

and that not only must it be slight as possible, but it must be withheld at the earliest possible moment.

Because no better method presents, I frequently advise the insertion, while the child is in posture, of an ordinary clinical thermometer, well oiled and used only for the purpose. Beside its simplicity and frequent success, it impresses the mother with the foreign nature of such a stimulus and the more readily does she dispense with its use. Soap and glycerin suppositories are to be avoided if possible. Massage ought never to be practiced on the young child.

This paper is intended as a plea for the early correction of constipation and will not, therefore, outline any treatment for the neglected cases of this disorder.

DISCUSSION.

DR. THOMAS S. SOUTHWORTH, New York City, said that the first step in the treatment of constipation in infants is to understand the underlying conditions. With nursing infants, the care of the mother and the regulation of her diet are important in relation to the constipation of the child.

DR. ISAAC A. ABT, Chicago, stated that the use of over-fatted food, especially cream, which is commonly regarded as desirable in the treatment of constipation in infants, has actually been found at times to produce constipation and has led to the formation of scybala. The late Dr. Earle once made the statement that children were often constipated because the food they received was so perfectly assimilated that there was very little residue. Dr. Abt believes that constipation in infants may be due to a variety of causes. First, to the food itself; second, to the nature and quantity of the residue, and third, to a lack of muscular tone in the bowel. It may be the result of an atonic condition of any section of the bowel, or it may depend on a simple tonic constriction of the sphincter. Dr. Abt believes this is a frequent condition in infants. We have all seen cases where the mere introduction into the anus of a fever thermometer, or the point of a syringe or a bit of greased paper, has given rise to a stool of perfectly normal consistency. All that is necessary in these cases is the relaxation of the sphincter muscle.

DR. J. R. SNYDER believes that such children are underfed and that a child should have an amount of food in excess of the actual nutritional needs. The best way to determine the cause of constipation is by a close inspection of the stools. This will disclose just what the stool lacks.

PERINEPHRITIS IN CHILDREN.*

WISNER R. TOWNSEND, A.M., M.D.,
NEW YORK CITY.

The term perinephritis is used by most writers to describe an inflammation in the tissues surrounding the kidney. Schmid,¹ Prior,¹ Puky,¹ Senator¹ and Israel² would limit it to those cases where the disease originates in the fibrous sheath of the kidney. When it begins in the fat tissues they prefer the term paranephritis, except Israel, who designates such cases as epinephritis. Kuster³ limits perinephritis to an inflammation of the anterior peritoneal covering of the kidney, and calls all others paranephritis. Under paranephritis Israel classes all inflammations beginning in the retronephric tissues.

This diversity of nomenclature rather tends to con-

fusion than clearness, and in this paper all cases are spoken of as perinephritis.

Perinephritis is not of frequent occurrence. Nieden,⁴ in 1897, could only find records of 166 cases. Of these, 23 were under 15 years of age, the youngest being five weeks old. Gibney,⁵ in 1876, reported 9 cases, and in 1880 increased the total to 28. The ages varied from 1½ to 15 years. In 16 there was suppuration; in 12 no suppuration. In 19 cases no cause was found; in 8 a cause was given. Fenwick,⁶ in a report on 76 cases, speaks of 4 in children under 10 years of age, and of 9 between 10 and 20 years, the youngest being 14 months old. He excluded from his list all of Gibney's cases, because none of them had been verified by postmortem findings. Kuster³ rejects 16 of Nieden's list, and adds 80 cases, making a report on 230. Of these, 24 were under 10 years of age, 17 between 10 and 20.

Johnson,⁷ in an experience of nine years in Roosevelt Hospital, saw but one case in a child, a perinephric abscess in a boy of 10, following a fall, not complicated by a kidney lesion. Israel,² in a report on 43 cases, speaks of one in a patient 12 years old. The 6 cases reported in this paper were all that were seen in children at the Hospital for the Relief of the Ruptured and Crippled, New York City, during the years 1894-1903, when 3,689 patients were treated in the indoor department, all under 14 years of age.

In no instance in the 6 cases reported from the Ruptured and Crippled Hospital was a correct diagnosis made by the attending physicians who first saw the patients, but all of them were sent to the clinic to have either spinal or hip braces applied. Gibney and others state that an erroneous diagnosis is made in over 50 per cent. of the cases seen. Only in rare instances should any difficulty arise in correctly interpreting the symptoms in a case of beginning perinephritis. After an abscess has formed the diagnosis is usually very easily made.

CLASSIFICATION.

In a consideration of perinephritis, the most simple classification is the division into primary and secondary, acute and chronic. Other classifications have been made, but they are unnecessarily elaborate. The best is that of Schmid,⁸ who speaks of direct and indirect infections, with various subdivisions.

Under primary are classed all cases where the disease originates in the tissues about the kidney, the fibrous capsule, the fatty or areolar tissue, the fascia over the quadratus lumborum or psoas, the fascia about the diaphragm or in the peritoneum in front of the kidney.

The secondary comprises all diseased conditions of these parts following or secondary to diseases in other parts of the body.

Acute and chronic are used in the ordinary acceptance of the term. Fenwick⁶ would add to the acute and chronic a latent type, to include those in which no physical signs are present pointing to suppuration near the kidney, or in which they are masked by more prominent manifestations of illness in other parts. In this class would be placed many of the pyemic cases.

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Diseases of Children, and approved for publication by the Executive Committee: Drs. S. W. Kelley, H. M. McClanahan and John C. Cook.

1. Herszky, Jena, March, 1903, *Centralblatt für die Grenzgebiete der Medizin und Chirurgie*.

2. Israel, Berlin, 1901, *Chirurgische klin. der Nieren Krankheiten*.

3. Kuster, Stuttgart, 1896-1902, *Die Chirurgie der Nieren*. Deutsche Chirurgie, 1897.

4. Nieden, Leipzig, 1878. *Ueber Perinephritis hauptsächlich in Aetiologischer und Diagnostischer Berücksichtigung*.

5. Gibney, New York, Amer. Jour. of Obstet. and Dis. of Child., vol. ix, 1876; Chicago Med. Jour. and Examiner, 1880.

6. Fenwick, London, *Lectures on Cases of Difficult Diagnosis*, Lancet, 1885.

7. Johnson, New York, *Contribution to the Surgery of the Kidney*, Annals of Surgery, 1899.

8. Schmid, *Handbook d. Therapie Nieren Krankheiten*, vol. vi.

ETIOLOGY.

In most instances the etiology is obscure, but in many a definite cause is supposed to exist. Exposure to cold, a strain or sprain, a blow, a wound or fall on the side, constipation, excessive exercise of any kind, jarring of the body, overexertion, simultaneous infection of the perinephric tissues with other infections are among the causes that have been held to produce primary perinephritis.

The secondary may follow infection of any part of the body, and has been seen in all forms of kidney lesion, especially in pyonephrosis, pyelitis and stone in the kidney, or after operations on the kidney, ureters, bladder or urethra. It may follow or occur in typhoid and other fevers, in pneumonia, empyema, abscess of the lung or pleurisy, after the ulceration of a stone through the gall bladder or the rupture of an echinococcus cyst, in appendicitis or inflammations of neighboring organs within the thorax or pelvis, or after injuries of the kidneys,⁹ etc. The acute cases come on suddenly, and most of the primary cases are of this character.

PATHOLOGY.

The pathology is an inflammation of the parts. Among the bacteria which may be found are staphylococci, streptococci, pneumococci, typhoid, tubercle or colon bacilli. Eighty per cent. of the primary cases end in abscess, and in the secondary an abscess is always found.

Where no abscess occurs the inflammation subsides more or less rapidly, and no trace may be left except, in occasional instances, a thickening of the part.

SYMPTOMS AND PHYSICAL SIGNS.

Symptoms.—The first symptom of primary perinephritis is usually pain, which may be very severe in character. It is most frequently felt in the region of the kidney near the vertebræ, but may be referred to the terminal filaments of the nerves and felt in the axillary line or even in front of the body. It may intermit and be mistaken for a neuralgia or lumbago, or extend downward and simulate a sciatica. Occasionally it is felt in the distribution of the anterior crural or obturator nerves. If constant it may be severe or dull in character, and pressure about the region affected generally increases it. As movements of the body tend to aggravate the pain, the spine is generally held rigid, and it is due to this fact that so many of the cases are at first mistaken for Pott's disease. A spine held stiffly often misleads the careless examiner, as the position assumed may tend to bring into prominence the spinous processes of the vertebræ, but to the careful observer this "position curve" is very different from the kyphosis of Pott's disease, the curvatures due to rhachitis or the beginning cases of rotary lateral curvature.

When psoas contraction occurs either before or after an abscess has formed or within the psoas muscle, flexion of the thigh results, and attempts to straighten the lower extremity cause pain, due to tension on this muscle, which may be referred to the hip, spine or pelvis. Very young children can not locate it definitely, and even those older are often uncertain where it is felt. This drawing up of the thigh by contraction of the psoas causes lameness and tilting of the pelvis, with consequent bending of the body to the affected

side. This accounts for these cases being mistaken for beginning hip-joint disease, and the true condition overlooked.

As the disease is of an inflammatory type, chills or rigors, followed by fever and septic temperatures, are among the first symptoms, and are often severe in character, and produce rapid depression of the vital forces. Rigors, septic temperatures and great general depressions, where a definite cause is not known, should suggest an examination for a perinephritis, even if other symptoms are absent.

Constipation is the rule, and its causation is variously ascribed to the patient's desire to avoid the pain of moving the body necessary to open the bowels, to pressure from the abscess on the intestinal tract, or to pressure on the sympathetic nerves. Diarrhea is very exceptional, and may be an early sign of pyemia. Vomiting is often present at the onset, but is of no special significance.

Examination.—A physical examination of the loins may show a dull note on percussion in the hypochondriac region over the affected area, and this is apt to increase as the abscess enlarges. The colon on the left side is in front of and on the right side to the inner side of the tumor, and over this a tympanitic percussion note may be elicited.

Abscess Formation.—With the formation of an abscess we have a tumor which may be felt, even when small, and which usually follows certain lines in coming to the surface.

It either points near the spine or in the hypochondrium or simulates a psoas abscess,¹⁰ which may be described as consisting of four parts: 1, A somewhat narrow channel at its upper part in the psoas sheath; 2, a dilated sac in the iliac fossa; 3, a constricted neck under Poupart's ligament; 4, a dilated sac in the upper part of the thigh.

All psoas abscesses do not, however, pursue this course. The matter may leave the muscle above the crest of the ilium, and tracking backward, may point in the loin (lumbar abscess); or it may point above Poupart's ligament in the inguinal region; or it may follow the course of the iliac vessels into the pelvis, and, passing through the great sacrosciatic notch, discharge itself on the back of the thigh; or it may open into the bladder or find its way into the perineum.

It may burrow upward and pass through the pleura and lungs and be discharged through a bronchus,¹¹ or burrow downward and open into the vagina or intestinal tract.

The pus may have a fecal odor without any connection existing between the abscess and the bowel, as gases in debilitated patients may pass through the bowel wall. When a perforation of the kidney has occurred, a urinary odor may be noticed in the abscess.

Urine.—The urine may be of high specific gravity, high color, and may contain albumin and casts, indications of involvement of the kidneys, such as occurs in course of inflammations in other parts of the body. It is transient in character, not a permanent kidney lesion.

Blood.—The blood count shows an increase in the leucocytes, such as is found in abscess formation in other parts and in many inflammatory conditions. If tubercular in character, there will be no leucocytosis unless sepsis also exists.

9. Watson, Boston, Subparietal Injuries of the Kidney, Boston Med. and Surg. Jour., 1903.

10. Gray's Anatomy.

11. Loumeau: Jour. de Med. de Bordeaux, vol. xx, No. 41.

RELATION OF AGE AND SEX TO THE DISEASE.

The disease affects the sexes in about equal proportion and the same is true of the side affected. There is no reason why bilateral perinephritis may not occur in children, but I have found no recorded cases. Secondary bilateral cases have been reported by Turner,¹² Rayer,¹ Rosenstein,¹ Hitz,¹ and others in adults.

DIFFERENTIAL DIAGNOSIS.

The most common errors are to mistake perinephritis for beginning osteitis of the spine, Pott's disease, osteitis of the hip or hip-joint disease, or for acute osteomyelitis of the vertebræ. The absence of kyphosis, the rapid onset, the location of the pain, the rapid formation of abscess, high leucocyte count, with high temperatures, are symptoms rarely found in beginning Pott's disease, and the differential diagnosis is rarely difficult.

In hip-joint disease all motions are limited, in perinephritis only extension, and all are possible if the thigh is flexed. In hip-joint disease there is atrophy of the hip. An abscess rarely occurs in early stages, but if present, it is apt to be near the joint, not near the spine. The onset of hip-joint disease is usually slow, and the first symptom is generally lameness, the leucocyte count is not increased until suppuration occurs, and pain is apt to be referred to the knee or hip. In but rare instances will any difficulty be found in making a proper diagnosis.

From psoitis in some cases a positive diagnosis can not be made. The principal points to remember are that psoitis is more rare, abscess is infrequent, pain is apt to extend along the course of the psoas and iliacus and to be felt in front rather than behind, and that psoas contraction or thigh flexion is a very early symptom. Undoubtedly some of the reported primary cases of perinephritis where no suppuration occurs are cases of psoitis, although suppuration may occur in inflammation of muscle.

In acute infectious osteomyelitis of the vertebræ, the pain is felt in the spine, most severely in the affected area, with local spinal tenderness. The last symptom is of great value, and is absent in perinephritis. With involvement of the nerve root within the spinal canal, we have lancinating pains which extend in front. These are usually more severe than the pain in perinephritis, but this symptom may be misleading. Dural symptoms may appear early, and pressure on the cord cause compression symptoms. These are absent in perinephritis. The septic symptoms would be the same in both.

The abscess tumor may be mistaken for an enlarged spleen, liver or kidney, or for an aneurism or appendicitis, but proper study of the symptoms will rarely leave one in doubt as to the true condition that exists.

The treatment should be based on the conditions present. If seen early, rest in bed, tonics, laxatives and mild stimulation are indicated. If an abscess is present, prompt surgical interference is demanded. Failure to promptly open a collection of pus may mean death from sepsis or burrowing into other parts, with formation of sinuses and long delay in recovery and serious complications.

A study of the reported cases in the literature clearly shows that the tedious convalescence, the formation of abscesses in other parts secondary to the perinephritis and the deaths were largely due to failure in making an

early diagnosis and to indefinite surgical procedures after the diagnosis had been made.

In the cases treated at the Hospital for Ruptured and Crippled Children, no deaths have occurred. In primary perinephritis the death rate should be very low, if cases are properly treated; in secondary it will depend on the primary site of and character of the infection.

Watson⁹ found perinephritic abscess the cause of death in 56 of 81 fatal cases of subparietal injury to the kidney treated expectantly, but in 99 uncomplicated cases treated by operation other than nephrectomy, in 21 cases of perinephritis there was but one death. The cause of perinephritis and the treatment both influence the mortality rate.

REPORT OF CASES.

CASE 1.—Male, aged 13; admitted to hospital Nov. 27, 1903. Family history negative. Was perfectly well up to two weeks ago.

History.—In July he had a chair pulled from under him, slightly injuring his back, but he fully recovered. In September he fell from a bicycle, but did not hurt himself. Two weeks before admission he lifted a heavy box and the next day suffered intense pain in the back and had a chill. The pain was excruciating and paroxysmal in character and confined to the right side of the spine. About a week later it extended downward toward the hip and was felt in front of the abdomen. He was constipated and the bowels were finally moved by the use of salts. After the chill he had fever, and three days later was delirious. A physician who was called at this time was unable to make a diagnosis, but pronounced it hip joint disease when one week after onset the thigh became flexed and was held constantly in that position. After the first few days vomiting was present and persisted, until after admission to the hospital. Boy lost flesh rapidly and had a daily chill and fever for over two weeks.

Examination.—On admission, rectal temperature was 101 degrees, pulse 88, respirations 18. He was pale and evidently suffering pain. The right thigh was flexed on the abdomen; extension beyond 90 degrees was impossible. No disease of hip or spine made out. Deep pressure in region of kidney caused pain.

Urine amber color. Sp. gr. 1020. No sugar or albumin.

Abdomen retracted, no signs of peritonitis. Leucocyte count 14,000.

Treatment.—Treatment was rest in bed and milk diet.

Result.—Symptoms gradually subsided. Leucocyte count December 5 was 7,500. Flexion of thigh had disappeared, and on December 12 he was discharged cured.

Feb. 15, 1904, he was seen in the out-patient department and was perfectly well; could walk or run as any other boy, and was gaining flesh rapidly.

CASE 2.—Male; aged 6½; admitted to hospital July 22, 1903. Family history negative. Has had none of the diseases of childhood.

History.—Was perfectly well until one week before admission, when he complained of pain in the left side, very severe in character and worse at night. No cause known. Had chills, followed by fever; lost flesh; appetite failed. The family physician first made a diagnosis of malaria, then of hip disease, and sent the patient to the hospital for a brace.

Examination.—Examination on admission showed general condition poor; rectal temperature, 102.8 degrees. A large, fluctuating tumor was easily made out in the lumbar region, presenting two inches to the left of the spine, midway between the crest of the ilium and the last rib.

Treatment.—Abscess was opened, careful examination made and no disease of spine was found.

Result.—August 19, discharged cured. February 14, 1904, seen at his home; was perfectly well.

CASE 3.—Male; aged 11 years; admitted to hospital, Oct. 29, 1902. Family history negative.

History.—The first symptom noticed was pain in the back near the spine; the child held himself bent over when he walked. He lost weight and had chills, followed by fever. No cause known. The family physician made a diagnosis of hip disease and sent him to the hospital for a brace.

Examination.—Examination on admission showed boy in poor physical condition. The left thigh was flexed on the abdomen, and could not be extended beyond 90 degrees. No evidence of disease of spine or hip. In left ilio-costal space a fluctuating tumor was easily made out.

Treatment.—This was opened, drained, and patient was discharged cured on November 24. February 15, 1904, seen at his home; was perfectly well.

CASE 4.—Female; aged 6 years; admitted to hospital Nov. 12, 1903. For two weeks prior to admission she had pain in the back, with chills, followed by fever. No known cause.

The family physician sent the child to the hospital for a brace for Pott's disease.

Examination.—On admission the rectal temperature was 104 degrees; there was incontinence of urine, sensitiveness to pressure in the right lumbar region, marked stiffness of the lumbar spine. Pain was increased when the child bent to either side. Bowels regular; no tumor felt.

Two days later the parents removed the child from the hospital. At that time the temperature was lower and the general condition improved.

February 12, 1904. Seen at her home and condition found to be perfect.

CASE 5.—Female; aged 3; seen in out-patient department Sept. 27, 1901.

History.—For two weeks had been complaining of pain in the back and walked lame. No cause known. Had chill, followed by fever.

Examination.—A fluctuating tumor was found to the left of the spine in the lumbar region; marked psoas contraction; thigh held flexed on abdomen; constipation; passes but small quantities of urine daily. Temperature in axilla 100 degrees.

Treatment.—Three days later at the hospital the abscess was opened, and one month later entirely healed. Feb. 15, 1904. Seen at home; perfectly well.

CASE 6.—Female; aged 5 years; admitted to hospital Dec. 5, 1898.

History.—In July she was run over by a wagon, but the superficial wounds healed, and she was apparently well, but two months ago she began to get lame.

Examination.—General condition was poor; abdomen prominent, also third and fourth lumbar vertebræ. Muscular spasm and rigid spine. Distinct abscess was found in the right pelvis, psoas contraction; thigh flexed on abdomen.

Treatment.—December 18, aspirated, and two ounces of greenish pus were withdrawn; December 22, aspirated and seven ounces withdrawn. Temperature, 100 to 102 degrees.

December 26, abscess was opened, and on Jan. 17, 1899, a counter opening was made between the ribs and pelvis and free drainage established between this and the opening in front.

Dec. 26, 1899. Posterior opening was closed; one into the pelvis in front still discharging.¹³

DISCUSSION.

DR. R. B. GILBERT, Louisville, mentioned two cases in which this condition was mistaken for disease of the vertebra, and said that the knowledge of the facts in regard to perinephritis in children should aid in the diagnosis of this condition, which is so frequently overlooked.

DR. A. JACOBI, New York City, considered that Dr. Townsend did not lay sufficient stress on the possibility of constipation being a cause of the condition in children, just as it is in the adult. It is due, not so much to the pressure produced by the dilated colon, but to the stagnation of the feces, producing inflammation of the colon and subsequent infection. Dr. Jacobi has no doubt that in the adult Dr. Townsend has seen many

just such cases. In some cases that have come under Dr. Jacobi's observation, obstinate constipation of many years' duration was the cause, or one of the causes, of the perinephritis. He could only recall four cases of this condition in young children, two in children perhaps 2 or 3 years old, the other two in older children. In the latter cases the perinephritis was on the right side; in the younger children on the left side. Constipation takes place in very young babies particularly about the left curvature, just in or above the sigmoid flexure; particularly in those which he has described as "congenital constipation," which depends on an exorbitant length of the sigmoid flexure. In older children, in whom the ascending colon is longer than in the newly born, the constipation may take place in the right curvature, and this happened in the cases that came under his observation.

DR. W. R. TOWNSEND said that he had recently seen two cases of perinephritic abscess in children and both had been mistaken for hip-joint disease.

Clinical Notes.

RESPIRATORY PITCH.

A. J. STEVENS, M.D.

MALDEN, MASS.

Those who write their opinions on medical subjects, unsupported by reasons or experiments which can be put to the proof by any competent person, and those who write the "one consecutive case" articles may usually be considered bores. My justification for asking a hearing is based on something more definite than personal opinion, something which can be confirmed by evidence sufficient to prove a case in the courts. As a preliminary I will ask the reader's indulgence in the relation of a personal experience which may have a certain value to those interested in auscultation.

Thirty-six years ago the teaching as to the pitch of respiratory sounds was the same as that of to-day. At that time it was my privilege to receive instruction in auscultation under a talented pupil of Dr. Austin Flint. Through personal experience of pulmonary disease my interest in becoming expert was great, but my first experience as a pupil was discouraging. The current teaching as to pitch did not coincide with the evidence of my ear.

After referring to my instructor a number of patients in whose chests the expiratory sounds were lower than the inspiratory, and being told that I was in error, I feared for some time that my peculiarity would be fatal to proficiency as a diagnostician in pulmonary diseases. I had confidence in my ability to detect slight differences in pitch, but that confidence did not carry me to the extent of setting up an unsupported opinion against that of the experts in the profession. After many discouraging attempts to master the subject, I learned that ability to detect morbid sounds was not lessened by inability to define the pitch in the terms of the accepted authorities.

After thirty-five years, in which auscultation has been practiced daily, and the correctness of early impressions in this particular have been confirmed, it is a satisfaction to read what Dr. Quimby stated in his paper in *THE JOURNAL*, Oct. 1, 1904. The following evidence is worth considering, and any physician can multiply the tests to any desired extent on the same lines. Musicians use the term "positive pitch" to designate a faculty which seems incredible to one who does not possess it. Those persons who have it can, unaided by any sense except that of hearing, name any note sounded on a piano. The evidence of persons having "positive pitch" should have great weight in settling the question of the pitch of respiratory sounds.

Several of my patients and friends have this faculty, and having tested their ability to hear and describe the sounds heard through a stethoscope placed over the trachea and also over different parts of the chest, and finding their evidence unanimous, that inspiration is of higher pitch than expiration, it seems to me that an unbiased jury would render a verdict in

13. Since the above was written the author has seen two additional cases in children of 3 and 4 years of age, one mistaken for hip-joint disease, the other for spinal disease. Abscesses were opened and drained and both cases made perfect recoveries.