.D. University of Nebraska - 1932  
 Rotating Internship, University of  
 Omaha Hospital - 1932-33  
 Internship - surgery - Univer-  
 sity of Minnesota Hospitals,  
 1933-34.  
 Surgical Research Laboratory -  
 Millard Hall - 1934-35.  
 Fellow - Minneapolis General  
 Hospital - 1935-36.

Surgery

Bergh, George - Montevideo, Minn.  
 M.D. University of Minnesota - 1933  
 M.S. Northwestern - 1934  
 Intern University of Minnesota  
 Hospitals - 1932-33  
 Fellowship Northwestern Univer-  
 sity - 1933-34.

Medicine

Craig, F. H. - Wheeling, West Virginia.  
 A.B. West Virginia  
 B.S. West Virginia  
 M.D. Duke University  
 Intern, Ancker Hospital,  
 St. Paul, Minn., 1935.

Surgery

Dennis, Clarence - St. Paul, Minn.  
 B.S. Harvard 1931  
 M.D. Johns Hopkins Medical School-1935  
 Sub-Intern - Johns Hopkins,  
 1934-35.  
 Intern University of Minnesota  
 Hospitals, 1935-36.

Surgery

Doss, A. Keller - New Orleans, La.  
 M.D. Tulane - 1934  
 Intern City Hospital, Baltimore,  
 1934-35.  
 Intern University of Minnesota  
 Hospitals, 1935-36.

Obstetrics & Gynecology

Gerdes, Maud - Eureka, N. D.  
 B.A. University of Minnesota - 1925  
 B.S. University of Minnesota - 1928  
 M.B. University of Minnesota - 1928  
 M.D. University of Minnesota - 1929  
 Intern, University of Minnesota,  
 1930.  
 General Practice, Zeeland, N.D.,  
 3 years.

Ophthalmology & Oto-Laryngology

Hoffman, Walter L. - Minneapolis, Minn.  
 B.S. University of Minnesota - 1935  
 M.B. University of Minnesota - 1935  
 M.D. University of Minnesota - 1936  
 Intern Miller Hospital, St. Paul.

Ophthalmology & Oto-Laryngology

Hurd, F. D. - Tolley, N. D.  
 B.S. Gettysburg, Pa.  
 M.B. University of Minnesota - 1924  
 M.D. University of Minnesota - 1925  
 Rotating Intern, University of  
 Minnesota - 1925  
 Private Practice - Tolley, N. D.  
 N & T Fellow.

Ophthalmology & Oto-Laryngology

Juers, Arthur L. - Lake City, Minn.  
 B.S. Louisville University - 1928  
 M.D. Louisville University - 1931  
 Intern - Letterman Hospital,  
 San Francisco, Cal.  
 Intern - University Hospitals,  
 Minneapolis - EENT - 1934-35

Medicine

Layne, John A. - Minneapolis, Minn.  
 B.S. University of Minnesota - 1934  
 M.B. University of Minnesota - 1934  
 M.D. University of Minnesota - 1935  
 Intern - Cincinnati General  
 Hospital - 1934-35.

Medicine

Mattison, Robert E. - Minneapolis, Minn.  
 B.S. University of Minnesota - 1935  
 M.B. University of Minnesota - 1935  
 Intern University of Minnesota  
 Hospitals - 1935-36.

Radiology

McGill, Joseph - Chicago, Ill.  
 B.S. St. Louis University - 1932  
 M.D. St. Louis University - 1933  
 Intern - St. Louis Hospitals - 1934-35  
 Resident - Surgery - St. Louis Hospi-  
 tals 1935.  
 Resident - American Legion Hospital  
 Battle Creek, Mich. 1935.

Obstetrics and Gynecology

McLennan, Charles - Duluth, Minn.  
 B.A. University of Minnesota - 1930  
 M.A. University of Minnesota - 1932  
 M.B. University of Minnesota - 1934  
 M.D. University of Minnesota - 1935  
 Intern - Detroit Receiving  
 Hospital.  
 8 Months, Chicago Lying In  
 Hospital.

Neurology

Newman, Harry R. - Toronto, Canada.  
 M.D. University of Toronto - 1935  
 Intern - St. Margaret's  
 Hospital - Hammond, Ontario.

Surgery

Paine, John R. - Dallas, Texas  
 B. A. Harvard - 1927  
 M. D. Harvard - 1931  
 Surgery, University of Minne-  
 sota Hospitals - 1931-32.  
 Research Assistant, Dept. of  
 Surg., University of Minnesota  
 Hospitals - 1932-33.  
 Intern, Minneapolis General  
 Hospital July to Jan, 1933.

Medicine

Pass, Isadore, J. - Minneapolis, Minn.  
 B.A. University of Minnesota - 1929  
 M.A. University of Minnesota - 1932  
 M.B. University of Minnesota - 1932  
 M.D. University of Minnesota - 1932  
 Rotating Internship, Minneapolis  
 General Hospital - 1934.  
 Department of Pathology, Minnea-  
 polis General Hospital - Jan. to  
 June 1934.

Surgery

Rea, Charles E. - St. Paul, Minn.  
 B.S. University of Minnesota, 1928  
 B.M. University of Minnesota - 1930  
 Intern, Minneapolis General  
 Hospital 1930-31.  
 M.D. University of Minnesota, 1931  
 Fellow, Dept. of Pathology,  
 1931-32.  
 Fellow, Physiology, University  
 of Illinois, 1932-33.  
 Experimental Surgery, Univer-  
 sity of Minnesota, 1933-34.



Ophthalmology & Oto-Laryngology

Stanford, Charles E. - Minneapolis, Minn.

B.A. Wisconsin - 1931

M.D. Wisconsin - 1934

Intern - Wesley Memorial - 1 year,  
1934.

Weakness has become progressively worse.

Past history and family history

Was in good health up to onset of present illness. Had scarlet fever at 9 years of age; measles, mumps and chickenpox in childhood. Paternal grandfather died of septicemia at 65 years of age. One sister died at birth. Other immediate relatives all well.

Physical examination. Marked anemia.

Blood pressure 120/52. Indefinite heart murmur, not transmitted, apparently systolic in time, located over aortic area. Mucous membranes are extremely pale. Patient markedly weak. Physical examination otherwise negative.

Laboratory

Urine - negative. Blood - hemoglobin 33%, red blood cells 1,700,000, white blood cells 9,100, polymorphonuclears 67%, lymphocytes 33%. Wassermann, negative. Stools - tarry and black in color; test for blood, 4+. Agglutination tests - negative. Gastric analysis - 4° free, 40° total acidity. Electrocardiogram - slurring in QRS in all leads, low amplitude in QRS.

X-Rays

Intestinal studies and barium enema, negative. X-ray of chest showed slight scoliosis of thoracic spine.

IV. CASE REPORT

NEUROSARCOMA OF SMALL BOWEL  
TRANSFUSION REACTIONS  
EVISCERATION

R. W. Koucky

age 24

Hospital No.

Admitted - 6-27-36

Sudden Onset of Abdominal Cramps

5-15-36 (about) - Following evening meal, developed sudden severe cramps over entire abdomen; no localization. Pain lasted a few hours and was relieved by medication given by family physician. Attacks recurred on 3 successive evenings. Bowel movements normal; no blood.

Sudden severe hemorrhage

6-1-36 (about) - In interval, apparently completely well. Arose in morning feeling faint and very weak. Weakness so severe that patient was forced to go back to bed. No pain on this day. Passed 3 to 4 black tarry stools. Admitted to local hospital. Given a transfusion on admission and another in the following week.

Bleeding continuous

6-27-36 - Admitted to University of Minnesota Hospitals. In the interval, there had been repeated tarry stools.

Transfusion reactions

The transfusions given with the amounts, method and the response are listed in the following table. The patient's blood group was IV and all the donors used were fours. In the earlier attempts, following the reactions, the cross matchings were re-checked and the bloods were found to be compatible. The blood of one donor which had earlier been acceptable subsequently gave rise to a reaction.

<u>Date</u>	<u>Amount of Transfusion</u>	<u>Reaction</u>	<u>Hb. %</u>
6-27	few c.c.	Immediate chill	33
6-28	500 c.c.	0	41
7-3	500 c.c.	0	39
7-19	25 c.c.	Immediate chill	23
7-20	200 c.c.	Immediate chill	
7-21	(a) 20 cc. blood in 400 cc. saline (b) 20 cc. undiluted blood from same donor	0	20
7-23	500 c.c.	Immediate chill $\frac{1}{2}$ hr. later, chill, pulse 170, hemoglobinuria.	
7-24	150 cc. intraperitoneally	Blood pressure 96/50, abdominal pain, nausea, immediate chill	30
8-4	400 cc. washed cells (washed 1x)	Chill, nausea, dyspnea - immediate	
8-5	100 cc. washed cells (washed 2x)	Immediate chill	25
8-6	300 cc. washed cells (washed 3x)	0	26
8-8	160 cc. washed cells (washed 3x)	0	
8-11	250 cc. washed cells (washed 3x)	0	43
8-12	300 cc. washed cells (washed 3x)	0	
8-13	300 cc. washed cells (washed 3x)	0	

Tumor: continued bleeding

7-27-36 - Mass became palpable in mid-abdomen to the left of the umbilicus. Mass appeared smooth and movable. Through this period the stools remained positive for blood and frequently were black. On one occasion, the patient had a collapse manifested by profuse perspiration, falling blood pressure and marked restlessness, probably indicating an episode of more acute hemorrhage into the bowel.

Operation

8-12-36 - Mass palpable in upper abdomen proved to be a large, lobulated tumor attached to the small bowel, mesentery and descending colon. The tumor was freed from the omentum and by dissection, it was separated from the sigmoid colon. Resection of the small bowel was carried out with an anastomosis of the two ends.

Pathological examination

Gross examination of the tumor showed a

whitish-yellow lobulated mass measuring on the average about 15 cm. in diameter. The surface was ragged in areas, marking the site of resection from the surrounding viscera. The portions of the tumor which were not attached to the viscera were smooth. A segment of the small bowel passed through one pole of the tumor. The mucosa of this segment was intact throughout. On the side facing the tumor, there was a broad, oval projection where the tumor impinged upon the lumen of the bowel. There was no ulceration of the mucosa of the bowel overlying this mass. The tumor appeared to rise outside of the mucous layer. Cross section of the tumor revealed a large cystic cavity filled with liquefied and necrotic tissue. The remaining walls varied in thickness from 1 to 3 cm.

Microscopic section

The tumor was a spindle-cell type of growth. There was considerable varia-

tion in the shape of the nuclei: they generally were oval or spindle shape with a few round forms. Many showed large nucleoli and a few mitotic figures could be found. There was a definite capsule at the periphery of the tumor. Palisading of the nuclei could be found. The tumor was demarcated from the mucosa of the small bowel and was separated from it by a zone of edematous submucous tissue. Many parts of the tumor showed inflammatory reaction.

#### Interpretation

Sarcoma (probably neurosarcoma),  
Grade II.

#### Postoperative Course - evisceration

8-20-36 - Wound separated; evisceration. Bowel replaced. Rubber dam inserted under peritoneum and wound closed by adhesive straps.

8-27-36 - Wound again separated. Again taped over rubber dam.

#### Edema

9-7-36 - Hemoglobin 53%. Edema of both lower extremities present. There were bouts of nausea with abdominal cramps. X-rays of abdomen showed small amounts of gas in bowel. No indication of obstruction. Rubber dam removed from incision and wound re-strapped. Wound filling in with granulation tissue.

9-11-36 - Up in wheel chair.

## V. DISCUSSION

### 1. ROENTGENOLOGY OF SMALL BOWEL TUMORS

Chauncey N. Borman.

The roentgen examination of small bowel tumors is decidedly of less value than in tumors of the remaining portion of the gastro-intestinal tract. The diagnosis is usually so seldom made, that only occasional case reports are recorded. Recently, Raiford reported that the diagnosis of small bowel tumor was made in 8 of 14 clinically recognized cases. Daub and Jones reported definite localizing findings in 5 of 9 cases of duodenal malignancy. Golden found only

17 cases of non-malignant tumors of the duodenum reported, and in 3 cases the diagnosis had been made.

Most malignant tumors of the small bowel diagnosed by x-ray examination have been carcinomata with sarcomata next in frequency. In the benign group, adenomata have been most frequently reported.

#### Technique of x-ray examination

in suspected tumors of the intestine:

A flat plate of the abdomen should first be made. This examination is chiefly for comparison with the following plates and to a lesser extent for the visualization of large dense intra-abdominal masses. A barium meal is next given and the plates made with the patient in the erect position. The first plate should be taken after 30 minutes, at which time the most satisfactory filling of the duodenum is obtained. The meal is followed by fluoroscopic examination and pictures made of any suggestive lesion. In the absence of any fluoroscopic findings, plates at 4 and 8 hours should be the routine procedure; at the end of 24 hours, another plate, followed by the barium enema examination, complete the routine procedure.

#### Diagnosis

From the roentgenologic standpoint, tumors of the duodenum and terminal ileum may be more readily demonstrated than those of the jejunum and proximal ileum since the former are fixed and often permit localization and detailed study. The latter segments being movable, offer greater difficulty and localization of the tumor must be based on the average abdominal position, and on the bowel pattern.

The widened dilated contour of the barium filled duodenum may be readily identified. Finger-like projections of barium in the dilated crypts, vigorous reverse peristalsis, and sudden narrowing or defect beyond which very little barium passes justifies the diagnosis of dilation, and in most

cases is due to obstruction by a tumor. In the region of the duodeno-jejunal juncture, however, the possibility of obstruction, extrinsic in origin, such as that produced by mesenteric vessels, should be remembered. The most common type of defect is the irregularly narrowed lumen; produced by an infiltrative growth of the wall. Large polypoid tumors of the wall produce a sharp localized block of the lumen, while a small localized polyp will show a small rounded lateral defect in the barium shadow.

The constricting jagged lesion, with marked narrowing, suggests malignancy. Rounded, movable defects imply somewhat the possibility of benign polyps, although malignant degeneration can never be ruled out by the roentgen examination alone. In the presence of a rounded defect in the upper duodenum suggesting a benign tumor and a six hour gastric retention, a growth arising in the stomach and prolapsing into the duodenum is to be considered.

In tumors of the jejunum and upper ileum, dilation is the most frequent finding. Obstruction, if complete, may show a rounded, bulbous defect at the head of the barium meal. Incomplete obstruction may shadow a narrow "trickle" of barium through a narrowed, infiltrated segment. This portion of the bowel offers the greatest difficulty in diagnosis, and often any little information other than the presence of obstruction, if present, can be obtained. Often the site of obstruction within the abdomen changes with position of the patient, offering additional hazards.

In tumors of the terminal ileum, dilation is again the most frequent sign. Localization of the obstructing factor can be more readily made in this region because of the greater fixation of the segment. Barium enema may reveal a collapsed large bowel, with the enema following into the ileum and suddenly stopping at the obstructive site. Filling defects in the ileum may occur but it is more common to find a defect in the cecum produced by pressure of a mass. Intussusception of the ileum into the cecum may occur. The incidence of intussusception has been reported at from 23

to 30%, and is present three times more often in malignant tumors than in benign. Sarcoma and lymphosarcoma occur more often in the terminal ileum than other segments.

## 2. TRANSFUSION REACTIONS

Richard M. Johnson

When the patient was admitted, she had severe anemia with a history of repeated intestinal hemorrhages which had not ceased spontaneously or following transfusion. This indicated that repeated transfusions would probably be necessary before any extensive diagnostic study could be made. X-ray examinations of the gastro-intestinal tract, esophagoscopy, gastroscopy, proctoscopy and detailed blood studies gave normal findings except for severe secondary anemia. This excluded with reasonable certainty most of the common causes of melena; namely, peptic ulcer, diapedesis of stomach or lower colon, malignant and benign neoplastic lesions of the stomach and colon, intussusception and leukemia. The absence of splenomegaly, hepatomegaly and lymphadenopathy together with the above mitigated against the probability of cirrhosis of the liver, Banti's disease and other causes of esophageal varices. The absence of hematemesis since the onset of the patient's symptoms was evidence against blood entering the stomach. Negative abdominal findings, the absence of a leucocytosis and the very profuse nature of the repeated hemorrhages were not considered as the usual observations in mesenteric infarction, portal vein thrombosis and Meckel's diverticulitis. Henoch's purpura could conceivably produce a similar clinical picture but there were no skin or joint symptoms at any time during the course of the disease. Consequently, the hemorrhage was thought to be occurring in the small bowel and resulting from a bleeding intrinsic lesion, such as a neoplasm or inflammatory tumor or polyp. Henoch's purpura and diverticulitis were still considered as a possibility.

The progressive anemia and the frequent episodes of hemorrhage made operative interference necessary. When transfusions were given preparatory to operation, the patient developed transfusion reactions from compatible blood. Following one of these transfusions, a hemoglobinuria developed. No hemolysins could be demonstrated when the two bloods were again tested. Transfusions were tried after diluting the blood with normal saline and even then a reaction followed. During this interval, the patient continued to have repeated hemorrhages with an associated fall in hemoglobin and red cell count. We were certain that the bloods used were not agglutinated by the patient's blood and that there were no hemolysins in either the patient's or donor's blood stream. The reactions probably represented a reaction of the patient toward the plasma proteins of the donors. A sensitivity of the patient to the plasma proteins of the donor's blood was further indicated when a severe reaction followed the intraperitoneal injection of cross-matched blood. If these reactions resulted from the injection of the plasma proteins of the donor's blood, washing the cells of the donor two or three times with normal saline to separate the cells from the plasma protein, should enable us to safely transfuse the patient with the donor's cells suspended in normal saline. Reactions of reduced intensity resulted following the injection of red blood cells which had been washed once and twice but three washings successfully prevented any reactions. After several transfusions with thrice washed red blood cells, the patient was thought to be ready for surgery and transferred to the surgical service. The "gameness" and the very excellent cooperation of this patient contributed a great deal to the ultimate outcome.

### 3. SURGICAL CONSIDERATIONS

Wm. T. Peyton

There are several interesting features about this patient. It was a case of intestinal bleeding without demonstrable cause until the mass became

palpable in the abdomen. Various suggestions as to the cause of bleeding were made, such as hemangioma of the bowel, Meckel's diverticulum with ulcer, polyp and purpura hemorrhagica. The tumor was thought to have been palpated in the right upper quadrant a few weeks before it became palpable in the midportion of the left abdomen. This might well be explained by the free mobility of a small tumor mass before it became fixed to the sigmoid colon following which its mobility was quite restricted.

The mass may have enlarged so that it became palpable quite rapidly due to degeneration of the central portion of that part of the mass which projected into the mesentery of the intestine.

Small bowel obstruction did not occur because that portion of the tumor projecting into the lumen of the bowel was so small that it only occluded approximately one-third of the lumen of the gut.

When first exposed, the tumor appeared to involve both the small bowel and sigmoid and it was proposed to resect and anastomose the small bowel then bring the tumor out through the abdominal wound with the involved loop of sigmoid and remove the tumor leaving clamps on the ends of the colon as in an obstructive resection for carcinoma of the colon, the colon to be anastomosed later by the usual Mikulicz procedure. When the small bowel was resected and the tumor was lifted up, it began to separate from the colon and it was found that it did not involve the colon but was merely adherent to it.

The extremely poor nutritional condition of this woman and her low hemoglobin was probably a contributory if not the sole cause of evisceration. Healing was delayed so that when the tensile strength of the catgut in the wound was approaching zero 9 days after operation healing had not occurred and dehiscence of the wound followed. During convalescence, edema occurred which was probably a nutritional edema. She did not tolerate food for at least 3 weeks after operation and blood serum

could not be given by transfusion on account of the reactions that followed transfusion of whole blood. The edema gradually cleared up after protein was tolerated in her diet.

Tumors of this type in the gastrointestinal tract are unusual. A fibromyxosarcoma (neurosarcoma) of the stomach was reported by Hartman (1927) and he found four such tumors of the stomach reported in the literature, one of which was excised by Shouldice and when reported two years after operation there had been no recurrence of gastric symptoms.

In 1933, a man was readmitted to the University of Minnesota Hospitals for multiple neurosarcoma. His previous admission 6 years before was for glaucoma which is a complication of multiple neurofibromatosis. When admitted in 1933, he had multiple subcutaneous tumors, a gastric lesion, a lesion of the alveolar process and metastases to the lung. At postmortem examination, he was found to have in addition to the neurosarcoma of the stomach multiple neurosarcomata of the small bowel.

#### 4. PATHOLOGY OF NEUROFIBROMA AND NEUROSARCOMA

Rudolph W. Koucky

The terms "fibroma" and "fibrosarcoma" as they are commonly used designate tumors in which the cells are fusiform and resemble a fibroblast. Undoubtedly, this class represents a considerable range of neoplasms of different genetic natures allied only in the similarity of the microscopic appearance.

The terms "neurofibroma" and "neurosarcoma" represent an attempt to divide from the above all-inclusive group a class of tumors which probably arise from the connective tissue elements of nerve fibers, i.e. from the Schwannian sheath. The term "neurofibroma" has been generally accepted and appears preferable to "fibroma of a nerve."

Until relatively recently, a diagnosis of neurofibroma could be considered only

in the presence of the so-called "classical picture." This included the following:

- Congenital nature
- Inherited
- Subcutaneous or cutaneous tumors
  - fibroma
  - lipoma
  - hemangioma
  - melanoma
  - sebaceous adenomata
- Visceral tumors
- Pigmentary anomalies
- Unnatural growths of hair
- Nerve pain
- Deformity of extremities
- Individual bone changes
- Spine deformity
- Asymmetry of head.
- Central nervous system tumors
- Mental disturbances or deficiency
- Eye and ear changes

These features must be considered as manifestations of a generalized mesodermal deficiency. Only rarely does one individual present the complete picture. All possible gradations and combinations must be expected and a single tumor without any other obvious stigmata of the disease is common.

Microscopically, the tumors are made up of elongated fusiform cells arranged in interlacing bands. Palisades of nuclei are frequently seen. In the rapidly growing tumors, giant cells are often present. A condensed capsule about the tumor is very characteristic.

The manner of dissemination of the tumors is doubtful. It is very possible that local recurrences after removal are new tumors developed on the remaining part of the nerve fiber. No proof has been advanced to indicate that distant peripheral tumors are metastasis. More likely, they are independent primary tumors. The frequency with which tumors are found in the lungs suggests very much that dissemination to this organ may occur through the veins as tumor emboli.

The rate of growth varies a great deal. Most tumors are slow growing or stationary. The grading of the malignancy