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

Megacolon

Volume XIII | Friday, October 17, 1941 | Number 3

STAFF MEETING BULLETIN
HOSPITALS OF THE
UNIVERSITY OF MINNESOTA

Volume XIII | Friday, October 17, 1941 | Number 3

INDEX

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

Financed by the Citizens Aid Society,
Alumni and Friends

William A. O'Brien, M.D.

I. LAST WEEK

Date: October 10, 1941

Place: Recreation Room
Powell Hall

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

Program: "Generalized Amyloidosis"
J. B. Arey and F. W. Hoffbauer

Discussion
F. W. Hoffbauer
L. G. Rigler
J. B. Arey
E. T. Bell
C. J. Watson

Present: 141

Gertrude Gunn,
Record Librarian

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II. OFFICES

DR. DEMETRIADES D. ARIS

Announces the opening of his offices
For the practice of dentistry
at
730 La Salle Building
Seventh at Marquette - Minneapolis

Evenings by appointment Phone GE 3475

III. MEETINGS

1. MINNESOTA MEDICAL ALUMNI ASSOCIATION

announces its

ANNUAL CLINICAL PROGRAM AND MEETING

Friday, October 31, 1941, (the day before Homecoming). To be held in the University Hospitals as in previous years.

Wesley W. Spink: "Sulfonamide Therapy"
Larry Boies: "Hearing Loss in Childhood"
*Lloyd H. Ziegler, Milwaukee: "Reactions of Psychotic Individuals to Surgery"
*Harry Christianson: "Ano-rectal Diseases"
Miland Knapp: "Physical Therapy of Fractures"
*Erling Platou: "Human Serum Therapy"

A short business meeting will immediately follow the Clinical Program.

Luncheon will be served in the Coffman Memorial Union at 12:30 p.m. This luncheon meeting will be addressed by Dr. Wallace H. Cole on his "Recent Experiences in England."

All Alumni of the University of Minnesota Medical School and other interested physicians are invited to attend.

*Member of 1921 class.

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2. CENTER FOR CONTINUATION STUDY

Medicine

Radiology of Chest -	November 3-5
Sulfonamide Therapy -	November 10-12
Urology - - - -	November 10-12
Diseases of Infancy and Childhood -	December 15-20

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Hospital

Medical Record Library Service - -	October 6-8
Medical Technology -	October 20-22
Occupational Therapy -	November 17-19
Medical Social Service-	November 24-26

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Public Health

Public Health Nursing -	November 6-8

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3. WINTER PROGRAM

Otolaryngology	Jan. 19-24.
Hospital Administration	Jan. 26-31.
Dietetics	Feb. 9-11.
General Surgery*	March 2-7.
General Medicine (Fellows of College of Physicians)	April 6-11.
Toxemia of Pregnancy	April 20-25*.

*Tentative.

Other courses will be announced.

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REUNION OF UNIVERSITY OF MINNESOTA PEDIATRIC INTERNS AND FELLOWS--Oct. 17-18, 1941

Friday, October 17, 1941

9 a.m. - Clinic, Eustis Amphitheatre

Tracheo-esophageal fistula	C. A. Waterbury
Addison's disease in an infant	Willis Thompson
Lymphosarcoma	A. Wert
Chronic cystic fibrosis of pancreas	L. Luzzatti
Aplastic anemia	Wm. Bogart
Thrombocytopenic purpura	F. Kiesler
Lung abscess	Wm. Bogart
Encopresis	C. A. Waterbury
Thyrotoxicosis	F. Kiesler
Ovalocytosis	Paul Bancroft
Macrogenitosomia praecox	Wm. Bogart
Acute nephritis	S. Chamberlin
Nephrosis	S. Chamberlin
Nephrotic nephritis	S. Chamberlin
Constrictive pericarditis	R. Alway
Congenital megacolon	R. Alway

11:45 a.m. - 1:15 p.m. - General Staff Meeting

Congenital Megacolon	R. Alway
(Discussion, Dr. Henry J. Gerstenberger, Prof. of Pediatrics, Western Reserve University)	

2 p.m. - Room 111, Medical Science Building

Primary Staphylococcus albus peritonitis	A. E. Karlstrom
Blood Substitutes	Paul Dwan
Thrombophlebitis Migrans	V. Birnberg
Advantages and Disadvantages of Early Solid Food Feeding in Infants	R. Rembolt
Further Studies on the Electrolyte Metabolism in Asthma	Al Stoesser, M.M. Cook and M. Booth
Is Sulfanilamide Administration a Practical Procedure for Prevention of Rheumatic Recrudescences?	R. Platou, P. Dwan and A. E. Hansen
Further Studies of the Effect of the Ketogenic Diet on the Electroencephalogram of Children Having Epilepsy	G. Logan
Celiac Disease with Tetany	P. Dyson
Study of the Convulsive Mechanism in Hypoparathyroidism	M. Ziegler, Irvine McQuarrie, A.E. Hansen
Emotional Factors in Pediatric Diagnosis	E. Clarke and R. Jensen
Effect of Changes in Atmospheric Oxygen on the Fragility of Red Blood Cells	M. Booth
Further Studies on Virus Pneumonitis	J. Adams and N. Roach
The Effect of Vitamin E on the Blood Lipids in Human Subjects	Ralph Rossen
Mechanism of Electrolyte and Water Exchange in Diabetes Insipidus as Affected by Desoxycorticosterone	J. Anderson, and Wm. Murlin
Evidences of Disturbance in Lipid Metabolism in Eczema	A. E. Hansen and Hilda Wiese

7:00 p.m. - **Reunion Dinner for Former Interns and Fellows - Campus Club.**

Saturday, October 18

9:15 a.m. - Clinic, Small Lecture Room, Main Entrance, Minneapolis General Hospital.

Treatment of pertussis paroxysmal state with hyperimmune serum, demonstration of a case	E. Strem
Introduction to the treatment of poliomyelitis by Sister Kenny's method	A. Stoesser and Sister Kenny
B. influenza meningitis	A. Hill
Prothrombin blood level in newborns receiving prelacteal feedings	L. Richdorf
Presentation of other interesting patients	A. Stoesser and staff

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IV. MORE SUBSCRIBERS

Thank you for your support.

Arkansas, Fort Smith
Chamberlain, Charles T.

Hot Springs National Park
Lindgren, Russell C.

Arizona, Tucson
Bergquist, Major E. L.

California, Los Angeles
Hoffman, Arthur M.

San Bernardino
Engel, Ed E.

Colorado, Greeley
Peterson, A. E.

District of Columbia, Washington
Weinshel, Leo R.

Iowa, Dubuque
Roy I. Thoisen
Henry Edstrom
D. W. Leik
H. M. Pahlas
D . C. Conzett
A. B. Nesler
C. C. Lytle
Carl Smith
A. G. Plankers
F. P. McNamara

Kansas, Wichita
Hibbard, James S.

Michigan, Eloise
Bryan, D. I.

Minnesota, Austin
Molgren, F. W.

Minnesota, Bemidji
Lutheran Hospital

Minnesota, Brainerd
Quanstrom, V. E.

Minnesota, Cold Spring
Barnett, Joseph M.

Minnesota, Hibbing
Williams, J. A.

Minnesota, Lake Park
Sand Beach Sanatorium

Minnesota, Minneapolis
Asbury Hospital
Eitel, George D.
Fowler, L. H.
Henrickson, Earl C.
Mattson, Hamlin
McGandy, R. F.
Myers, J. A.
Rizer, Robert I.
Rusten, Elmer M.
St. Mary's Hospital
Spano, J. P.
Stewart, Rolla
Ulrich, Henry L.
Weisman. S. A.

Minnesota. Redwood Falls
Cole. J. Gordon

Minnesota, St. Paul
Aurelius, J. Richard
Children's Hospital, Inc.
Hauser, Victor P.
Koepsell, Arthur
Meade, John R.
Nye, Lillian L.
Zimmermann, H. B.

Minnesota, Worthington
Southwestern Minnesota Sanatorium

Nebraska, Omaha
Davis, Herbert H.

New York, Brooklyn
Samwick, A.

South Dakota, Rapid City
Black Hills General Hospital

Washington, Seattle
Sherwood, K. K.

Wisconsin, Milwaukee
Beckman, Harry
Library, Milwaukee Children's Hospital

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V. MEDICAL SCHOOL

Seminar in Pathology

Seminar in pathology 12:30 p.m., Monday, October 20, 1941, 104 Institute of Anatomy.

Brucellosis in cattle, Dr. A. G. Karlson.

Visitors welcome.

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The Minnesota Pathological Society

Institute of Anatomy, Tuesday, October 21, 1941, 8:00 p.m.

Symposium on equine encephalomyelitis:

Clinical features, Dr. Leonard W. Larson, Bismarck, North Dakota.

Epidemiology, Dr. Carl M. Eklund.

Pathology, Dr. A. B. Baker.

Discussion: Dr. Reuel Fenstermacher, Dr. Alex. Blumstein

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Department of Anatomy

The Anatomy Seminar will meet on Saturday, October 18 at 11:30 a.m., room 226, IA.

Dr. L. J. Wells: Spermatogenesis following hypophysectomy.

John W. Rebuck: Experimental inflammation in man.

All interested are cordially invited to attend.

E. A. Boyden, Chairman.

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From the Mail Bag:

I certainly do wish to have the 1941-1942 Staff Meeting Bulletin, Hospitals of the University of Minnesota.

I think that it will be a fine thing for a little of the "culture of the Upper Mississippi Valley," as Dr. McKelvey calls it, to filter down into the far reaches of south Texas. Especially those of us who are stationed in this part of the country wish for some of the culture of the east bank just below the Washington Avenue bridge. Those of us who are assigned to tactical units of the Army are glad to be reminded at least once each week that there is still such a thing as clinical medicine and surgery.

Marcel T. Mitchell, 1st Lt., MC.
Medical Detachment, 38th Infantry
Fort Sam Houston, Texas.

VI. MEGACOLON

Robert Alway

Megacolon is a dilatation of part or all of the colon with or without hypertrophy of its wall. The first reference to this condition is credited to Ruysch who, in the seventeenth century, described a case in a 5 year old girl. The first description in America was published by Lewis in 1867. General interest was first aroused, however, by the report of Hirschsprung in 1886. It is known in the German, French - English and Italian literature respectively as Hirschsprung's disease, congenital idiopathic dilatation of the colon and Mya's disease.

A great variety of causes and many therapeutic regimes have been advanced since Hirschsprung's article brought general attention to this condition. Now it is generally considered to be a result of a colonic obstruction which is due to anatomic, or more frequently, autonomic imbalance. In the past decade the neurogenic theory has gradually gained general acceptance. It is supported more by the recent and successful therapeutic methods than by anatomic evidence. These methods have as their basis an alteration of the autonomic control of the rectum and colon.

The classification of megacolon includes the primary (idiopathic or Hirschsprung's) and the secondary types. In the latter there is a demonstrable anatomic cause. Treves, Vernon David, and Brenneman have shown that congenital anorectal stricture is occasionally the cause of megacolon.

Megacolon is primarily a disease of infancy and childhood. At least 70 per cent of the cases appear within the first few weeks of life. Males predominate in the ratio of three to one. A familial tendency has been noted by some and also an association with congenital abnormalities. It has also been noted in association with endocrine disturbances such as acromegaly and hypothyroidism.

Etiology

The etiology megacolon is not known. No single theory of the many advances is applicable to all cases. It is possible that an interrelation of two or more factors may exist and that the cause may vary.

Since any rational therapeutic approach is dependent on an understanding of the possible etiologic factors involved some basic data will be discussed.

Innervation of the Colon and Rectum

The craniosacral (parasympathetic) division of the general visceral efferent system furnishes the motor supply to the colon and rectum. The motor fibers to the proximal portion of the colon, including the first third or half of the transverse colon, are supplied by the vagus. The pelvic nerves (nn. erigentes) arising from the second to fourth sacral segments supply the rectum and distal portion of the colon.

The inhibitory fibers to the entire colon arise from the thoracicolumbar (sympathetic) division of the general visceral efferent system. The sympathetic (inhibitory) fibers to the cecum, ascending and transverse colon proceed by way of the inferior mesenteric plexus; while those to the descending colon, sigmoid and rectum arise from the second and third lumbar segments and go through the lumbar splanchnics to the inferior mesenteric and hypogastric ganglia, reaching the latter by the presacral (hypogastric) nerve. Supplying the descending colon and sigmoid are the lumbocolonic nerves which are post-ganglionic fibers of the inferior mesenteric ganglion. The rectum is supplied by the pelvic (inferior hypogastric) plexus arising from the hypogastric ganglion.

Inhibitory fibers to the internal anal sphincter, however, are parasympathetic while the motor fibers are sympathetic.

Experimental

Adamson found that following section of the parasympathetic supply to the colon and bladder by division and avulsion of the roots of the pelvic nerve a urinary retention immediately developed. In these animals surviving eight weeks

X-ray evidence of megacolon developed; this he attributed to the relative sympathetic overaction. Although showing a possible cause of megacolon his experiment does not elucidate the exact cause of the autonomic imbalance.

Morton and Scott found that removal of the inferior mesenteric ganglia or of both lumbar sympathetic chains in cats produced increased peristalsis and increased tonus of the bowel wall. Section of one or more lumbo-colonic nerves caused increased motor activity only in the segments supplied by the sectioned nerves. Results identical with those of section were obtained in all cases following spinal anesthesia through temporary interruption of the inhibitory action of the sympathetics.

Adamson felt that the association of a dilated bladder which occurred experimentally and occasionally clinically with megacolon, and which improved after presacral sympathectomy, was an indisputable argument in favor of the neurogenic origin of primary megacolon. The nerve supply is the only thing which the bladder has in common with the rectum and colon.

Langley and Anderson first demonstrated that stimulation of the lumbar sympathetics produced dilatation of the colon and contraction of the internal sphincter thus preventing defecation. This was again shown by Learmonth and Mankowitz. Learmonth then showed that section of the lumbar sympathetics resulted in increased bowel activity and subsequently Rankin and Learmonth duplicated these results in humans.

Autonomic Pharmacology

The activity of any organ is a result of the action of cholinergic and adrenergic factors of the parasympathetic and sympathetic nerves supplying it.

Acetylcholin is produced at the neuromuscular junction of the cholinergic (parasympathetic) nerves and also in lesser amounts at the synapse between the pre- and post-ganglionic adrenergic (sympathetic) nerves.

Acetyl-beta-methyl cholin has an action similar to acetylcholin though not exactly corresponding to it. It is more active and is not so readily destroyed. The effective dose varies from person to person. This drug is available as the chloride or as the bromide; the former is hygroscopic and deteriorates rapidly unless in solution while the latter is more stable and appears, clinically, to be less toxic. It is known as mecholyl. The pharmacologic action of prostigmin is synergistic to acetylcholin and mecholyl; it enormously enhances their action and acts either by stabilizing them or by inhibiting cholin esterase. When given with or before mecholyl, prostigmin produces an increase in intestinal motility far above that produced by mecholyl alone. This effect is abolished by atropine. In case of severe reactions to mecholyl, gr. 1/50 of atropine sulfate will promptly block the action of mecholyl. If prostigmin has been given in addition to mecholyl then epinephrine should be given as well as atropine.

Atropine is antagonistic to the cholinergic drugs. It stops or prevents the action of acetyl choline and mecholyl. Its site of action is probably in or near the reacting cell.

Syntropan is the ester of tropic acid with 3 - diethyl amino - 2, 2 dimethyl - 1 propanol. Syntropan acts similarly to atropine but is less toxic, does not have atropine's undesirable side effects and it controls intestinal tonus without interfering with the peristaltic reflex. It may be given by mouth.

Benzedrone sulfate is used as an adrenergic drug although there is not an exact parallelism. Its action is prolonged. It may be given by mouth.

Physiology

Sympathetic (adrenergic) activity causes an increase in the diameter of the colon by relaxing the wall and contracting the internal anal sphincter, while the opposite occurs with parasympathetic (cholinergic) activity. It may therefore be assumed that a relative sympathetic overactivity permits filling

of the bowel, while a relative parasympathetic overactivity permits emptying of the bowel. In health there is physiological balance.

If emptying of the bowel does not follow the setting up of the defecatory reflex, which is initiated by stretching of bowel wall coincident with filling, then the bowel wall adapts itself to its contents. This is the so-called postural tone. When this occurs there is no further stimulus to defecation until the bowel wall is again stretched. If any cause prevents emptying of the rectum then, through successive readaptations, the capacity of the rectum and even more that of the proximal colon will become greater.

Rectocolonic dysfunction may follow then from adrenergic hyper-, hypo-, or normal function coincident with opposite variations in cholinergic function. The various possible combinations of sympathetic-parasympathetic imbalance must be kept in mind in approaching the problem of primary megacolon.

Pathology

The affected portion is characteristically tremendously dilated and the muscularis hypertrophied, although occasionally the colon wall is thin, translucent and the haustral markings lost. The lymphatics and mesenteric glands are enlarged. Ulceration of the mucosa sometimes occurs; this may proceed to perforation. The mesenteric thickening is sharply limited to the involved section of the colon.

The process usually begins in the sigmoid and may progress in a retrograde direction until the entire colon is involved. The sigmoid alone is involved in about 50 per cent of the cases while involvement of the entire colon is next in frequency. The small intestine and rectum are usually normal; the latter may share in the process. Dolichocolon, a long colon with a long mesentery, may occur.

Microscopically there is an increase in the cellular elements of the mucosa and muscularis and an increase in the blood vessels of the mucosa. The serosal changes are minimal. The hypertrophy of the wall is mainly through increases in the circular muscle layer.

The capacity of the colon may be enormous. Formad reported a case from which he removed 40 pounds of feces while Puls, in another case, removed 17 quarts of liquid feces.

Diagnosis

The diagnosis is strongly suggested by a history of obstinate constipation and chronic abdominal distension frequently dating from infancy or early childhood. The picture is striking in that the child usually appears in good health, the appetite and digestion are good and the nutrition is little impaired. Megacolon is remarkable for the extraordinary infrequency of bowel movements without signs of acute intestinal obstruction.

In about one-third of the cases there is a history of one or more episodes of vomiting or bouts of diarrhea alternating with long periods of constipation. In these the child is more apt to appear dull and apathetic and show cardiorespiratory symptoms due to displacement of the thoracic viscera by the tremendously dilated colon.

The characteristic abdominal distension may be tense or doughy and on palpation fecal masses may be felt. The stool passed may be scybalous, bulby or diarrheal. Fecal impaction is not infrequent.

The history and physical findings are supported by the x-ray appearance obtained by using a barium enema. Distinction is made between Hirschsprung's disease and secondary megacolon although the range of findings may be only the visual evidence of the length and severity of the process.

Differential Diagnosis

The usual patient with megacolon gives a typical history, physical and x-ray findings but the occasional atypical cas

necessitates consideration of other possible causes of chronic abdominal enlargement in infants and children.

The celiac syndrome is characterized by abdominal distention and attacks of diarrhea with large, pale, malodorous stools. It is usually encountered before the end of the first year; it is most frequent in the second and third years. Anorexia and disturbed nutrition are usually associated. The distention involves the small and large intestines equally, frequently varying markedly from day to day. The celiac abdomen may be considerably larger in the evening than in the morning.

Slowly developing enlargement of the abdomen is often the first symptom noted in tuberculous peritonitis. Ascites and nodular abdominal masses not removed by enemas are frequently associated with the distention. The onset is rarely during infancy and early childhood and furthermore a positive tuberculin reaction and other signs of tuberculosis aid in differentiation.

Chronic intestinal obstruction, particularly colonic, may be confusing but can usually be recognized by the use of proctoscopy and the barium enema. It is well known that megacolon does occur secondary to congenital anorectal stricture.

One of the symptoms of rickets formerly regarded as characteristic was constipation. This and the frequent marked pot-belly are due to a loss of muscular tone in both the abdominal and intestinal walls and it is mainly tympanites. The skeletal changes plus evidence of altered calcium and phosphorous metabolism serve to make the diagnosis.

Atony of the intestinal musculature occurs in conditions with thiamin deficiency and insufficient calcium and potassium intake. These can produce constipation and dilatation sufficient to suggest megacolon as may also occur in acromegaly and hypothyroidism.

Treatment

Physiologists have long known that stimulation of the lumbar sympathetic ganglia caused inhibition of colonic peristalsis, dilatation of the colon and contraction of the internal anal sphincter. This was not applied to primary megacolon until Royle and Hunter, in 1924, noted relief from constipation in spastic diplegics on whom they had performed a left lumbar sympathectomy. Subsequent to this Wade and Royle applied this procedure successfully to primary megacolon.

Prior to this the surgical treatment consisted of excision of the involved section or short circuiting procedures. These had a high mortality and even when successful left much to be desired. Medical management was no more satisfactory.

Medical Management

According to De Takats the indications for medical management are: (1) an effort to minimize colonic distention and prevent nutritional disturbances in children up to 3 years of age; (2) mild cases in which the child is growing normally and the response to treatment is satisfactory; (3) as a pre-operative measure in those cases not responding adequately to medical management.

A well-balanced diet, mineral oil, rectal dilations (systemically and high), warm colonic irrigations are general suggestions for medical care.

One should remember that an occasional patient will respond to habit formation training alone. This is strikingly shown in case 4. In the majority of instances where habit training alone appears insufficient it is still a great aid in supplementing medical or surgical regimes.

Conditioning of the patient to having bowel movements is the desired end result of treatment. These children, in most instances, have never had a spontaneous bowel movement and hence have had no experience with a normal defecatory impulse. In this clinic we have tried to

follow a regime which makes use of as many conditioning factors as possible.

Klingman has proposed a classification of megacolon based on the characteristics of emptying, as followed fluoroscopically after a barium enema, and the response to autonomic drugs. If the colon, except for the recto sigmoid, empties well he feels that the recto sigmoid apparatus is not functioning. To this condition he gives the term recto sigmoid achalasia and states that it is due either to parasympathetic underactivity or sympathetic overactivity, the latter not responding to any drugs. The parasympathetic insufficiency in this type usually responds to syntropan. This is started with 5 mgm. dose, three times a day and may be increased to as much as 150 mgm. a day. The theoretical explanation of its mode of action is obscure, but nevertheless that it does succeed is shown by 5 cases reported by Klingman. For those patients not responding to cholinergic inhibitions he advises sympathectomy. Those instances in which the recto sigmoid empties while the proximal portion of the colon does not he ascribes to cholinergic insufficiency. Mecholyl, with or without prostigmin, is the treatment of choice in these.

The use of mecholyl, particularly mecholyl bromide, is advocated by Law. The recommended initial dose is 0.05 to 0.1 gm. orally after breakfast; in two or three days this may be increased to 0.2 gm. If there is still no effect, a mid-afternoon dose of 0.1 to 0.2 gm. may be added. Daily administration of mineral oil and enemas as needed should be used with mecholyl treatment. Prostigmin enormously augments the action of mecholyl so that with a dose of 5 to 10 mgm. of mecholyl not more than 1 mgm. of prostigmin should be used.

Surgical Treatment

The present surgical treatment of primary megacolon is sympathectomy. The benefits from this are due to elimination of sympathetic inhibitory action. Wade and Royle first did lumbar ramisection to interrupt the lumbar sympathetic outflow. Since that time several modifications have been used; among which is that of Judd and Adson who excised the lumbar ganglia and trunk and Rankin and Learmonth who sectioned the presacral nerve and the lumbo-cononic nerves (inferior mesenteric plexus).

Lumbar sympathectomy causes vasoparalysis of the legs but does not effect ejaculation in the male. The Rankin-Learmonth procedure gives more complete interruption of the sympathetic supply to the recto sigmoid but produces sterility in the male through abolishing ejaculation. Orgasm is not effected. Recently DeTakats has reported on a patient who subsequent to section of the presacral nerve showed motile spermatozoa in the examined specimen. Still it is recommended that the presacral nerve be left intact in male children limiting the resection to the lumbar chains.

Telford and Stopford have devised the procedure of section of the medial rami of the lumbar sympathetics which avoids vasoparalysis and sterility in the male. This is probably the optimal procedure but for thorough denervation a lumbar sympathectomy is preferable.

Indications for surgery are the presence of a definite obstruction or the failure of medical management. It has been found that those patients showing visible peristalsis and hypertrophy of the colon do well, while those with a thin walled colon, the result of extreme dilatation, exhibiting no peristalsis receive minimal help from sympathectomy. The urgency of colonic decompression from infancy is thus obvious. If the muscular power of the colon is lost no type of sympathetic interruption will be of value.

Acetylcholin and spinal anesthesia have been advised as aids in pre-operatively determining whether or not the colon can contract. Spinal anesthesia has also been recommended as one type of treatment because spontaneous evacuation has been established and maintained for several months following its use.

The pre-operative treatment is important. A low residue diet with mineral oil and daily warm high enemas should be used. The colon should be emptied as cer-

pletely as possible. In addition general measures for improving the patient's condition are advisable. Blood transfusions and parenteral glucose will aid in minimizing the surgical risk.

Postoperatively the child may be placed on a general diet. The establishment of regular bowel habits is important and this may be facilitated by mineral oil daily, a regular time for defecation and the use of mecholyl or prostigmin.

It should be remembered that sympathetic interruption has several limiting factors. Very young children do not tolerate the operative procedure well; hence it is desirable to carry them along on medical management until they are at least 4 years of age. There is no consistently dependable preoperative test with which to prognosticate results. The patient whose colon is thin and shows little peristalsis will receive minimal benefit. Normal functional activity is not always immediately restored to the bowel after sympathectomy and even then intractable relapses not infrequently occur.

If cases are selected and if the preoperative preparation and postoperative management are carried out thoroughly, sympathectomy is an excellent method of correcting primary megacolon.

Results and Prognosis

Because the newer surgical treatment and the use of autonomic drugs in controlling megacolon have been in use a relatively few years late results are difficult to obtain. Generally speaking, the present therapeutic means offer hope of a considerably better expectancy.

Case Reports

Case 1. Male, aged 14 months, was first admitted 4-28-33 with a typical history of megacolon. The child had been constipated since birth and required frequent enemata. The abdomen was tensely distended and showed definite colonic peristalsis. Barium enema at this time showed a large atonic colon. The child was given mineral oil and frequent enemata. He was discharged 8-2-33, readmitted 9-1-33 to 9-10-33 because of a fecal impaction which was easily removed. The boy died suddenly at the age of 23 months. No autopsy was performed.

Comment: This was one of several similar cases which were treated only by mineral oil and frequent enemas to try to maintain colonic decompression.

Case 2. Male, age 5 years, was first admitted 8-28-29 because of constipation and abdominal distention dating from birth. Barium enema showed a megacolon while proctoscopy revealed a membrane partially occluding the rectum. This was removed surgically and postoperatively the boy had spontaneous bowel movements every day for several months when recourse to enemata became necessary. When readmitted on 3-29-30 he had an enormously distended abdomen and the barium enema examination showed marked dilatation of the sigmoid and ascending colon. His stay was complicated by hemorrhagic encephalitis which necessitated deferring a proposed sympathectomy. The patient did not return as requested until 8-5-39 when he was admitted in extremis, expiring the same day from a volvulus of the sigmoid.

Case 3. Male, age 10 years, admitted 8-8-38 because of constipation and abdominal distention since birth. Spinal anesthesia following a barium enema (which showed megacolon), caused increased bowel activity but no evacuation. Mecholyl chloride was started and increased to 10 mgm. twice a day. Prostigmin, 0.25 mgm was added and then the mecholyl gradually increased until the patient had occasional spontaneous bowel movements. Since that time there have been numerous adjustments in dosage to maintain adequate spontaneous evacuations. On 200 mgm. of mecholyl bromide a day he had an evacuation at least every other day. Coincident with additional thiamin he started having 2 evacuations a day.

Comment: This is one of several patients who have been satisfactorily carried along on mecholyl bromide.

Case 4. Male, age 2, first admitted to this hospital 7-6-29 because of chronic constipation and abdominal distention since birth. He had never had a spon-

taneous evacuation and none even with enemas for one month prior to admission. The physical findings were typical. Spinal anesthesia after a barium enema showed increased tonus but did not result in evacuation. An attempt was made to develop a conditioned reflex mechanism. After an enema each morning the child was urged to contract his abdominal muscles to expel the enema. If he would not a mild galvanic shock was applied just above the iliac crest. Within 4 days he had a normal bowel movement and by 8 days had an evacuation every morning without enema or galvanic stimulation.

Case 5. Male, age 9 years, was admitted because of retarded growth, pain in the legs, dry skin and chronic constipation with an enlarged abdomen. The barium enema showed a dilated redundant colon which emptied quite well. Spinal anesthesia had no particular effect on the emptying power. The diagnosis of this case was cretinoid epiphyseal dysplasia. The patient was given thyroid, one-half grain a day, and coincident with some general improvement there has been a marked lessening of the constipation.

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III. GOSSIP

Associate Professor of Medicine, Wesley W. Spink, is receiving congratulations these days on his new book "Sulfanilamide and Related compounds in General Practice" published by The Year Book Publishers Inc. It is a complete, up-to-the minute story of the miracle drugs. The references are divided according to chapters. Much of the material is the experience of Dr. Spink and his associates on our staff. The book is dedicated to "Elizabeth and their daughter Helen" who must have been deprived of a great deal of Daddy's time while the book was being written. Wes Spink was born in Duluth where he graduated from high school. He received a Bachelor of Arts Degree from Carleton in 1926. Following this he taught Physical Education, directed athletics and coached football and track at Doane College in Nebraska. This was the institution which was pictorialized in Life as a big little college. Graduate Study in Economics in California and Chicago was followed by Medicine at Harvard. He had his internship on the fourth medical service at Boston City Hospital. Prior to this he was a fellow in comparitive pathology and served on the staff at Thorndyke (instructor in medicine). He came to Minnesota in 1937 and since then has made phenomonal progress. Congratulations! Still speaking of books, the University of Minnesota Press presents the Doctors Mayo by H. B. Clapesattle. This book sold out the first edition of 20,000 copies from a prospectus. Orders are mounting so rapidly for additional copies that only a threatened paper shortage is keeping it from breaking all records for advance sale. Wally Ritchie has also hit big time with his new book on "Essentials of General Surgery" published by Mosby. All about this next week.

The following letter from an old friend will be of interest to all: I do desire to receive the 1941-42 Staff Meeting Bulletins of the University of Minnesota.

In regard to my status at the Station Hospital, I was at first in internal medicine, but since it was practically a glorified internship, I managed to pick my present position.

In case you are interested, Fort Leonard Wood has cost $43,000,000 to date. The Station Hospital has cost $9.000,000, and consists of 90 single-story wooden buildings, with 48 wards, having a combined capacity of 1460 beds, with room for 540 more beds in emergencies. There are two large and two minor operating rooms, and X-ray and fluoroscopy rooms, complete with equipment. There is a complete Dental Clinic of 15 units. At present, there are 48 permanent doctors, and 192 nurses, (until we are called away to one of the other forts).

So far as our personnel is concerned, we have Capt. Bowers, Lt. Burnham and Lt. Schwyzer, from the University of Minnesota. Lts. Mooney and Gilsdorf were here for a short time, but are now in Alaska.

In spite of all the money that has been spent here, many things are quite primitive. The chief contacts I have at present are with Dr. Robert A. Moore and others of the staff at Barnes Hospital, and also the group in the Board of Health at Jefferson City.

In case you have any literature in regard to epidemiology and clinical pathology I would appreciate your sending them. Lt. Foster, who is our pathologist, and I are trying to build up a suitable library, and would be glad to have such literature as you have available.

Yours very truly,

Wm. O. Clarke, Capt., M.C.,
Chief of Clinical Laboratories,
Station Hospital,
Fort Leonard Wood, Missouri.