The Boston Medical and Surgical Journal

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January 4, 1917

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Address.

ABDOMINAL PAIN.*

BY HENRY JACKSON, M.D., BOSTON.

I WAS pleased when your president asked me last June to read a paper before your society, though I had no new and startling medical data to bring before you. I considered carefully what subject to choose, and decided to try to reduce to some definite form the experience of a large general medical hospital service in the diagnosis, treatment and prognosis of the broad subject of abdominal pain.

I know that I must leave out some important factor which may be brought out in discussion; please consider that the personal pronoun does not by any means always mean simply my own views on doubtful points, but the opinion obtained by consultation with my colleagues.

Though most of my experience comes, of course, from hospital cases, I shall introduce a good many private cases, personal, or seen in consultation; I feel that the private case is often much more difficult to diagnose, a case in which often an immediate diagnosis must be made, yet we are deprived of some of the more intricate methods of diagnosis obtainable only in a well equipped laboratory.

In order to give some of my personal experiences, I shall speak of a few rare causes of abdominal pain, which may practically be of little value because they occur but seldom, yet when

* Read at a meeting of the Essex North District Medical Society on October 11, 1916.

they do occur, they may be of much value as suggestions for the appropriate treatment.

As most of you probably know, I speak only as a physician who may sometimes be right in diagnosis, yet must depend upon his surgical colleague for the proper treatment and subsequent care of the patient. In a large city, the physician is necessarily separated from the surgeon, perhaps not always an advantage to the patient. A friend of mine in a small town near Boston, said to me that he thought many lives were jeopardized when medical care was divided from surgical interference, adding that when he made a diagnosis of appendicitis, he went to his buggy for his instruments and operated then and there. But, taking it all in all, I feel a patient is safer in the hands of a man who devotes at least a large part of his time to surgery.

The causes of abdominal pain may be broadly divided into several different classes, which we will try to differentiate the one from the other:

1. Spasm of internal organs, of which gall-stone colic may be spoken of as the type.

2. Pain of "nervous origin," the type of which is to be found in the crises gastriques of tabes; this is perhaps the most dangerous classification, as usually the diagnosis is wrong, and on the other hand, a good many diagnoses of ulcer of the stomach have been made when the pain and vomiting were only localized manifestations of spinal cord diseases.

3. Pathologic lesions of various internal organs: for instance, ulcers of various internal organs, as stomach, duodenum, etc. Under this head may be classified the pain due to volvulus

twist of the intestines and torsion of other organs.

4. "Referred pain." To my mind this represents the most dangerous type of abdominal pain. Such a diagnosis is permissible, justified, yet in each individual case the burden of proof lies upon the physician, and often requires the skill of a good surgeon to confirm the diagnosis of the physician. The most common cause, in my experience, is the very acute abdominal pain which may be associated with the onset of pneumonia; other practical points I can bring forward in the discussion of the various types.

5. The last, but, of course, the most common, and certainly the most important type, because amenable to immediate and successful treatment,—inflammation of the various internal organs, which eventually leads to peritonitis, local or general, with prompt recovery or tragic death, according to the knowledge and skill of the attending physician.

Into one of these five types I feel most and perhaps all cases of abdominal pain may be divided.

Before entering upon the discussion of the various types and causes of abdominal pain, certain broad principles may be enunciated which apply to all forms of pain, are of utmost importance, and must be held always before the mind when approaching the diagnosis of the individual case. The symptoms and signs of most importance are: Pain, tenderness, spasm, fever, vomiting, rapid pulse, all clinical phenomena which may be determined at the bedside, and represent the data on which in most cases we may make our diagnosis. We are often assisted, and our diagnosis confirmed, though not made, by the laboratory examination of the blood showing a leucocytosis which confirms our diagnosis of some acute septic process, or the urine demonstrating some acute genito-urinary condition which has caused the pain.

For the patient, pain is the main issue, but as pain is the chief question for the patient, so spasm and tenderness should be the paramount questions for the doctor. Fortunately, the question of pain is a doubtful factor dependent often upon the susceptibility of the individual, is a symptom in the specific sense, whereas, tenderness, with associated spasm, is a sign demonstrable to the physician, independent of the will of the patient, often most marked in narcosis, and the one most important sign on the presence or absence of which our diagnosis is made, and appropriate treatment instituted.

Pain may be really terrific, yet the patient is in no danger; spasm may be slight, yet show the surgeon that only an immediate laparotomy can save the patient's life.

I once received an urgent telegram to meet a patient at a certain hour on his arrival in Boston,—a most intelligent man who was far from neurotic. When I saw him he apologized for asking me to hurry, and said his pain had gone,

though during the day it had been very severe. I saw a man sitting at comfort in his library; he had a little fever. Examination showed sharply localized tenderness at McBurney's point, with definite spasm. Diagnosis, appendicitis, and operation three hours later showed a ruptured appendix, with an early localized peritonitis. He gave a history of having eaten some indigestible food, the diagnosis had been acute indigestion, and the treatment castor oil, followed by salts.

In this case, the absence of pain was really the most serious symptom, when associated with the definite tenderness and spasm, as it led us to consider that rupture was the probable cause of the relief of the pain.

Fortunately, spasm is not dependent upon the patient, or modified at his desire. Pain and vomiting are very common symptoms, which may be of much value to assist us in a diagnosis, but for the sake of safety, we should never make a diagnosis of acute indigestion, or green apple colic, when to pain and vomiting are added tenderness and spasm, whether fever be present or not; fever confirms the diagnosis, and often differentiates the type, but is not a necessary accompaniment of serious inflammation of the abdominal cavity in its early stages.

I regret to say that I have made the mistake of not attributing sufficient importance to a slight spasm; only last winter, in the City Hospital, we overlooked a case of acute appendix, though we considered the case carefully. Just as I left the bed, I noticed a rapid pulse on the chart, and regretted too late that I did not go back to review again more carefully all other signs. Of course I do not mean to suggest that I have always been able to make a correct diagnosis, but I have never regretted advising an operation, and, on the other hand, have bitterly regretted that an operation was done too late to save life, or when a generalized peritonitis made convalescence prolonged and hazardous.

Exceptions prove the rule, and in one case I, with several others, advised laparotomy in a case that turned out to be acute nephritis, yet as we reviewed the case at the time, we felt no other course was justifiable. Fortunately that case recovered.

In view of the recent widespread theory that operations for acute abdominal conditions are too frequent, it seems to me comforting that statistics can show that operations are rarely performed without adequate cause, and I am certain that most of us have cause to regret that we overlooked the importance of spasm, making a diagnosis of colic or nervous pain in a patient, who really had appendicitis or pus tubes. I know this has been my experience in a large general hospital, where the surgeons and physicians are in constant consultation and, what is perhaps more important, are always under the criticism of bright young house officers.

To reiterate: pain, tenderness, spasm and fever never mean indigestion.

I wish now to take up the various classes of abdominal pain, of which I have made five divisions.

1. Spasm of internal organs.

(a) Intestinal colic. The usual cause is the ingestion of some indigestible food, or an excess of proper food. As improper food is the usual cause of such a disturbance, vomiting may be added to the pain, irrespective of the severity of the pain, and this is a complicating factor which may cause much doubt in the diagnosis. In the elimination of more serious trouble, we may depend on the absence of tenderness, the pain being often relieved by pressure, the absence of spasm and no fever, with a relatively slow pulse. The appropriate treatment is starvation and cartharsis. In constipation of long standing, masses of faeces may well cause doubt: I have made more than once a definite diagnosis of some abdominal tumor, and been proven wrong by the passage of enormous masses of faeces. I saw in consultation years ago an old lady, merely to give an opinion as to the safety of ether for a laparotomy. I suggested faecal masses, and was pretty sure I was right, when her doctor said she had constant watery movements. She was cured, and is today well, after the rectum was mechanically emptied, and she had large doses of castor oil.

In a doubtful case, give no food, avoid opium, and try enemata, aided sometimes by small doses of belladonna.

(b) Gallstone colic: sudden in onset, often with a history of antecedent "indigestion," and perhaps as a sign, other attacks of abdominal pain. No fever, and for some reason that is not plain, even in the absence of jaundice, a pulse normal in rate and often slow. The pain may be intense, situated in the upper abdomen, and often radiating into the back; the pain may stop as suddenly as it began, so care must be used in giving morphine. The proof of the cause of the pain is furnished by the appearance after two or three days of slight jaundice. The immediate treatment is morphine. If fever and tenderness high up in the abdomen appear in a day or so, we must be on our guard for cholecystitis, a condition that has occurred in patients of mine, who had previously weathered more than one attack of apparently simple gallstone colic.

My own feeling is that delay in operating for gallstone colic after more than one attack is unwise. Many Boston surgeons favor operation after one definite attack, unless some circumstances especially contraindicate an abdominal operation.

(c) Renal colic. As in gallstone colic, the onset is sudden; the pain radiates towards the groin, and is often felt as a sharp pain in the penis. As I have seen it, it is a most agonizing pain, often accompanied by a pulse much more

rapid than in gallstone colic; a complicating factor in diagnosis is found in tenderness which may be felt along the course of the ureter, and I have known of a case in which a stone caught in the ureter required laparotomy, and led to a possible diagnosis of appendicitis. The pain is much more apt to be intermittent than in gallstone colic. Within a few hours, or at most a day, we almost invariably find in the urine a few fresh red blood globules, not a haemorrhage, but a few cells which must be sought for by the microscope. We must watch carefully for several days for the stone. Treatment: morphine, and large amounts of an alkaline water.

(d) Ptomaine poisoning. Intense abdominal pain, vomiting, collapse, with cold sweat, and a rapid pulse. This is so rare that I always take it for granted that such a diagnosis is not permitted. I never saw a case, though last winter two very alarming cases followed eating partridge recently shot by a prominent surgeon, who was one of the victims. I have several times been called in consultation to cases of ptomaine poisoning, but always found some other condition, one the rupture of an extra-uterine pregnancy, one abortion due to passage of a sound, and others, some acute septic condition of the abdomen.

I, of course, refer to a serious, acute condition, and have no quarrel with a man who cares to designate as ptomaine poisoning any acute form of indigestion caused by decayed food, and in certain individuals, by various articles of diet harmless to most people.

2. Pain of nervous origin. Tabes may lead to many errors. The sudden onset of the crisis gastriques, with vomiting, and sharp abdominal pain, may well suggest the diagnosis of some acute essential abdominal lesion. I have seen several cases in consultation in the hospital, and once in private practice in which this mistake was made. There, of course, the absence of fever is the first point, and the subsequent diagnosis of a probable locomotor ataxia from the classical signs of this disease confirm the opinion. The main symptoms of acute abdominal disease—spasm and tenderness—are lacking. Aside from tabes, acute inflammation of the lumbar nerves, or even sciatica, may give rise to some doubt.

3. Pathologic lesions of various internal organs.

In this class of diseases the most mistakes are made, and we meet the most dangerous class of cases. Here spasm and tenderness take front rank to show the surgeon that he is not dealing with a case of colic, or other type of acute indigestion. I have seen many mistakes made, and many lives saved by the definite diagnosis of some organic lesion, curable by a prompt laparotomy. The onset is sudden, the pain intense, usually the pulse rapid and out of all proportion to the general condition of the patient; the pain is due to a mechanical condition, not to inflammation, so at the onset of such cases, an im-

portant sign is the absence of fever, and the leucocytosis which accompanies any and all inflammatory processes.

A lady of 60 years of age had had for several years much pain, considered as probably due to a condition of the heart known to exist; she had also what she called "neuralgia" of the abdominal wall. There had been no symptoms to suggest any acute stomach disease.

I was called to her on account of acute colicky pain which followed immediately after a very rich and very indigestible luncheon. From the first I was anxious, as her symptoms were different from what I had seen before. Pulse rapid, and general appearance indicated the grave condition called by the surgeon "anxiety," so hard to describe, and so important in prognosis.

In a few hours spasm and definite tenderness made me call a surgeon. He was sure it was colic.

A laparotomy nearly 48 hours later showed a perforated gastric ulcer. This case was most carefully watched, and all possible causes of the abdominal pain were considered, yet a fatal mistake was made, due, I felt at the time, to the fact that spasm and tenderness were not given their proper due, in a person of a very nervous temperament, who had weathered many an attack of abdominal pain. A careful review of her previous history did not suggest to us a probable history of gastric ulcer.

Twist of the pedicle of an abdominal tumor has several times given me much satisfaction as the cause of an acute abdominal pain, which was cured by a prompt laparotomy; extra-uterine pregnancy belongs in a similar class, though here the collapse and rapid pulse with the secondary blanching of the countenance, due to internal haemorrhage, are factors of much value in diagnosis. The most severe case of "ptomaine poisoning" to which I was once called turned out to be the rupture of an extra-uterine pregnancy in a woman well past forty years, who had never been pregnant to her knowledge; she recovered after laparotomy.

In lesions of this class, the differential diagnosis is often impossible, but fortunately the treatment is the same, laparotomy, the important point being to recognize that we have to deal with some definite organic lesion of the abdominal organs, and not with a severe case of colic, due to simple spasm.

I need hardly mention that acute pancreatitis should always be considered, though rarely definitely diagnosed; prompt laparotomy may cure even this so fatal disease, as in two cases to my knowledge, one a case seen in consultation in which the probable diagnosis of perforated gastric ulcer was made, and one that of a prominent Boston doctor, in which Dr. Richardson made, before operation, the probable diagnosis of haemorrhagic pancreatitis. I do not know on what grounds he made the diagnosis, or how certain he felt of the opinion given.

I wish especially to emphasize two lesions which may well give rise to much doubt, one comparatively common, and one rare, though worthy of consideration, namely purpura haemorrhagica, and acute nephritis.

I have seen on the surgical side of the hospital several cases admitted for appendicitis, or some other acute abdominal condition, that turned out to be purpura haemorrhagica; in such cases there are undoubtedly spots of purpura in the intestinal tract which give rise to the symptoms. The cases are made more doubtful, as there is often associated fever, and the patient may be pretty sick. The diagnosis is usually made by the finding of a few purpuric spots on the extremities, and possibly by blood in the urine, or haematemesis. A case seen in private consultation practice was considered as probably ulcer of the stomach, with possible perforation; the finding of many purpuric spots made the diagnosis clear, and recovery was complete. That the danger is real and not rare, is proved by the fact that in several cases laparotomy has been performed by good surgeons in patients who subsequently developed a perfectly typical purpura. The areas of purpura in the intestinal tract cause undoubtedly a certain amount of tenderness, hence the associated spasm which adds materially to the difficulty of diagnosis.

Acute nephritis: This disease has twice caused great doubt in my mind as to the existence of some acute inflammatory abdominal trouble. Once in a hospital case which was seen by several medical and surgical men, a mistake was made, and a useless laparotomy performed; fortunately the girl recovered. The case was published by the late Dr. John C. Munro, in a review of mistakes in abdominal surgery. Even after our mistake was proven, we all agreed that in a similar case we should advise the same treatment.

The other was seen in private consultation, an indefinite case of grippe, with much abdominal pain, and some tenderness across the upper part of the abdomen. I was called by a surgeon. The diagnosis was obscure, grippe was eliminated, and the diagnosis made by finding a very acute nephritis, with much blood, and many casts indicative of an acute Bright's disease. Complete recovery followed.

So I feel sure that though kidney disease does not cause backache, it may cause acute and severe abdominal symptoms.

From one point of view, the comforting statement may be made that laparotomy is the proper treatment for the severe cases of abdominal pain, not due to some colic or nerve disturbance. My experience in hospital practice is not that operation is done too often, but is neglected in cases that cannot recover under medical care.

4. "Referred pain." As I have already said, this kind of pain represents the most dangerous type of abdominal pain. I refer not to pain

due to lesion of some specific nerve, as in tabes, but to pain referred to the abdomen, when the lesion is situated far removed from the abdominal organs.

The most common cause of such pain is pneumonia. I have been several times called in consultation to give an opinion as to the wisdom of operation, when my diagnosis was a beginning pneumonia. A negative factor of importance is the high temperature of the early stages of pneumonia, and another factor of value, increased respiration, with the finding of an area of diminished respiration.

In a patient of my own, I watched with much anxiety a case of sudden abdominal pain, with secondary vomiting; no cough, but high temperature, in which definite signs of pneumonia did not develop for 36 hours. I have also seen several cases of perfectly typical pneumonia, in which laparotomy had been done for appendicitis within a day or so, not cases of lobular pneumonia, which might have been due to ether, but cases of normal lobar pneumonia.

Peritonitis is not a disease associated at the start with high fever, and opposite to acute pulmonary diseases, the pulse rate is increased out of proportion to the respiratory rate, and the height of the fever. The final diagnosis, of course, depends on the presence or absence of definite localized tenderness and spasm.

Acute attacks of heart trouble often give rise to similar doubts as to the existence of some acute abdominal trouble; and, also, though more rarely, that disease so difficult of diagnosis, acute pericarditis.

5. The most common acute inflammation of the internal organs—appendix, pus tubes, abscesses in the lower part of the abdomen, or of various new growths or tumors of the abdominal cavity.

Personally, I have no doubt that operation is the proper treatment for any definite inflammation of the appendix. I have never in my own practice, or in consultation, been able to recognize signs that could make a surgeon sure that he had to deal with a mild catarrhal trouble of the appendix that would speedily get well, and not with a localized trouble that would surely lead to rupture, and secondary peritonitis.

I have been sorry that I have not urged operation, but have so far not regretted that operation had been done for a supposed or probable appendix. Of course the older men have seen many a case of acute appendix recover promptly under medical treatment, but I know no safe rule to decide that one should wait.

If you feel that I have bored you with platitudes, and the recital of trite cases, please pardon me, as I have tried to present to you in short form the views of myself and my surgical colleagues on a matter of great importance, and one that has interested me much in a hospital service of twenty-five years.

Original Articles.

THE BENEFICIAL RESULTS OF PRE-NATAL WORK.

BY MICHAEL M. DAVIS, JR., PH.D., BOSTON,

Director of the Boston Dispensary.

ORGANIZED effort for the reduction of infant mortality has usually begun, in the United States, with attempts to improve the care, feeding and milk supply of babies during the first year of life, with the special hope of diminishing the deaths from diarrhea and other gastrointestinal diseases which levy so heavy a toll of life, particularly during the warm months of the year. From this beginning in many cities, the campaign against infant mortality has broadened in two directions. On the one hand, it has been extended throughout the year, instead of being confined to the summer; it has come to deal with general hygiene of the babies and the family, and with other diseases than the gastrointestinal; it has, in some instances, been extended later than the first year of infancy.

On the other hand, the campaign has also been pushed back to the time of birth, and before it. Prenatal work is now a recognized part of the nationally organized campaign for the reduction of infant mortality. Since the aim of this paper is to present some of the results which it has achieved in certain sections of Boston, it may be well to begin by formulating the definite purposes and means of prenatal work:

1. By making proper medical examination, pelvic measurements, etc., of pregnant women, before confinement (when possible, some months before), to decide whether normal delivery is possible or likely, and to give such medical advice as may be indicated for the comfort and safety of all women, and in particular when hospital care and operation are necessary.

2. By visits from a trained visiting nurse and reports to the physician, during the course of pregnancy, to instruct the mother and father in the hygiene of pregnancy, and to make the best possible preparation of the home for the sake of the coming child.

3. By expert medical care at confinement, to minimize the risk of delivery to mother and child.

4. By frequent visits from the nurse during the two weeks or so following confinement, to provide needed bedside care to the mother and give the baby the best start possible.

The Instructive District Nursing Association of Boston has developed this branch of its service until its nurses now care for over two thousand cases annually. This is about one-tenth of all the births in Boston. In certain districts, such as the North and West Ends, the proportion rises as high as one-third, while in some of