

GASTRO-INTESTINAL SYMPTOMS OF LESIONS IN THE GENITO-URINARY TRACT

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An old teacher of mine once said, "You cannot diagnose anything that you don't think of." The purpose of this paper is to direct attention to certain genito-urinary lesions which may give rise to pronounced gastro-intestinal symptoms and to encourage more consideration of the urinary tract in the differential diagnosis of what appear to be acute conditions of the abdomen.

Many patients with relatively acute gastro-intestinal symptoms do not require immediate surgical treatment and a good many others who have gastro-intestinal symptoms do not have clear-cut intraperitoneal disease, and it is this group particularly that deserves further investigation.

Dr. C. L. Hartsock of the Clinic, in a recent review of patients presenting themselves with gastro-intestinal symptoms, found that in only 35 to 50 per cent could the cause be actually demonstrated in the gastro-intestinal tract, and in 20 per cent of the patients one might expect to find outside the gastro-intestinal tract the lesions producing the symptoms. From the urologist's point of view, it is interesting to note that approximately 30 per cent of patients with lesions of the kidneys and ureters may be expected to have associated gastro-intestinal symptoms and, in our experience, from 17 to 20 per cent have had abdominal operations previously without relief of symptoms. This shows the importance of a careful preoperative diagnosis, not only in preventing unnecessary surgical procedures but in securing good results from the operative procedures which are carried out.

The most common gastro-intestinal symptom associated with lesions of the genito-urinary tract is nausea with or without vomiting. In many instances, the nausea and vomiting is extremely intense and, when the patient is seen in this condition, the natural inclination is to place the blame on some gastro-intestinal disease. In addition to this, however, pain may be referred to the abdomen. If the lesion exists in the kidney and upper part of the ureter, the pain is most commonly referred to the epigastrium or one of the upper quadrants of the abdomen. If, on the other hand, the pathology in the urinary tract is in the lower part of the ureter, the pain is usually referred to the corresponding lower segment and reflex disturbance is more likely to affect the lower part of the intestinal tract. Of course, it is well known that lesions at the extreme lower end of the ureter, particularly stones, may cause pain to the external genitalia.

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The explanation for the occurrence of gastro-intestinal symptoms in lesions of the urinary tract lies in the common nerve supply of the two organs. The nerves of the kidney are derived from the renal plexus which is formed by contributions of the solar and aortic plexus and the last splanchnic nerve. The renal plexus accompanies the renal artery which it surrounds in a meshwork of fibers and proceeds to the pelvis of the kidney and its small branches are sent out to the capsule. Both the renal and abdominal sympathetic plexes are therefore derived in part from the solar plexus. It is thus readily understood how lesions in the urinary tract may reflexly affect the gastro-intestinal tract through nerve communications in the solar plexus and the abdominal sympathetics.

It has been shown experimentally that changes in muscular activity of the digestive tube occur as the result of stimulation of the kidneys and ureters. These consist of an increase in frequency and amplitude of gastric peristalsis and an atony and inhibition of peristalsis in the colon. This coincides with the clinical picture one sees in these cases.

The most common lesion of the urinary tract which gives rise to gastro-intestinal symptoms is that of calculous disease. In a series of patients with ureteral stone which we recently studied, it was found that 20 per cent of the patients had had previous abdominal operations, the majority being appendectomies, and an additional 16 per cent had had erroneous diagnoses without operations. Cecil reports that his study of patients with kidney or ureteral stones showed that the pain was limited to the abdomen alone in 20 per cent of the cases, and in 19 per cent other abdominal operations had been performed without relief of symptoms.

Our experience has been that small stones impacted at the lower end of the ureter give rise to the most severe and alarming gastro-intestinal symptoms. The stone which is present in the kidney pelvis, if it does not give symptoms directly referable to the kidney, is much more likely to give rise to symptoms of chronic dyspepsia and low-grade pain in the upper part of the abdomen.

The following brief reports of patients serve best to illustrate these points.

Case 1: The first patient was a man, 45 years of age, who was referred to the Clinic with the diagnosis of acute intestinal obstruction. He had had an appendectomy several years previously and two days before admission to the hospital he had been seized with sudden, severe pain in the right lower abdominal quadrant. Nausea and vomiting immediately followed and within a few hours there was abdominal distension. The nausea and vomiting persisted and the vomitus became fecal in nature.

Examination showed that he was not acutely ill although he appeared rather toxic and dehydrated. There was rather pronounced abdominal distension without visible peristalsis. There was some tenderness in the right

costovertebral angle and this led us to suspect obstruction of the right urinary tract. A cystoscopic examination was therefore carried out and, upon catheterizing the right ureter, a slight, temporary obstruction was encountered about 3 cm. from the ureteral orifice. The ureteral catheter, however, passed this obstruction and there immediately was a very rapid flow of retained, bloody urine. A roentgenogram showed a very small shadow at the extreme lower end of the ureter.

A catheter was left in the kidney for continuous drainage and within a few hours the patient's vomiting stopped completely. The abdominal distension disappeared and the patient became entirely comfortable. Three days later the ureter was again catheterized and crystal-clear urine was obtained from the pelvis of the kidney. The patient was dismissed from the hospital entirely well, four days after admission.

Case 2: Another similar case was that of a man, 39 years of age, who was brought to the hospital complaining of pain in the left lower abdominal quadrant, abdominal distension, chills, and fever. He had been confined to a hospital in his home town for twelve days and a diagnosis of an acute abdominal condition of undetermined origin had been made. Quinine therapy and hot applications had been administered and these had caused slight improvement but the pain, chills, and fever had persisted.

At the time of admission, the temperature was 101.6° F. and there was severe pain in the left lower quadrant of the abdomen. The abdomen was markedly distended and there was severe nausea and vomiting. Further examination revealed some tenderness in the left costovertebral angle so we had a plain roentgenogram made which showed a shadow in the region of the lower part of the left ureter. Cystoscopic examination was therefore carried out, and on passing the catheter up the left ureter, an obstruction was met about 4 cm. from the ureteral orifice but it was passed and, upon reaching the pelvis of the kidney, a large amount of very thick, purulent urine was obtained. The catheter was left in place for drainage, following which the temperature immediately began to drop, and within a few hours the pain was entirely relieved and the nausea and vomiting ceased. A few days later a left ureterolithotomy was done. The patient had an uneventful convalescence and was entirely well when he was discharged from the hospital eight days following the operation.

That stones in the kidney may give rise to a somewhat different train of symptoms is illustrated by the following case.

Case 3: A man, 31 years of age, was admitted complaining of periodic attacks of pain in the right upper quadrant with radiation to the right lower quadrant. He stated that he had had intermittent attacks for a period of 17 years, and 12 years previously an appendectomy had been performed. The pain recurred and five years later an abdominal exploration was performed for adhesions, but again the symptoms returned. The patient had lost 15 pounds in weight, his appetite was very poor, and he frequently experienced nausea without vomiting. A plain roentgenogram was made which showed the presence of a large calculus in the right kidney. Following a pelviolithotomy he had complete relief of symptoms, gained 17 pounds in weight, and has remained well since his operation a year and a half ago.

The diagnosis in patients such as these is sometimes confusing because, by the time the physician is called, the gastro-intestinal

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symptoms so completely dominate the patient's illness that lesions outside the digestive tract are not considered in the differential diagnosis. Frequently a lead to the correct diagnosis may be had by eliciting a careful history. In most cases, careful questioning will reveal the fact that there was definite kidney pain previous to the onset of nausea and vomiting. It is well known that in obstructive lesions of the urinary tract, the distension of the kidney pelvis and pressure on the capsule give rise to pain, and this must necessarily exist before reflex gastro-intestinal symptoms begin. Therefore, one should get a lead to the correct diagnosis by obtaining a history of pain in the flank previous to the onset of gastro-intestinal symptoms.

The next most common lesion of the urinary tract which produces gastro-intestinal symptoms is hydronephrosis. Of course, a good many of these are in turn due to kidney or ureteral stones, yet there are other types of hydronephrosis, particularly those associated with obstructive lesions at the ureteropelvic junction, in which the diagnosis may be extremely confusing owing to the absence of any positive urinary findings. In a group of cases of hydronephrosis which we studied, 23 per cent of the patients had nausea and vomiting, and in a series of 52 cases of hydronephrosis associated with aberrant artery, 26 per cent had been treated for gastro-intestinal disease and 17 per cent had had previous abdominal operations without relief of their symptoms. Here again, nausea and vomiting is the most common associated symptom, although in this type of condition there may be abdominal pain which is extremely difficult to diagnose. This is particularly true if the hydronephrosis involves the right kidney, for the right upper quadrant of the abdomen is indeed a diagnostic pitfall owing to the multiplicity of lesions which may produce pain in this location. The following case illustrates these points.

Case 4: A young man, 21 years of age, was admitted complaining of periodic attacks of pain in the right upper quadrant of the abdomen associated with nausea and vomiting. The attacks might last for a day or two at a time and then subside, recurring again at irregular intervals. The pain at times radiated into the right lower quadrant but there was no history of fever with the attacks. An appendectomy had been performed a year previously but the symptoms had returned. A plain roentgenogram revealed no abnormalities. It was decided, however, that the kidneys should be investigated and a cystoscopic examination and ureteral catheterization were done. The pyelogram showed hydronephrosis of the right kidney with the kettle drum type of pelvis indicating an aberrant artery. Operation was advised and an obstructing aberrant artery was found which was divided and the ureter freed. This patient has experienced complete relief from symptoms since operation three years ago.

Urinary infections are not infrequently associated with gastro-intestinal symptoms. Tuberculosis of the kidney does not commonly give rise to diagnostic difficulty and yet the following case serves to

illustrate an instance in which a diagnosis of tuberculosis was not made for a considerable period of time.

Case 5: A young man, 28 years of age, had had attacks of pain in the left side for a period of eighteen months. The physician who was attending him stated that at the time of the original severe attack, there was a definite tumor mass which was palpable in the left lower abdomen. This was associated with abdominal distension, nausea, and a high fever. The physician believed that these symptoms were in all probability due to diverticulitis of the colon. The original attack subsided and the patient improved but soon had recurrent attacks of the same nature. When the patient was referred to the Clinic for examination, he was acutely ill and a definite mass was palpable in the left flank which was extremely tender. The unusual feature of this particular case was the fact that no urinary symptoms developed until a few days before admission into the hospital, at which time frequency and burning on urination were present.

Cystoscopic examination was carried out and a rather pronounced cystitis without ulceration was seen. The left ureter was catheterized and a considerable amount of purulent urine obtained. A pyelogram of the left side showed a deformity typical of renal tuberculosis and operation was advised. At operation, in addition to the tuberculous kidney, a very extensive perirenal inflammatory mass was encountered.

In this particular case, therefore, the patient had apparently had repeated peri-ureteral and perinephritic infections which had given rise to the mistaken diagnosis of a lesion of the descending colon.

It is, of course, well known that other acute infections of the kidney may give rise to gastro-intestinal symptoms. It is a common picture for patients with acute pyelitis to have some nausea and vomiting at the height of their fever. Usually in such cases there is no mistaken diagnosis, however, because urinalysis immediately directs attention to the infectious process in the kidney.

Rarely, kidney tumors will give rise to gastro-intestinal symptoms, as illustrated by the following case:

Case 6: A woman, 47 years of age, came into the Clinic for examination, having been advised to have an appendectomy for pain in the right side of the abdomen. A careful history elicited the fact that she had had occasional attacks of hematuria for the past year, the bleeding lasting only a very short time and clearing up spontaneously. The significant fact was that her attacks of pain usually occurred at the time of bleeding, but the pain was in the right side of the abdomen and referred to the region of the umbilicus. There had been no vomiting.

In view of this history, we felt that investigation of the right urinary tract was demanded and a pyelogram of this kidney showed a filling defect typical of kidney tumor. The kidney was removed and was found to be the seat of an adenoma.

It is quite likely that, in this case, the pain that the patient had been experiencing was due to the passage of small blood clots down the ureter, thus producing temporary ureteral obstruction.

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Occasionally, one encounters congenital anomalies of the urinary tract which give rise to gastro-intestinal symptoms. This is best illustrated by the following case:

Case 7: A young woman, 29 years of age, entered the Clinic in August, 1934. Her chief complaint was of pain in the right lower quadrant of the abdomen associated with nausea, vomiting, and loss of weight. Her symptoms were approximately of eight years duration. The nausea and vomiting were most intense and at times lasted for a week or ten days, necessitating hospitalization for the intravenous administration of fluids in order to sustain life. Soon after the original onset of symptoms, an appendectomy had been performed following which the patient was partially relieved for a few months. The symptoms recurred, however, and a few years later a cholecystectomy was done without any relief of symptoms. Later, at a third operation, the pelvis was explored and she was told that some ovarian cysts were punctured. In spite of these numerous surgical attacks, the patient's pain continued as did the terrific episodes of nausea and vomiting.

This patient was first seen in the Diagnostic Department and was referred to the Genito-Urinary Department for investigation of the urinary tract. At the time of cystoscopic examination, catheterization of the right ureter reproduced the pain, but the right pyelogram showed a normal kidney pelvis and there was no evidence of stone. We believed that this was a ureteral stricture and advised that she return for dilatation. At the second cystoscopic examination, a small dimpling was seen immediately below the right ureteral orifice. This had not been apparent at the time of the first cystoscopic examination and, in order to explore it, I probed with a small ureteral catheter and found that the catheter passed up 5 or 6 cm. This reproduced the patient's agonizing pain. It was impossible to fill this ureter with contrast media as the introduction of even a few drops of solution produced intolerable pain. A diagnosis of aberrant ureter was made and, owing to the accurate reproduction of the symptoms by catheterization, operation was advised. Because she had had so many operations, she was naturally loathe to accept this advice and returned to her home. Soon after, however, she had another extremely severe episode of pain, nausea, and vomiting, and returned for the operation.

At operation the aberrant ureter was located, divided at the bladder, and upon tracing it upward, it was found to end blindly at the lower pole of the right kidney. During the operation, marked hyperperistalsis in this ureter was observed and at the extreme upper end numerous filamentous communications extended from the upper end toward the pelvis of the kidney, these undoubtedly being nerve communications. The removal of this aberrant ureter completely relieved the patient's symptoms and within a few months she had gained 20 pounds in weight. She has been seen periodically since that time and has remained perfectly well.

It is particularly significant in this case that histologic sections of this ureter showed it to be entirely normal without any infection or other demonstrable change. It seems that one can explain this pain, therefore, only on the basis of hyperperistalsis of the aberrant ureter which produced extreme reflex disturbances in the gastro-intestinal tract.

Another congenital type of lesion which frequently produces gastro-intestinal symptoms is horseshoe kidney. The following case illustrates this:

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Case 8: A woman, 50 years of age, was admitted complaining of periodic attacks of pain in the lower left quadrant. This had been associated with rather marked constipation and on numerous occasions the patient had had mucus and some blood in the stools. A diagnosis of colitis had been made and she had been treated, but without relief of symptoms. Investigation of the urinary tract disclosed the fact that she had a horseshoe kidney, the left half of which was hydronephrotic and very low lying, being practically a pelvic kidney. Operation was carried out, and the left half of the horseshoe kidney was removed. The patient has had complete relief of her symptoms and the bowel condition has entirely cleared up.

These remarks and a brief review of cases illustrate the common association of gastro-intestinal symptoms in lesions of the urinary tract. It is not contended that every patient with gastro-intestinal symptoms should have complete investigation of the urinary tract, and yet if one carries out urologic investigation in all confusing or long standing cases of this type, one will be surprised to find what a high incidence of diseases in the genito-urinary tract will be demonstrated.