

# TREATMENT OF THE GASTRO-INTESTINAL TRACT IN CHRONIC RHEUMATOID ARTHRITIS \*

CHARLES L. HARTSOCK, M.D.

Rheumatoid arthritis still remains one of the great therapeutic problems of the age. Etiologic factors are still indefinite, although infection and the allergic reaction to infection seem the most logical explanation at the present time, but these do not seem to explain satisfactorily all the peculiarities and complexities of this disabling disease. Until the time when the cause and treatment of this moot problem is generally understood and agreed upon by the students and investigators of rheumatoid arthritis, research must continue its endeavor to unravel the mystery. The present study was undertaken to determine what, if any, evidence could be found in the digestive tract of these patients which might be of value in the solution of this therapeutic problem.

Evidence has been accumulating for some time that points to a possible role of the gastro-intestinal tract in arthritis. Constipation and colon dysfunction are such frequent accompanying symptoms that Lane<sup>1</sup> went so far as to advise colectomy to remove the intestinal stasis which he considered the cause of arthritis. Unfortunately, this work was marred by over-enthusiasm. Rare indeed is the arthritic patient who has not gone through a siege of drastic and unphysiologic purging and not infrequently at the doctor's suggestion.

The gastro-intestinal tract has also received much attention through the possible role that diet might play in arthritis. Protein, carbohydrates, various combinations of food and most recently the vitamins have been duly incriminated. Granted that most of this has been pure theory, and all too frequently the theory of a cult or quack, the evidence must be included to show the trend of thought about this disease. The most scientific thought along dietary lines is the work of Pemberton<sup>2</sup>, who advocates a low carbohydrate diet. This is based on the finding of a decreased glucose tolerance in these patients, and the belief that the intake of sugar should be restricted, because the tissues do not utilize sugar properly.

Goldthwaite and Osgood<sup>3</sup> have also emphasized the importance of proper function and elimination of the gastro-intestinal tract in the treatment of rheumatoid arthritis. They call attention chiefly to the asthenic and ptotic condition of the gastro-intestinal tract, due to the poor posture of the patient, and advo-

\*Reprinted by permission from Transactions of the American Therapeutic Society, Vol. 34: 43-48, 1934.

cate physiotherapy, especially corrective exercises, to improve nutrition and metabolism.

The gastric secretions have been found to be diminished, or absent, in many cases of arthritis and Pemberton<sup>4</sup>, of Liverpool, treated his patients almost exclusively with large doses of hydrochloric acid. It was my pleasure to see a whole ward of his patients taking very large doses of dilute hydrochloric acid, 8 to 12 dr. daily, and getting along about as well as any of these patients do. He also used a diet low in carbohydrate.

Fletcher and Graham<sup>5</sup> have approached the problem presented by the gastro-intestinal factor in arthritis in still a different manner. In 65 per cent of their patients there was an atonic condition of all or some part of the colon. McCarrison reproduced such colons by feeding animals diets high in carbohydrate and with low vitamin content, especially lacking in vitamin B. Fletcher and Graham therefore suggest that the arthritis is secondary to the disease in the colon, and treat their patients accordingly by decreasing the carbohydrate and increasing the vitamin B intake. With this treatment they are able to show marked improvement both in the colon and joint condition.

These various views suggest some relation of disorders of the gastro-intestinal tract to arthritis and we chose to study the question by an analysis of 100 consecutive cases of rheumatoid arthritis in all stages, from the mildest case to the patient confined to a wheel chair. It has been routine procedure in our clinic to have a gastric analysis and a complete gastro-intestinal roentgenological study on each patient, when possible. Hence these examinations were not limited to those patients who complained of gastro-intestinal symptoms. We attempted to study each case from the standpoint of the history of digestive abnormalities, the diet, the state of nutrition, the role of infection in the gall bladder, appendix and diverticula, if present, the result of removal of such infection when performed during the course of the disease, the gastric secretory findings, the roentgen findings and the effect of treatment on the course of the disease and on the gastro-intestinal conditions present.

Only twenty-four patients of the series had gastro-intestinal complaints aside from constipation. Sixty-one had severe constipation for which they were using almost daily laxatives or enemas. Twenty-six had no gastro-intestinal complaints.

The dietary factor was difficult to evaluate in these cases. In general the diet was inadequate, but no definite deficiency could be demonstrated with the exception that the protein intake was

## TREATMENT OF THE GASTRO-INTESTINAL TRACT

low in the majority of instances. The intake of carbohydrate had not been excessive, so far as we could determine. The nutrition was almost universally poor, and had been for a long time before the onset of symptoms. Exhaustion and fatigue were almost the universal rule. Little or no evidence was elicited to suggest that focal infection in the gall bladder, appendix or diverticula might be a factor. A very small percentage of patients displayed evidence of disease in these organs and only four were subjected to abdominal operations after the onset of the arthritis; in none of these was there demonstrable relief of symptoms.

The gastric analysis showed more definite deviation from the normal. In eight cases there was no record of any test. Three patients had hyperacidity, nineteen had normal acidity, forty-seven showed hyp acidity and in twenty-three, there was achlorhydria. The percentage of these patients with acid deficiency is considerably higher than that usually found in patients of similar age, that is thirty to forty-five years.

The x-ray findings showed still more deviation from the normal. In four cases no roentgenographic examination was done. The following gastro-intestinal abnormalities were reported in the remaining ninety-six patients:

Marked dilatation of stomach.....	1
Duodenal ulcer.....	2
Dilated duodenum.....	3
Non-functioning gall bladder.....	10
Gall stones.....	4
Chronic appendicitis.....	4
Inverted cecum.....	1
Ulcerative colitis.....	1
Diverticulosis colon.....	5
Atonic right colon.....	14
Atonic whole colon.....	22
Marked redundancy colon.....	30
Spastic left colon.....	7
Marked general visceroptosis.....	2
No abnormality.....	22

To summarize the gastro-intestinal findings, the most outstanding abnormality was deficient gastric acidity in seventy patients and colon disease in sixty-six; sixty of the latter showed some degree of atony or marked redundancy. In the whole group of 100 cases only three patients were entirely free from gastric symptoms, abnormal roentgenographic findings or disturbance of the gastric secretion. All others showed definite change from normal in one or all of these ways.

What significance do these findings in the gastro-intestinal tract have in relation to arthritis? Could they be merely changes that result from a disturbed general nutrition, secondary to the arthritic process? Haft<sup>6</sup> compared two series of twenty-five cases.

One group of patients had arthritis and the other had some wasting disease, and the findings in the colon were essentially the same. He believed the colon changes were only the result of disturbed nutrition. My experience does not entirely confirm these findings.

Are the gastro-intestinal symptoms in arthritis of no significance whatever? A moderate, although definitely smaller proportion of patients whose only complaint is mild digestive disturbance, also exhibit the same findings and their nutrition is not even always impaired. It is possible that these patients are potentially arthritics, but lack some other factor to produce the disease.

For the present, I think both these possibilities should be dismissed, because, in a disease so devastating to human happiness and economy, one should keep an open mind about any abnormality frequently found in association with the disease. It is well to recall how long it took to solve the riddle of achlorhydria and pernicious anemia. One thing that has impressed me, as a possible indication that the gastro-intestinal tract may be involved prior to the onset of arthritis, is that so many of the patients very early in the course of arthritis showed distinct changes, both in the gastric acidity and lack of tone of the colon. If these changes are primary and not secondary to wasting disease, is it amiss to speculate about what causes them? Changes in gastric acidity and in the tone of the colon are frequently associated with various types of deficiency disease, pernicious anemia, sprue, pellagra, iron deficiency anemia, etc. Deficiency of some as yet unknown substance as a factor in arthritis certainly possesses attractive theoretical possibilities.

The great majority of arthritic patients have evidence of imbalance of the sympathetic nervous system. Visceroptosis and an asthenic digestive tract, with subacidity, are extremely prevalent in the sympathicotonic individual. Add additional factors, and could the sympathetic nervous system be the underlying factor in chronic arthritis? Adson at the Mayo Clinic already has demonstrated the benefits of surgery of the sympathetic system in selected cases. If we combine these two theories a possible explanation is that heredity, illnesses and feeding difficulties in childhood, overwork and emotional strain, etc., have slowly produced these changes in the sympathetic nervous system and gastro-intestinal tract which result in a chronic lowered nutrition on which the arthritic process is easily grafted.

## TREATMENT OF THE GASTRO-INTESTINAL TRACT

From the more practical viewpoint of treatment of chronic rheumatoid arthritis, the gastro-intestinal tract should be considered seriously as a possible factor in the etiology of the disturbed nutrition which almost invariably accompanies the disease. It is only one factor. It should not be regarded as the sole cause, to the exclusion of many other therapeutic approaches. It appears from my experience that patients whose treatment includes some attention to the digestive tract, show a better response than when this is neglected.

Treatment of the gastro-intestinal tract should aim at improvement of the general nutrition, by correcting deficiency of diet and supplying ample caloric, vitamin and mineral intake; by correcting digestive symptoms which interfere with adequate intake; by treatment of the sympathetic nervous system as it applies to the digestive tract; by securing elimination in a natural way; by physiotherapeutic measures to tone up the atonic condition; and when indicated, by replacement of deficient gastric secretion. I am not thoroughly in accord with the opinion that the much advocated low carbohydrate diet should always be used. In some patients this diet aggravates digestive symptoms, and in the extremely malnourished patient carbohydrates can supply a large caloric intake in an easily assimilable form. In such cases the caloric intake is of the utmost importance. I prefer to add carbohydrate in the form of dextrans and sugars, rather than as starches, and to use small doses of insulin which often causes a great increase in appetite with a resultant gain in weight.

In general, I prefer the use of a well-balanced diet, with plenty of protein, calcium and iron. Because it is my belief that some deficiency is a factor in arthritis, and as this deficiency is at present unknown, I feel that calcium and iron and all the vitamins, especially B and D, should also be added in concentrated form and in large amounts. Poor absorption by the gastro-intestinal tract is a logical explanation of the deficiency and large amounts are needed for adequate absorption.

Digestive symptoms must be treated symptomatically. Those commonly complained of are anorexia, gas and distress shortly after eating, bloating, belching, flatus and disturbances of or around the heart from gas pressure. These are best combated by complete rest in bed when possible, or rest after meals, and by decreasing the size and increasing the number of meals. Dilute hydrochloric acid in large doses during and after the meal and nux vomica and gentian before the meal often solve the whole problem of the digestive disturbances. Light wines have a re-

markably stimulating effect on the appetite. The depressing action of tobacco should be entirely avoided. The sedative effect of bromide and pheno-barbital cannot be dispensed with in many of these nervous patients.

The correction of the disturbances in the sympathetic nervous system is best approached through the emotions. Relieving fears, anxieties and trying to change the patient's mentally depressed state into a state of happiness and contentment, largely through establishing confidence and by a peaceful environment, are among the greatest assets in treatment of the faulty nutritional state.

Bowel management is by far the most difficult problem and one which must be solved, if good results are to be obtained. If it is true that colon stasis does disturb body functions through absorption of toxic substances, then surely the irritation of the bowel with catharsis, irrigations and enemas must result in increased absorption. The difference in the sense of well-being of any patient who gets natural bowel movements confirms this fact, when compared to the way he feels when elimination is secured by unnatural means. Laxatives and enemas which most patients have used for years must, therefore, be proscribed. Here the patient usually offers considerable resistance, and insists that it is hopeless for him to secure elimination except by catharsis and that any effort to do so will only cause great discomfort. It is wise to hospitalize such objectors at the very beginning, in order to be sure that orders are carried out. Otherwise, efforts by the patient are half-hearted and the results are poor, and there is usually an immediate return to the old regimen, which thus becomes more deeply entrenched. Good results restore confidence and many a fight is won or lost on this point. Here again objections can be raised to the strict adherence to the low carbohydrate diet. This diet must of necessity contain considerable roughage, and the asthenic state of the digestive tract will not tolerate such a diet at the beginning of treatment. As the tone of the intestine improves and the irritation resulting from laxatives disappears, then the amount of bulk in the diet can be increased. I prefer to have the patient begin taking a low residue diet, which is better tolerated, encourages him to eat and usually leaves sufficient residue for bowel action. It is better to add non-irritating bulk, such as agar or psyllium seeds, in order to be sure to get results. The occasional tendency to stasis and packing in the cecum is overcome, if these are taken along with plain mineral oil. The patient must be educated to expect no results for at least three days on this routine. Not infrequently good results are obtained on the

## TREATMENT OF THE GASTRO-INTESTINAL TRACT

second day. A regular habit time, once daily, is insisted on, and this should be after the morning meal. To encourage this, a fairly large amount of hot liquid and a good breakfast are given. This is followed by exercise or abdominal massage for fifteen minutes and then if no desire for defecation occurs, a glycerine suppository is used. Obstinate constipation requires additional procedures, such as oil injections into the rectum at bedtime and Morse sine wave therapy to the colon. All of these measures are discontinued gradually as results warrant it. I want to emphasize here the importance of the good results obtained with gentle abdominal massage. The chiropractors and osteopaths capitalize very strongly on this simple method. I have no objection to the occasional laxative or enema, which I think is beneficial in many instances, and the old custom of a routine monthly dose of calomel and saline possesses many virtues, but one must be sure if these measures are used that they do not cause the patient to return to the old faulty habits. Large doses of vitamin B in any potent form are a very valuable aid and apparently possess some power to increase tone in the colon. The spastic type of constipation is so rare that the use of belladonna seldom is required. In addition to massage, the chief physiotherapeutic aid to the function of gastro-intestinal tract is postural exercises, and especially deep breathing exercises. In the severe cases these must be very mild at first, but should never be neglected, as they apparently are a great stimulus to metabolism, which is usually quite low and usually does not respond to thyroid medication.

Recent work, especially by Bloomfield and Polland,<sup>7</sup> seems to cast some doubt on the significance of subacidity and achlorhydria. These patients usually tolerate dilute hydrochloric acid very well and I feel that its administration adds just one more factor to the securing of a better nutritional state. It should be given in doses as large as can be tolerated.

With this treatment, in addition to the other measures routinely used in the treatment of rheumatoid arthritis, the improvement in the nutritional state has generally been good, with concomitant improvement in the function and decrease of pain in the joints. In the cases in this series in which it was possible to get follow-up roentgenologic studies on the colon, the improved tone was easily demonstrable.

The significance of these findings and the value of treatment might be very seriously questioned by any hypercritical observer or the therapeutic nihilist. But results with any type of treatment in rheumatoid arthritis are far from satisfactory, so any

## CHARLES L. HARTSOCK

addition to the therapeutic regimen that offers the slightest encouragement should certainly be given a fair trial in this discouraging disease.

There is one more point, and I think a very important one, to make about these findings in the gastro-intestinal tract. If, by chance, subacidity and an atonic colon are found in a non-arthritis patient, might not a certain proportion of patients be saved from arthritis by early institution of a more rigid treatment than might be advised otherwise if these findings were disregarded as having no possible relation to joint disease. To try to substantiate this, very recently I have been studying the sedimentation rate on such patients who do not have arthritis. While the series is still very small, the rates are as high, in many cases, as in patients with arthritis, which I feel may be of very definite significance in relation to the whole problem.

In conclusion a plea has been made and some suggestions have been presented for improving the general nutritional state of the rheumatoid arthritic or potential arthritic patient by careful attention to the findings in the gastro-intestinal tract.

### BIBLIOGRAPHY

1. Lane, W. A.: Chronic Intestinal Stasis. *Surg., Gynec., Obst.*, 11:495-500, 1910.
2. Pemberton, R.: Arthritis and Rheumatoid Conditions. *Am. J. M. Sc.*, 178:251, 1929.
3. Goldthwaite, J. E., and Osgood, R. B.: *Diseases of the Bones and Joints.* Boston, Wm. Leonard, 1910.
4. Pemberton, H. S.: Arthritis Deformans, Observations on its Etiology and Treatment. *Brit. M. J.*, 2:13, 1925.
5. Fletcher, A. A., and Graham, D.: Large Bowel in Chronic Arthritis. *Am. J. M. Sc.*, 179:91, 1930.
6. Haft, H. H.: The Colon Changes in Chronic Arthritis Compared with Other Chronic Diseases. *Am. J. M. Sc.*, 185:811, 1933.
7. Bloomfield, A. L., and Polland, W. Scott: *Gastric Anacidity.* New York, The Macmillan Co., 1933.