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JUST PUBLISHED

CLINICAL NEUROLOGY

By BERNARD J. ALPERS, M.D., Sc.D. (Med.)
Professor of Neurology, Jefferson Medical College, Philadelphia; Neurologist, Jefferson, Pennsylvania, and Wills Hospitals, Philadelphia

808 Pages  (6¼ x 10)  232 Illustrations  58 Tables  $8.00

The primary purpose of this book is to present the subject of neurology in such a manner as to make it more intelligible to the medical student and the general practitioner as well as to provide an up to date reference for the neurologist.

Dr. Alpers includes all the neurological conditions which the practitioner may encounter in daily practice. He gives a running account of the present-day knowledge of each disease with particular reference to its clinical development and to the symptoms and signs as they might be expected to unfold in the natural history of the disease.

Here is a concise and inclusive description of syndromes and neurological conditions and a rational basis for treatment which is given in detail.

F. A. DAVIS COMPANY
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NEW WORK  JUST READY

A PRIMER OF ELECTROCARDIOGRAPHY

By GEORGE BURCH, M.D., F.A.C.P., and TRAVIS WINSOR, M.D.
Associate Professor of Medicine,  Instructor in Medicine,
Tulane University School of Medicine


This new work is in every sense a primer. Its object is to enable the student, who is entirely unfamiliar with the subject to acquire a fundamental knowledge of electrocardiography in the most direct manner. The material is presented from a mechanistic point of view. Only with a knowledge of the mechanism is it possible for the reader of electrocardiograms to unravel individual tracings. The mechanisms are visualized by many diagrams. The difficult subject of Ventricular Gradient is simplified. Although every effort has been made to keep this presentation both simple and brief, it is both authoritative and fundamental.

LEA & FEBIGER
Washington Square  Philadelphia 6, Pa.
A RATIONAL APPROACH TO THE LOW BACK PROBLEM

JAMES M. EATON
Associate Professor of Orthopedic Surgery

An orderly approach to the low back problem is essential. It is my opinion that every patient presenting a low back problem should be considered a medicolegal case, that the history, and record of physical examination should be prepared as if it were to be presented in court, and that only those findings which can be substantiated, should be included.

History

If the case does come to court an accurate and exhaustive history is of the utmost importance to the patient, and to the physician. It is not sufficient to cover only the present illness in detail. All phases of the patient's life must be studied to reach a proper evaluation of the present complaint. Therefore listen patiently to all that is told, but believe only so much of it as the circumstances warrant, and the physical examination corroborates.

Present Illness

The present illness should be studied in great detail. Its date of onset, its cause from the patient's point of view, its prodromes, any specific and general complaints, the progress of the condition to the present time, and the relation to other concurrent diseases or circumstances should be sought. It is important to inquire into previous diagnoses made, the treatment given, and its effectiveness. The history of previous attacks of a similar nature, and their effect on the patient can be as important as the present illness.

Pain

Pain is a symptom which only the one suffering it can interpret. If it is due to an injury, the exact position of the body in falling, or when some unusual movement inaugurated the pain is determined. Was the pain immediate, or of gradually increasing intensity? Has it been intermittent or continuous? Sudden pain, with later improvement, is the usual history in an actual mechanical injury. Sudden onset of pain, which gradually increases, may be due to a spinal arthritis, myositis, or to some anomaly in development which had not previously caused pain. If there is a malignancy of the spine, pain may be expected to become gradually worse, irrespective of rest, activity, or treatment.
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Radiation of Pain

The exact radiation of pain should be noted. However, the ability of the patient to describe his symptoms will depend on his intelligence at the time of examination, as much as on the anatomic basis for the radiation. Sudden recurrence of pain following some slight muscular effort, may be the result of muscle spasm to protect a tender joint. It is difficult for the patient to localize pain referred from intestinal pathology, pelvic tumor, chronic prostatitis, or muscle fatigue.

Diagnosis by History

Musculoligamentous injury and spontaneous lumbago can frequently be differentiated by the history.

Inflammatory muscular affections such as lumbago typically present the following history: 1. Pain is instituted by simple body movements such as stooping, turning, sneezing, coughing, or the daily routine work of lifting, sawing, hammering, and the like. 2. The pain sets in suddenly with full intensity, like a “knife stab in the back.” Any movement of the affected muscles is extremely painful, and causes excruciating exacerbation. 3. When the patient recovers sufficiently to indicate the site of the pain, he points to one or both sides of the lumbar region, but cannot indicate any definite limit to the painful areas. The points of greatest pain on pressure, and those on movement, do not agree. It may not be possible to demonstrate objective changes in the muscles. 4. Turning, or movement in bed is more commonly avoided than in the case of muscles injuries. 5. Previous history of similar attacks with sudden onset is common. Sometimes these are described as having sciatic radiation. Bed rest relieves the symptoms in 2 or 3 days, but the longer the patient rests in bed without beginning to exercise the muscles, the more slowly the symptoms diminish.

Muscle injury of the lumbar region typically presents the following history: 1. The amount of flexion, torsion, or the force or distance of falling, is compatible with the amount of soreness and pain of which the patient complains. Extensive movements of the body to break the fall, or to regain footing after slipping, may be involved in the causation of pain. A sudden wrench of the back may be sustained while the patient has not contracted his lumbar muscles sufficiently to establish the amount of rigidity necessary to withstand the violent shock of an unexpected movement, unguarded motion, or sudden jolt. 2. If the injury is of such a kind, it may have torn muscles or ligaments, or have moved joints past their normal range of motion. 3. The pain is localized by fingertip, and described as existing in that area where it would be expected to be most severe on anatomical grounds. 4. Pain is likely to increase with the passage of time, and with effort. The patient may work for a short time after injury before complete disability begins. 5. With rest in bed the pain may be constant, or may increase during the first day. Hot packs, baking, and massage relieve the pain from the first. Antirheumatic remedies are ineffective.

Position and Pain

The effect of position on the severity or incidence of pain is quite important. If the pain is relieved by reclining in bed, determine whether this is accomplished in the supine, prone, or lateral position, with the knees flexed or extended. Those suffering from lumbosacral or sacro-iliac pathology, rest with the knees flexed. Pain from spinal cord pathology, and malignancies, is unaffected in intensity, or is worse when attempting to sleep in bed. On first arising, pain may recur in those suffering from chronic arthritis of the spine, or low grade inflammation of the musculo-ligamentous system, improve after moving about, only to recur in a short time, and persist as long as weight bearing continues. If the patient is suffering from a spondylarthrosis, perhaps associated with some anomaly in the lower back causing asymmetrical change in the muscle tone of the two sides, the pain may be entirely relieved after a night of sleep, only to recur after heavy work again causes repeated strain of the involved structures.

Coughing, etc.

The effect of apparently unrelated actions on the intensity of pain should be noted. Coughing, sneezing, blowing the nose, defecating, and urinating may cause an exacerbation of the complaint. These actions cause an increase in intraspinal fluid pressure which causes further irritation of an existing radiculitis, or irritation of nerve roots by extradural pressure. This phenomenon may vary with the intensity of pain, and the acuteness of the attack, though it is frequently present when the acute symptoms have subsided.

Muscle Weakness

Weakness of muscle power of the lower extremities and hip regions should be investigated. Inquiries should be made as to stumbling, stubbing the toe, difficulty in climbing and descending stairs in a normal manner, or sudden collapse of a limb. Examination of the shoes will often reveal scraped toes, and scuffed foreparts, which has not been observed by the patient. They are a sign of muscle weakness. Such difficulties may be due to the intensity of pain, but may persist when the pain has subsided. Limping in conjunction with low back and sciatic pain is frequently the result of pain suffered on particular motions of the lower extremity, but in a majority of cases residual limp is the result of muscle weakness.

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tageous position. Certain occupations of a jolting nature, such as truck driving, may produce persistent jarring on the joints of the spine. It is important to know whether the work is repetitive, requiring particular and repeated motions of the back, over protracted periods.

The mental attitude of the patient toward his work, his fellow employees, his employer, and his social status, may help in evaluating the importance of the complaints of pain. Fatigue backaches frequently become more intense toward the end of the day. Exposure to alternating changes of temperature, or to the hazard of cold or dampness should be recorded.

The habits and avocation of the patient should be studied. His recreation may be too strenuous. The number of hours spent in such activities may determine whether loss of rest is contributing to the prolongation of his backache. The question of sufficient sleep is important to the low back problem, as well as to the physical economy as a whole.

Visceral Disorders

No history is complete without inquiring into gastro-intestinal, genito-urinary, and gynecologic disturbances of sufficient intensity to produce symptoms referred to the lower back. They may completely overshadow the original complaint. The female with painful pelvic lesions assumes a lordotic posture to avoid downward pressure of the abdominal contents on the inflamed and sensitive organs. With the back in this position there is no safety factor of motion. Any force expended on the lumbosacral joints, already held in the extreme range of motion, can injure them, whereas a similar jar on a joint in which physiologic motion is possible, will have no consequences. The prostate and seminal vesicles receive fibers from the tenth, eleventh, and twelfth thoracic segments, as well as branches from all the lumbar and upper 3 sacral segments. Structures having such widespread innervation, might easily cause widespread referred pain.

Rectal pathology as a cause of low back pain cannot be too highly stressed. Many times minor rectal complaints are overlooked, and the patient fails to respond to low back therapy until the rectal complaint is eliminated. An habitually overloaded rectum may be the sole cause of backache.

Irritation from low grade, recurrent appendicitis, especially if the appendix is retrocecal or retrocolic, may cause psoas spasm, a tendency to flex the hip, and altered vertebral mechanics from the lordosis produced.

Excess food and alcohol intake must be studied. Hyperuricemia has been observed in a rather large proportion of the cases under our observation, with symptoms that varied from those suggesting spinal cord tumor and herniation of lumbar intervertebral discs, to simple low back strain of postural defects. Normalization of the blood uric acid level has resulted in relief of both local symptoms, and those referred to the extremities.
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Nervous System Disorders

Complaints of sensory and motor disturbances of the extremities, particularly weakness of the lower extremities out of all proportion to the injury, generalized spinal tenderness, and paresthesias suggest affections of the nervous system. This is especially true if there is diminution or loss of bladder and rectal control, or if excruciating pains, radiating down both lower extremities, appear suddenly after a minor injury. Protrusion or herniation of intervertebral discs produce extradural compression of nerve roots causing unilateral radicular symptoms which may be motor as well as sensory. These herniations may be so large they produce complete block of the cauda equina, and suggest tumor compression because of the bilateral, and usually unequal, distribution of symptoms in the lower extremities.

Previous Illnesses

Investigation of past illnesses, injuries, and operations may throw some light on the present complaint. This is especially true of infections which might leave foci of infection which persist for years as a source of irritation. Information should be elicited regarding rheumatic or other joint pains referable to the appendicular skeleton, as well as to the back. Venereal infections are common, often denied. While valuable leads may be obtained, hasty conclusions must not be drawn from positive admissions. Many of the acute infectious diseases of childhood and adult life give rise to arthropathies, which persist long after the acute symptoms have subsided, and often are not associated with the original illness by the patient. While the great majority of low back problems occur in the third and fourth decades of life, the arthralgias of the climacteric, both male and female, cannot be ignored.

Previous surgery experienced by the patient may give a clue to possible spinal pathology. The patient who is suffering from tuberculosis of bone has frequently been operated on for “swollen glands” at an earlier date. Mastectomies, both male and female, are frequently performed because of malignancy, though the patient may have been told otherwise. In these cases lumbar metastasis is very frequent, and patients who have been operated on for malignancies should always be regarded as having a metastatic lesion when backache develops.

Physical Examination

The examination of the lower back is a part of the general physical examination of the patient, and is carried out in detail only when special complaints are related to the skeletal system. The patient must be considered as an individual, and not as one suffering from complaints isolated one from another. The human body is a complex mechanism, in which the proper function of interrelated parts is dependent on the proper function of the whole.
The patient should be stripped, preferably in the presence of the examiner. Female patients, however, are clothed in an examining gown which provides adequate exposure of the entire spine and lower extremities. The action of the patient during the process of disrobing and dressing is observed. It should be noted whether he has any more difficulty in flexing his legs in the sitting position, while removing and putting on his shoes, than he does in flexing his legs while on the examining table. Observe if the patient pretends difficulty in removing and putting on his clothes, which is incompatible with the findings on the examining table. Note whether the patient sits on one buttock, or on both, during disrobing, and if he favors his back while climbing on and off the table. In climbing on the examining table a true sacro-iliac patient will step up and down if he favors his clothes, which is incompatible with the findings on the examining table. Observe if the patient pretends difficulty in removing and putting on his clothes, which is incompatible with the findings on the examining table. Note whether the patient sits on one buttock, or on both, during disrobing, and if he favors his back while climbing on and off the table. In climbing on the examining table a true sacro-iliac patient will step up and down if he favors his clothes, which is incompatible with the findings on the examining table. Observe if the patient pretends difficulty in removing and putting on his clothes, which is incompatible with the findings on the examining table. 

The patient should be examined in the standing, walking, sitting, and prone positions. 

**Walking**

Note the general appearance, abnormalities of gait, type of posture, and evidence of congenital abnormalities of the spine as a whole. If a limp is present, determine if it is due to pain, weakness, or shortening.

**Standing**

Observe the posture and habitus. The tall slender type of individual is more subject to stress and strain mechanisms which affect the lower back, and to spondylarthritis of a rheumatoid nature. The short, heavy set individual will develop organic changes within the spinal segments, and be subject to spondylarthrosis of a degenerative nature.

The comparative height of the shoulders, scapulas, iliac crests, and trochanters is noted. Variations in epiphyseal development will make iliac crest measurement unreliable in some cases, though if variation is observed, further study is indicated to determine pelvic and sacral tilt accurately.

It is noted whether the anteroposterior curves of the spine are average, increased, or decreased. If scoliosis is present, the primary and secondary curves, the apices of the curves, and the direction of rotation and side bending mechanisms are observed. Later, with the patient in the sitting, and prone positions, the effect of change of position on the scoliosis is to be recorded. If pain is present in a scoliosis, its location should be noted, and marked with a skin pencil. In a sciatic scoliosis tilting of the spine is determined, and the angle of tilt at the lumbarosacral level is measured with a goniometer. In prespondylolisthesis, the lumbarosacral angle is determined, and recorded as average, decreased, or increased. The symmetry of the buttocks is determined. Frequently one gluteal crease is lower than the other, and may be an indication of flaccidity of muscle from nerve involvement.

The following measurements may now be taken on each side: anterior superior iliac spine to the ground, anterior superior iliac spine to internal malleolus, greater trochanter to external malleolus, pubic spine to internal malleolus. These measurements, compared later with similar measurements taken in the supine position, are inaccurate, but if persistent variations are noted, they may indicate structural variations which should be checked by x-ray studies. The actual extremity length is not as important as is its effect in causing unleveling of the pelvis and sacrum which results in altered spinal mechanics, and involves chronic ligamentous and arthrodial strain.

Motion in flexion, extension, side bending, and torsion is usually studied. Active motion should affect all parts of the lumbar spine equally, so that a true curve is produced. The degree of referred pain on each motion is significant, and its exact location should be marked on the skin with a pencil.

On flexion the patient can normally bend approximately 90 degrees with the lower extremities. Placing the fingers between the spinous processes of the lumbar region will help in differentiating between lumbar motion, and the abnormal degree of hip joint motion which may be developed by some patients with a rigid lumbar spine. Normal flexion of the lumbar spine starts in the spine, and affects the hip joints secondarily. When the spine is stiff, movement of the hips precedes that of the spine. The patient will stoop toward the side of the spastic erector spinae muscles, and, ordinarily, away from the side of painful nerve roots, because deviation to the side of involvement exerts more pressure on the roots. Neri's sign, if positive, is elicited when the spine is flexed. The lower extremity on the affected side is flexed at the knee to avoid stretching the sciatic nerve.

Extension of the spine is usually accomplished with the aid of a hand on the sacrum, or of both hands on the pelvis. Hyperextension of the lumbar spine usually relieves the pain of prespondylolisthesis, of pathology of the liguamentum flavum or intervertebral disc; but the pain of lumbar spondylarthritis, and of sacro-iliac arthritis is increased.

Side bending in the lumbar region is usually confined to an arc of not more than 40 degrees. In cases of sciatic or sacroarthrogenetic scoliosis, limitation of lateral motion is generally toward the unaffected side. In attempting this motion the pelvis rotates toward the unaffected side. The range and character of both active and passive motions are recorded.

Rotation is limited in the lumbar region, and is usually accomplished by a combination of flexion in the lumbar region, and rotation in the thoracic region. For proper evaluation of the degree of spinal rotation...
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Side bending in the lumbar region is usually confined to an arc of not more than 40 degrees. In cases of sciatic or sacroarthrogenetic scoliosis, limitation of lateral motion is generally toward the unaffected side. In attempting this motion the pelvis rotates toward the unaffected side. The range and character of both active and passive motions are recorded.

Rotation is limited in the lumbar region, and is usually accomplished by a combination of flexion in the lumbar region, and rotation in the thoracic region. For proper evaluation of the degree of spinal rotation
the pelvis must be fixed by the examiner or an assistant. This maneuver is rather important in deciding whether a transverse process of the fifth lumbar vertebra, shown by x-ray study to be impinging on the ilium, is causing pain or not.

The Trendelenberg test for stability of the hip is performed. When standing on one foot, the pelvis normally rises on the opposite side to balance the trunk. If the hip is unstable, the pelvis drops on the opposite side because the weight is taken by tension of the gluteal muscles over the trochanter, and the pelvis tilts until these muscles are taut. One might say, that the pelvis rises on the affected side before an unstable hip can bear weight.

While the patient is erect, the Romberg test should be performed. The feet are held in apposition, and the eyes closed. Swaying of the body, or actual falling, occurs in spinal cord diseases causing dissociation between peripheral and cerebral centers.

The back, gluteal, flank, and lateral thigh muscles are palpated for spasm, flaccidity, tenderness, and fibrosis in the aponeuroses. The findings are checked later, with the patient in the prone and lateral positions.

**Sitting**

Examination in the sitting position should be made with the patient on a backless stool, low enough for the feet to touch the floor comfortably. Note whether weight is borne equally on the two ischial tuberosities. If it is not, the patient is shifted on the stool. If he consistently sits on one tuberosity, and complains of pain when asked to sit squarely on the stool, lumbosacral, sacro-iliac, or coccygeal pathology is suspected.

Compare the contour of the spine with that observed in the standing position, paying particular attention to the shoulders, scapulas, and iliac crests, to kyphosis, lordosis, and tilting of the trunk. In the sitting position the anteroposterior curve in the lumbar region is normally flattened. A sitting kyphosis is an indication of weakness of the lumbar muscles, or of an involuntary attempt to prevent torsion of a tender sacro-iliac joint. The effect of the sitting position on a scoliosis is noted. In scoliosis there is commonly spasm of one erector spinae muscle group, and of the quadratus lumborum. To determine whether the deviation is due to spasm on the concave side of the curve, or to muscle relaxation on the opposite side, lift the patient by his head. If the deviation is due to relaxation, the curvature will disappear. If there is little or no difference in the contour of the spine in the standing and sitting positions, it may indicate a high degree of spasm on one side, or in the absence of spasm, the probability of congenital anomaly such as sacralization of the last lumbar vertebra on the affected side. The hip joint can usually be excluded as a source of pathology if no change in spinal contour is noted between the standing and sitting positions.

**Prone**

Note the deviation of the trunk, and compare with that found in the standing and sitting positions.

Test for psoas, spasm by hyperextending the lower extremity on the unaffected side first, then on the affected side. Pain is felt early when the lumbosacral joints are affected, later when the sacro-iliac joints are involved.

Palpate for areas of tenderness, and compare them with those noted previously. In inflammatory muscle conditions the entire muscle seems affected, and it is difficult to localize a tender spot. Note any spasm, weakness, or immobility of paraspinal, gluteal and lateral thigh muscles. Search for fibrosis and fibrotic nodes or deposits, particularly in the aponeuroses and bellies of involved muscles. Palpate over the course of the sciatic nerves, and note any areas of tenderness. Palpate over the sacro-iliac joints and lumbar arthrodials for tenderness and malposition.

Percussion of the spinous processes, and sacro-iliac joints will usually elicit an increase of pain if there is true joint involvement, and spondylarthrosis and spondylarthritis can be localized. Occasionally pain will be transmitted over the distribution of the involved sciatic nerve. The concurrence of spondylarthrosis at the level of disc herniation probably explains the constant finding of pain on percussion in these cases.
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Sitting

Flexion, extension, and side bending of the spine may be tested in the sitting position, but aside from confirming the corresponding findings in the standing position, little of value can be determined.

The patient is now transferred to the examining table, and told to sit with both lower extremities extended. True sciatic pain makes it impossible for the patient to assume this position. This is known as Bechterew's sign. With the patient in this same position, Linder's sign is elicited if forced passive flexion of the head on the chest increases sciatic pain on the affected side, sometimes throughout the entire distribution of the nerve. When positive, Linder's sign is said to indicate true root pain. The patient then lies supine, the examiner fixes the lower extremities to the table by placing his forearm across the distal portion of the thighs, and instructs the patient to sit up without the aid of his hands or elbows. In the presence of spondylarthritides, sacro-iliac disease, or nerve root inflammation, the pain is often so severe that the patient is unable to sit up. This is known as Lewin's sign.

The toe to mouth test is performed in both the sitting and supine positions. One leg is extended, the patient grasps the opposite foot and attempts to place the great toe in the mouth. In sacro-iliac disease pain is induced on the opposite side, while in lumbosacral disease, pain is felt on the same side.

While in the sitting position the patellar reflexes should be checked and compared.

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The patient is now instructed to hyperextend the lower extremity on one side, without flexing the knee. In the presence of myositis in the gluteal muscles, pain will be felt on the involved side. The procedure is repeated on the other side. This test may help to differentiate sacro-iliac disease from gluteal myositis or injury.

Ely's test is performed with the patient prone, by flexing the knee until the heel approximates the buttoc. In the presence of involvement of the spine or pelvis, the pelvis will rise from the table. A positive Ely sign is an indication of lumbosacral lesion. Spasm of the tensor fascia lata, and contraction of the iliotibial band of the fascia lata, will also produce the same sign, and probably explains the phenomenon. The Nachlas test is performed in the same manner, and is considered positive if pain is produced in the lumbosacral or sacro-iliac joints, and, at times, in the anterior aspects of these joints.

Yeoman's test is performed with the patient prone, knee flexed, one hand of the examiner on the ankle, and the other over the sacro-iliac joint. The hip is hyperextended by lifting the knee from the table, while keeping the pelvis fixed to the table. This maneuver stretches the anterior sacro-iliac ligaments, and elicits pain in the sacro-iliac joint, if it is involved.

Mennell's test is performed in the prone position. The thumb of the operator is placed over the posterior superior spine of the ilium, then slid outward and inward. If pressure over the outer point produces pain, it is due to sensitive deposits in the gluteal aponeurosis. Tenderness over the inner point indicates involvement of the superior ligaments of the sacro-iliac joint.

While the patient is in the prone position check the Achilles tendon, and plantar reflexes, with the knee slightly flexed, and the leg supported by the operator. Compare one side with the other. These findings are compared with the same reflexes elicited with the patient in the kneeling position.

**Lateral Position**

With the patient first on one side, and then on the other, the spasticity of the iliopoas muscles may be checked, and compared with the corresponding findings obtained in the prone position.

The tensor fascia lata should be checked for spasm, tenderness, and fibrosis, and the degree and character of motion in the lumbar spine is tested by passive motion of the lumbar spine with the legs and thighs flexed.

Ober's test is used to determine contracture of the iliotibial band of the fascia lata. With the patient lying on the well side, the buttocks brought well back to the edge of the table, and the shoulders rolled forward in a modified Sim's position, the under hip and knee are half flexed to lock the lumbar spine. The operator places one hand on the pelvis to steady the trunk, grasps the uppermost leg with the other hand, and flexes the knee and hip 90 degrees. The extremity is then abducted widely, and extended until the thigh is in line with the trunk. After maintaining this position for a few seconds, the leg is released, and the extremity allowed to fall. If there is any contracture of the iliotibial band, the thigh will remain more or less passively abducted for a few seconds, or drop directly downward in adduction, before falling forward in flexion. Normally the extremity falls forward in flexion.

**Supine**

There are many signs and tests employed with the patient supine to determine sciatic pain, lumbar, lumbosacral, and sacro-iliac disease. Most of the tests utilize maneuvers which produce clockwise and counter clockwise motion of the sacro-iliac joints, and stretch the sciatic nerve.

The straight leg raising test of Lasègue is performed by elevating the lower extremity with the knee extended. Normally the extremity can be raised from 90 to 90 degrees without pain. The maneuver exerts a pull on the ischial tuberosity by the hamstring muscles, causing a rotary strain on the sacro-iliac joint. If the joint is involved, pain is elicited on the involved side. If there is contraction of the gluteal and piriformis muscles on the opposite side, a contralateral reflex is obtained, and pain is elicited in the opposite joint. Pain may also be felt in the lumbosacral joints, and the patient can often point out the exact location of the pain. Pain in the posterior thigh may be due to shortening of the hamstrings, or to sciatic pain, and is not considered a positive sign.

Bragard's sign is elicited by acute dorsiflexion of the foot at the point pain is felt in the Lasègue maneuver. If the sciatic nerve is affected, there will be an acute exacerbation of pain, but the sacro-iliac region will not be affected.

Goldthwait's sign is elicited by somewhat the same maneuver as Lasègue's maneuver. The knee is flexed, and the thigh is flexed on the abdomen while the opposite extremity remains extended. The flexed knee is now extended slowly. Pain is usually felt in the lumbosacral, sacro-iliac, or posterior hip region when the test is positive. This same maneuver is also known as Kernig's test.

Smith-Peterson's test is performed by repeating the straight leg lifting maneuver, with one hand placed beneath the lumbar region. On lifting the extremity, note the point at which the lumbar lordosis is obliterated, and compare the contracture of the hamstring and gluteal muscles on the two sides.

Patrick's fabere sign is elicited by flexing the hip and knee, placing the external malleolus above the patella of the opposite, extended leg, and forcing the flexed knee down. This maneuver extends the thigh, and puts tension on the Y ligament of the hip joint. This test is useful in differentiating hip joint disease from certain low back diseases. In hip joint disease, pain will be felt early in the maneuver, as the Y ligament is stretched. If low back pain is present, pain will be felt in the involved
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The straight leg raising test of Lasegue is performed by elevating the lower extremity with the knee extended. Normally the extremity can be raised from 80 to 90 degrees without pain. The maneuver exerts a pull on the ischial tuberosity by the hamstring muscles, causing a rotary strain on the sacro-iliaic joint. If the joint is involved, pain is elicited on the involved side. If there is contraction of the gluteal and piriformis muscles on the opposite side, a contralateral reflex is obtained, and pain is elicited in the opposite joint. Pain may also be felt in the lumbosacral joints, and the patient can often point out the exact location of the pain. Pain in the posterior thigh may be due to shortening of the hamstrings, or to sciatic pain, and is not considered a positive sign.

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areas later in the maneuver, as the joint structures are strained. This test is also known as the Sign of Four (flexion, abduction, external rotation, extension).

Laguerre's sign is elicited in somewhat the same manner. The same maneuver is carried out, but the extremity being tested is supported at the ankle by the operator, immediately above, but not touching the extended knee. Little force is transmitted to the lumbosacral arthrodiads, and the test may be used to differentiate between lumbosacral and sacro-iliac disease.

The double straight leg lifting test is used to determine whether upper or lower lumbar structures are involved. As the extended legs are flexed on the abdomen, the point at which pain in the back occurs is noted. The higher the legs are when pain is felt, the lower in the lumbar spine will be the lesion.

Gaenslen's test applies rotation to the sacro-iliac joints. The patient is brought to one side of the table, the opposite lower extremity is flexed and held on the abdomen by the patient. The extremity to be tested is now lowered over the side of the table with the knee flexed, and the thigh hyperextended, placing strain on the sacro-iliac joints. If pain is elicited, the test is positive.

A sciatic tension test is useful to differentiate between hamstring pathology and sciatic pain. The thigh is flexed on the abdomen, and the knee extended until muscle pull begins to resist further motion. Then the foot is dorsiflexed. In the presence of sciatic neuritis, pain increases. Turyn's sign is elicited in the same way except that the great toe instead of the whole foot is dorsiflexed. In true sciatic neuritis, pain is increased.

Lewin's corollary sign is elicited on flexion of the extended leg. The opposite thigh will flex in the presence of lumbosacral and sacro-iliac involvement.

The toe to mouth test is performed as in the sitting position, and the findings are as before.

The Soto-Hall test is helpful in localizing the site of involvement. With the patient supine, one hand steadies the chest, and the head is flexed on the trunk. This causes tension of the supraspinous ligament, and the spinous processes, acting as levers, cause compression of the vertebral bodies, resulting in pain.

Compression and distraction of the anterior superior iliac spines by the operator's hands rarely produces pain unless sacro-iliac pathology is well advanced.

With the patient still in the supine position, the Babinski, Oppenheim, and Gordon signs should be tested for, and ankle clonus, cremaster, and abdominal reflexes may be checked.

Another test which we employ routinely, is the jugular compression test, sometimes known as the Viete, Naffziinger, or Jones test. The jugular veins are compressed by digital pressure, or by inflating a sphygmomanometer cuff about the neck to from 30 to 50 mm. By either of these maneuvers, the intraspinal pressure is increased, causing an exacerbation of pain in the area of radiculitis. Localized or referred pain, and occasionally numbness over the distribution of the involved sciatic nerve may be noted. Occasionally pain will be elicited on sudden withdrawal of pressure. The test is performed with the patient in the supine, sitting, and standing positions.

Rectal examination, both digital and specular, should be made in every case. The presence of any rectal pathology should be noted, and the prostate should receive special attention. The position of the coccyx, its possible relation to the pain complained of, and the status of the anterior sacro-iliac ligaments should be determined. In female patients, vaginal and bimanual examinations are most important, to elicit any pelvic and perineal pathology.

After physical examination is carried out, the physician should be able to direct the attention of the radiologist to the area of involvement with some accuracy. X-ray examination, preferably made before treatment is instituted, includes studies of the lumbar spine and pelvis in the anteroposterior, lateral, and oblique projections. A properly made erect, or weight bearing study will be a great help in determining unequal extremity length and its effect on the pelvis, sacral base plane, and superimposed spine. Additional studies to determine the optimum lift to be used are made by placing lifts of various thicknesses under the foot on the low side, and then making film studies to visualize the effect on the spine. If lift therapy is instituted, the patient should be re-examined in 6 to 8 weeks to evaluate the effectiveness of the lift, and to indicate any necessary adjustments.

The patient who has suffered from repeated attacks of low back pain, with or without sciatic radiation, and who has failed to respond to adequate conservative management, should be examined by a neurologist and orthopedist. If positive findings indicate the possibility of intraspinal, or intra- or extradural irritation or inflammation, x-ray study of the internal configuration of the spinal canal in the lumbar region is indicated. This study is performed following the introduction of a contrast medium in the subarachnoid space. Either air, oxygen, or a radio-opaque oil such as pantopaque or lipiodol is used. The myelograms will practically always outline and localize the lesions causing the irritation. But if no lesions are found, their possibility cannot be entirely eliminated, and repeated examinations should be made, if the symptoms continue, or recur.

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THE UTERINE CERVIX

A STATISTICAL INVESTIGATION AND DISCUSSION OF CERVICAL PATHOLOGY

NORMAN W. AREND
Fellow in Pathology—1943-1945

The records of the Department of Pathology of the Osteopathic Hospital of Philadelphia covering pathology of the uterine cervix were reviewed with the purpose of comparing the findings with those of other hospitals, and similar departments. Furthermore, this comparison was made in an effort to reveal information that might be used to improve treatment or diagnosis.

The period of investigation covered 4 consecutive years and totaled 1168 cases. Twenty-one diseases of the cervix were identified. Table 1 shows the distribution. The specimens were received under varying conditions. Some were biopsies, some were the result of conization, and some were cervical stumps. But the greatest number were cervixes with the uterine corpus attached.

Table 1
Lesions Diagnosed in a Period of Four Years

<table>
<thead>
<tr>
<th>Pathology</th>
<th>no. cases</th>
<th>per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Acute cervicitis</td>
<td>7</td>
<td>0.4</td>
</tr>
<tr>
<td>2. Chronic cervicitis</td>
<td>529</td>
<td>32.6</td>
</tr>
<tr>
<td>3. Cervical polyp</td>
<td>132</td>
<td>8.1</td>
</tr>
<tr>
<td>4. Cervical erosion</td>
<td>298</td>
<td>18.4</td>
</tr>
<tr>
<td>5. Chronic pelvic inflammation</td>
<td>278</td>
<td>17.1</td>
</tr>
<tr>
<td>6. Endometriosis</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>7. Precancers</td>
<td>55</td>
<td>3.4</td>
</tr>
<tr>
<td>8. Leukoplakia</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>9. Syphilis</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>10. Carcinoma</td>
<td>35</td>
<td>2.2</td>
</tr>
<tr>
<td>11. Foreign body granuloma</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>12. Sarcoma</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>13. Myoma</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>14. Obstruction</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>15. Atresia</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>16. &quot;Pin hole os&quot;</td>
<td>22</td>
<td>1.4</td>
</tr>
<tr>
<td>17. Atrophy</td>
<td>42</td>
<td>2.6</td>
</tr>
<tr>
<td>18. Hypoplasia</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>19. Elongation</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>20. Ectropion</td>
<td>2</td>
<td>0.1</td>
</tr>
<tr>
<td>21. Laceration</td>
<td>44</td>
<td>2.7</td>
</tr>
<tr>
<td>22. Undiagnosed</td>
<td>163</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Total: 1624 cases 100.00%

*Correction factor: 1624/456 = 3.56

Total cases: 1168

* Two or more diagnoses made in 456 cases.

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This tube of smooth muscle presents two types of epithelium. The pars or portio vaginalis is covered by stratified squamous epithelium which merges with a nearly similar type of epithelium in the vagina, but ceases abruptly at the external os. The endocervix is lined by simple tall columnar cells which contain large quantities of clear, alkaline mucin above their basal nuclei. This accounts for the term "picket cells." Interspersed between these cells are the racemose glands of the cervix lined with similar cells. At the internal os opening into the uterine cavity, the junction of the endocervix with the endometrium is not as sharp, and the lower columnar epithelium of the endometrium is quite different, and lacking in mucin.

The physiology of the cervix uteri is a subject of much debate. The possibility that cyclical changes take place similar to those of the endometrium was not considered in the past despite mullerian origin. Wollner4 studied the endocervix by means of biopsy and established the existence of cyclical changes to his own satisfaction. Fuhman5 found marked secretory activity in the premenstruum, and Moench6 noted increased solubility of the cervical mucus in the preovulatory phase. However, there are some incongruities which have not been explained to everyone's satisfaction. These are cytological states which are not compatible with hormonal variations.

In an effort to find a clue to the cause of some of these incongruities, 1000 cases included in the group given in table 1 were separated into age brackets from 15 to 75 years of age. The menstrual history was then procured, and each age group arranged to provide as nearly a complete menstrual cycle as possible. Tissue reports of representative sections of each age group were studied, but results were unsatisfactory because the series contained several variables. It was suspected from the first that one variable was hormonal therapy. Another was corpus pathology. But the variable that caused the greatest deviation from the adjudged cyclical status was endocervical infection and inflammation. The control of such factors involves the use of living subjects, and is thus beyond the scope of this paper.

Acute cervicitis was rarely encountered, only 7 cases (0.4 per cent), having been found. Since treatment of purulent cervicitis is non-surgical, this figure should be small in this series, except when initiated by diseases.
THE UTERINE CERVIX

A Statistical Investigation and Discussion of Cervical Pathology

Norman W. Arends
Fellow in Pathology—1943-1945

The records of the Department of Pathology of the Osteopathic Hospital of Philadelphia covering pathology of the uterine cervix were reviewed with the purpose of comparing the findings with those of other hospitals, and similar departments. Furthermore, this comparison was made in an effort to reveal information that might be used to improve treatment or diagnosis.

The period of investigation covered 4 consecutive years and totaled 1168 cases. Twenty-one diseases of the cervix were identified. Table 1 shows the distribution. The specimens were received under varying conditions. Some were biopsies, some were the result of conization, and some were cervical stumps. But the greatest number were cervixes with the uterine corpus attached.

Table 1
Lesions Diagnosed in a Period of Four Years

<table>
<thead>
<tr>
<th>Lesion</th>
<th>no. cases</th>
<th>per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Acute cervicitis</td>
<td>7</td>
<td>0.4</td>
</tr>
<tr>
<td>2. Chronic cervicitis</td>
<td>529</td>
<td>32.6</td>
</tr>
<tr>
<td>3. Cervical polyp</td>
<td>132</td>
<td>8.1</td>
</tr>
<tr>
<td>4. Cervical erosion</td>
<td>298</td>
<td>18.4</td>
</tr>
<tr>
<td>5. Chronic pelvic inflammation</td>
<td>278</td>
<td>17.1</td>
</tr>
<tr>
<td>6. Endometriosis</td>
<td>1</td>
<td>.06</td>
</tr>
<tr>
<td>7. Precancerous</td>
<td>55</td>
<td>3.4</td>
</tr>
<tr>
<td>8. Leukoplakia</td>
<td>1</td>
<td>.06</td>
</tr>
<tr>
<td>9. Syphilis</td>
<td>1</td>
<td>.06</td>
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<tr>
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<td>456</td>
<td></td>
</tr>
</tbody>
</table>

* Correction factor

Total cases 1168

* Two or more diagnoses made in 456 cases.

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Acute cervicitis was rarely encountered, only 7 cases (0.4 per cent), having been found. Since treatment of purulent cervicitis is non-surgical, this figure should be small in this series, except when initiated by diseases
of the corpus. In 4 cases the infection was non-specific. Distortion of
the uterine corpus by neoplasms was a predisposing factor in all 4 cases.
Table 2 gives the age incidence and type of tumor. In 3 cases, gonorrhea
in the form of acute diffuse inflammation of the internal female genitalia
was the cause of the acute cervicitis, and treatment by surgical interfer­
ence was incorrect. In table 2 the age incidence for this portion of the
group is seen to overlap that of the non-specific cases.

<table>
<thead>
<tr>
<th>Table 2</th>
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<tbody>
<tr>
<td>Acute Cervicitis</td>
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<tr>
<td>A. non-specific</td>
</tr>
<tr>
<td>Case</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
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<td>3</td>
</tr>
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<td>4</td>
</tr>
<tr>
<td>B. specific</td>
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<tr>
<td>Case</td>
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<td>------</td>
</tr>
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<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

Chronic cervicitis was the largest group of the series, containing 529
diagnosed cases (32.6 per cent). Of these cases, 12 presented in addi­
tion, large cervical lacerations. This is one causative factor. Smaller
lacerations were not recorded because to do so is impractical. But cervical
washing at childbirth no doubt accounts for many of these cases. Abortion
is frequently followed by infection which lodges in
lacerations were not recorded because to do so is impractical. But cervical
maintains disease of the external portion. Records of this were not avail­
able. Probably infectious organisms introduced at interference, by un­
sterile douches, or by instrumentation, account for another small group.
Gonorrhea may have caused a small percentage, while one case was due
to the malposition of procidentia.

The average age of individuals having chronic cervicitis was 43.9
years, ranging from 18 to 74. This points to other causation. Curtis7
quotes Saines as authority for stating that the average age of the meno­
pause is 47.1 years. Crossen and Crossen9 give the age of menopause as
from 44 to 47 years. It can therefore be deduced that either an excessive
production of estrogenic hormones, or prolonged excessive menstruation,
common during the period of instability preceding the menopause, is a
cause of the hypersecretion of mucous with the resultant maceration of
tissues and subsequent infection. To this group, which might be called
hormonal, must be added those dyscrasias produced by neoplasms of the
ovary. Cases of generalized endocrine disturbance will be considered later.

This group of chronic cervicitis includes cases which undoubtedly
could have been given relief by conservative treatment if hysterectomy had
not been indicated, either by the pathology of the corpus itself, or because
this pathology predisposed the cervix to infection. With the advances of
hormone therapy, adequate obstetrical repair, and postpartum treatment,
the writer feels that a great many of these cases might have been spared
major surgery. It is true that a fraction of these diagnoses was made
upon specimens submitted following conization or cautery, but it is felt
that this fraction is far too small to affect the opinion expressed.

Involved in the problem of chronic inflammation is the formation
of cervical polyps. Just as extensive cervicitis is accompanied by cysts
due to hyperplasia of hypersecreting glands, and lack of drainage, so too,
polypoid overgrowth of hyperplastic mucosa occurs. One hundred thirty­
two cases were found (8.1 per cent). Usually 1 or several polyps were
submitted separately. It is at once seen that unless the products of cauter­
ization were discarded, or that other conservative measures were used,
the cause of the disease was not treated. The youngest individual present­
ing polyps was 25, the oldest 69, with an average age of 47.3 years. This
hinds at chronic inflammation of years duration, there being a difference
of 3.4 years between chronic cervicitis and complicated cervicitis. This
agrees with findings of the gynecologists.

Cervical erosion is considered an added complication in chronic cervi­
citis. Curtis7 maintains that these areas lose their epithelial covering
through action of the discharge. Boyd,8 More,19 Novac,2 and others, op­
pose claiming that the simple columnar cells of the endocervix grow under,
and replace the stratified squamous cells which slough. This latter view
is also held by our department, an uncovered stroma having very rarely
been found. The excessive hyperplasia in the form of tiny papillary
sprouts, found in most of our 289 cases, also supports this view.

Erosion thus makes up 18.4 per cent of the cases diagnosed. The
youngest patient involved was a pregnant girl 15 years old, from whom
the entire uterus was removed upon the suspicion of choriocarcinoma.
The two oldest women were 75 years of age. The average age was 40.1
years. There is the possibility that the erosion in the pregnant girl might
have been one of the so-called congenital erosions. If the view that there
is an interplay between the squamous epithelium of the outer cervix, and
the columnar epithelium of the cervical canal, is correct, then, since healing
eventually ensues in most cases, the age incidence should be lower than
for chronic cervicitis and cervical polyps. Such is the case, for the aver­
age of 40.1 years is 3.8 years younger than our incidence for chronic
cervicitis, and 7.2 years younger than for cervical polyp. The 75 year old
individuals represent 0.67 per cent of the group of 289 cases, and repre­
sent the small portion of erosions which may fail to heal.

It is lamentable that some of the specimens included in the above
group were obtained by total hysterectomy because of fear of cancer of the
cervix. It is felt that careful clinical examination, supported by bi­
opsy, and followed by irradiation of the endocervical infection, would have
relieved symptoms and saved the many inconveniences of surgery. Hap­
of the corpus. In 4 cases the infection was non-specific. Distortion of the uterine corpus by neoplasms was a predisposing factor in all 4 cases. Table 2 gives the age incidence and type of tumor. In 3 cases, gonorrhea in the form of acute diffuse inflammation of the internal female genitalia was the cause of the acute cervicitis, and treatment by surgical interference was incorrect. In table 2 the age incidence for this portion of the group is seen to overlap that of the non-specific cases.

Table 2

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Tumor</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>48</td>
<td>myomata</td>
</tr>
<tr>
<td>2</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>66</td>
<td>adenocarcinoma</td>
</tr>
<tr>
<td>4</td>
<td>42</td>
<td>myomata</td>
</tr>
<tr>
<td>5</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>43</td>
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</tr>
<tr>
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or infection. (A summary is found in table 3.) Thirty-five cases were found in which inflammation due to hormonal imbalance was operating. Since estrin is involved, one might consider that this group supports the theory of chemical carcinogenic agents. These however are only initiating circumstances of a natural phenomenon. The reader is referred to Boyd's or Ewing's discussion of the precancerous lesion. The average age lies in middle life, in the fifth decade.

<table>
<thead>
<tr>
<th>Lesion</th>
<th>No. Cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic cervicitis</td>
<td>21</td>
<td>38.2</td>
</tr>
<tr>
<td>Cervical polyp</td>
<td>5</td>
<td>9.1</td>
</tr>
<tr>
<td>Cervical erosion</td>
<td>6</td>
<td>10.9</td>
</tr>
<tr>
<td>Chronic diffuse inflammation</td>
<td>12</td>
<td>21.8</td>
</tr>
<tr>
<td>Laceration</td>
<td>3</td>
<td>5.5</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>85.5</td>
</tr>
<tr>
<td>B. Occurring alone</td>
<td>8</td>
<td>14.5</td>
</tr>
<tr>
<td>Grand total</td>
<td>55</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Leukoplakia of the cervix is considered by some as an early precancerous lesion. One case was diagnosed in this series in a woman 51 years old. Serology was undetermined. Novac maintains that these are differentiation anomalies. Curtis prefers to include the condition with syphilis, but mentions precancerous changes. Since there was but a single case in this group evidence in any direction is inadequate.

Ulceration of the cervix due to late syphilis was found in one woman 53 years old. The percentage is 0.06, or, if leukoplakia is considered to have a syphilitic basis, 0.12 per cent. This agrees with the findings of Stokes, Beerman, and Ingraham. Gummas are the usual lesions, exhibiting their granulomatous nature beneath an area of ulceration. Other infectious granulomas were not encountered. One case was peculiar in that a foreign body granuloma was found to have developed about suture material.

Frank cancer was found in 35 cases, or 2.2 per cent of the total. The youngest patient was 31 years old, the oldest 70. The average age was 52.2 years. This agrees with the statement of Douglas and Faulkner that more than two thirds of the cases occur between 35 and 55, and that cancer is rarely seen below the age of 30. The same authors also state that about 99.0 per cent of these are of the epidermoid type. (Crossen and Crossen found 89.0 per cent.) In this series 87.5 per cent were epidermoid in nature, and 12.5 per cent were adenocarcinomas.
pily this fraction is small, but nevertheless is large enough to be considered. Many of these erosions were found in uteri requiring surgery because of corpus pathology, many others were discovered in biopsies, or fragments from cautery, and many, the remainder, were associated with chronic diffuse inflammation of the internal female genital organs.

It is our concept, in agreement with Goodall and standard nomenclature, that chronic diffuse inflammation of the internal female genitalia covers those inflammatory states which may be traced to endocrine asynchronism, and includes peritoneal sclerosis, cystic ovarian sclerosis (all these being components of one disorder), the hypertrophies, and other allied disorders. The cervix in this disease is enlarged due to an increase in the fibromuscular elements. Round cell infiltration is found throughout the cervix, but especially beneath the intact mucosa. Glands may be dilated with retained debris due to contraction of the fibromuscular addition.

Prevalence of this disease (listed as chronic pelvic inflammation in table 1), is shown by the large group of 278 cases, representing 17.1 per cent, or approximately one sixth of the total. The youngest individual involved was 22 years old, and the oldest was 71. The average age was 39.0. All these individuals were sexually mature, but it was observed that many had either never borne children, or, in later years, had been unable to conceive. Sterility is thus one aspect of chronic pelvic inflammatory disease. This is further evidence of severe interhormonal imbalance.

Chronic diffuse inflammation of the internal female genital organs is a relatively new disease classification, too new for the more conservative text books, so many facets of the idea are completely unexplored. This is particularly true of treatment, which has been unsuccessful, if not actually neglected. In consequence these patients suffer until the internal genital organs have been totally removed. Relief is then obtained. It would appear to the writer that such treatment is drastic to the point of being inexcusable. This is not stated as an attack upon the surgeon, but rather to stimulate thought and study of a problem which prevents women from having children during their reproductive period of life.

Endometriosis is considered by Goodall to be produced by the same endocrine disharmony. In this series only 1 case of cervical endometriosis was found, in a young woman of 24. It has been rarely encountered by other departments. Confusion with a precancerous lesion is possible, but with care is not likely.

Precancerous lesions of the cervix were found in 55 cases (3.4 per cent). Any lesion that was suspicious from the standpoint of cellular dedifferentiation was considered a precancerous lesion. No attempt was made to sort out the "benign" lesions as interpreted by Novac, since it was felt better to err on the safe side. The youngest individual affected was 23 years of age, the oldest 70, the average 41.2 years. It is significant that most of these lesions were superimposed upon chronic inflammation or infection. (A summary is found in table 3.) Thirty-five cases were associated with chronic infection. This would support the theory of chronic irritation in the development of carcinoma. Twelve cases were found in which inflammation due to hormonal imbalance was operating. Since estrin is involved, one might consider that this group supports the theory of chemical carcinogenic agents. These however are only initiating circumstances of a natural phenomenon. The reader is referred to Boyd's or Ewing's discussion of the precancerous lesion. The average age lies in middle life, in the fifth decade.

<p>| Table 3 |</p>
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<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Occurring in Cervices Infected or Inflamed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lesion</td>
<td>no. cases</td>
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Frank cancer was found in 35 cases, or 2.2 per cent of the total. The youngest patient was 31 years old, the oldest 70. The average age was 52.2 years. This agrees with the statement of Douglas and Faulkner that more than two thirds of the cases occur between 35 and 55, and that cancer is rarely seen below the age of 30. The same authors also state that about 99 per cent of these are of the epidermoid type. (Crossen and Crossen found 89 per cent.) In this series 87.5 per cent were epidermoid in nature, and 12.5 per cent were adenocarcinomas.
In the epidermoid cancers, grading by Broder's classification deviated from the expected pattern to some extent. Usually 15.0 per cent are Grade I, 60.0-70.0 per cent are Grades II and III, and 15.0 per cent are Grade IV. Table 4 shows the gradings in which this information was given, and percentages in those cases. The variation in incidence is undoubtedly due to the small number of cases in our series.

<table>
<thead>
<tr>
<th>Grade</th>
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<tr>
<td>I</td>
<td>3</td>
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Adenocarcinoma may also be graded in this manner, with the same distribution of grades. As if to prove the point above, all four cases of adenocarcinoma in the series were Grade II or III. With it plainly understood that there are too few cases for reliability, an observation will be made. Adenocarcinoma usually affects younger individuals. It was noted that the average age incidence for epidermoid carcinoma was 51.7 years, whereas the average age for adenocarcinoma of the cervix was 35.5. The age differentiation is supported by cases mentioned by Cutler and Buschke.16 Neither extent of metastasis, nor local infiltration were considered. Local eosinophilia was observed, but no correlation with infiltration was made. Gill,17 who feels that the presence of eosinophilia in the stroma of these tumors represents a better than usual resistance to spread, found 7.7 per cent in 309 cases of epidermoid carcinoma. Only 1 or 2 of the cases in our series could have been rated, according to his subdivision, as "one plus."

One case of sarcoma of the cervix was found in a woman aged 32. This rarity resembled sarcoma botryoides. But as only about 68 cases have been reported in the literature, the classification of this specimen may properly be questioned. Is it authentic sarcoma botryoides of the cervix, or did it arise elsewhere in the uterus? Its polyoid nature, as well as the age incidence, favors authenticity.

There were only 2 cases of benign tumor in the series. Both were fibromyomas, and both individuals were 53 years old. True cervical "fibroids" are said to make up only 8.0 per cent of the total number, but the 0.11 per cent found in this series is rather low, for it is judged that many more than 184 cases of myoma of the corpus uteri were seen associated with the 1168 cervices. As a matter of interest, both tumors were interstitial, with some degree of obstruction.

Distortion of the cervix with complete obstruction was found in 1 case in which numerous "fibroids" distorted the corpus uteri to such an extent that the cervix was involved.

Atresia of the cervix was found in 1 case due to scarring. Cautery was the most likely causative agent. This low figure is encouraging.

Twenty-two cases (1.4 per cent) showed a nulliparous external os which was further decreased in size by the scarring of chronic inflammation. To these the name "pin-hole" was given. The youngest woman was 31, the oldest 59 years old, the average was 44.9.

Marked cervical atrophy was found in 42 cases making up 2.6 per cent. Surprisingly, one case of marked atrophy was found in a woman 40 years old. This illustrates the wide variation that may occur between physiologic and chronologic age. Less surprisingly, the average was 56.6.

Removal of corpus pathology was usually the reason for hysterectomy, the cervix being small in each instance.

Marked hypoplasia was found in 1 instance. The size of the uterus in this 29 year old woman was appropriate to a child. The cervix was proportionate, and quite short.

In 7 cases (0.4 per cent), the cervix was greatly elongated. In this group the youngest patient was 30, and the oldest 66, the average age was 51.6. The cervices were removed coincidentally, and the anomaly observed.

Elongation of the lips of the cervix, or ectropion, due to laceration, was seen in only 2 cases (0.11 per cent). One was in a female 22 years old, the other was a neglected laceration and eversion in a woman 63 years of age. These were the only unprepared bilateral lacerations seen. Forty-four other cases of laceration of lesser degree were listed, aggregating 2.7 per cent of the total number of cases. Distortion was great in many of the cervices. Laceration extending into the fornix or vagina was not rare. The individuals involved varied in age from 33 to 75. The average age was 44.6 years, thereby indicating complete nonchalance of physicians in care of the cervix immediately following delivery, and subsequently. Over half of these cases were the site of other pathology, to which the cervix was probably predisposed by unprepared laceration.

As a whole, the findings reported here were comparable with those of other hospitals and departments. If further statistical studies are to be of greater scope and value, better hospital records and case histories are needed, especially on requisitions for histopathology. If this is accomplished, the records of the Department of Pathology should provide a wealth of material.

Summary and Conclusions

The records of the Department of Pathology of the Osteopathic Hospital of Philadelphia were examined for information concerning pathology of the cervix uteri.
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Summary and Conclusions

The records of the Department of Pathology of the Osteopathic Hospital of Philadelphia were examined for information concerning pathology of the cervix uteri.
The period of investigation covered four years, and 1168 cases are discussed, from which the following conclusions are drawn:

1. Cyclical variations (physiologic) in the uterine cervix can not be studied from the records because of lack of control of several variables.
2. Acute cervicitis was occasionally mismanaged.
3. The records suggest that chronic cervicitis was frequently neglected, and occasionally treated too radically.
4. The average age of patients in this series from whom cervical polyps were removed suggests that they developed as a result of long standing chronic inflammation which had been neglected.
5. Erosion was occasionally treated by hysterectomy before biopsy was performed.
6. Satisfactory treatment for chronic diffuse inflammation of the internal female genital organs is unknown.
7. Most precancerous lesions occur in cervices infected or inflamed.
8. Adenocarcinoma of the cervix in this series occurred in younger individuals than did epidermoid carcinoma.
9. Proper cervical cauterization was the rule.
10. Repair of cervical laceration was occasionally neglected.
11. Improved hospital records are needed.

### Bibliography


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**THE PHYSIOLOGIC BASIS FOR MANIPULATIVE THERAPY IN THE TREATMENT OF KIDNEY DISEASE**

**Harold J. Strick**

The editorial board of Osteopathic Medicine considers it desirable to publish undergraduate papers from time to time. The following paper was recommended for publication by the head of the Department of Urology.

**Purpose**

The osteopathic approach to treatment of diseases of the kidney has within its armamentarium manipulative therapy in addition to the surgical and medical phases of treatment. In the past thirty years, vast amounts of literature have been devoted to the surgical and medical aspects of this topic with a striking paucity of information concerning the value of manipulative therapy in kidney disease. The very fact that so little has been written on this topic makes it extremely difficult for one to review the results of the men who have been employing manipulative therapy in the treatment of kidney disease. The purpose of this paper is to indicate the anatomicophysiological basis of manipulative therapy in the treatment of kidney disease with the hope that those who have employed this method of treatment will be stimulated to report the results of their work, and that those who have not seen fit to use manipulative therapy will realize the rationality of this approach.

In past decades medical research has been devoted to the structural pathologic changes in disease. It is only in recent years that interest has been aroused in the pathologic physiology of disease processes. Pathologic physiologic change has ever been an elusive and undefinable entity. For this reason, too little emphasis on this aspect of disease was the rule, and yet a clear understanding of pathology is incomplete without it.

In order for one to appreciate the osteopathic concept, a clear understanding of basic neurophysiology is essential. The following discussion will therefore deal with this basic consideration first and then discuss the osteopathic approach with special reference to the kidney.

**Basic Neuromuscular Physiology**

An over-all view of the nervous system indicates that there are essentially three fundamental elements of structure and function involved. 1. An afferent system of neurons whose function it is to convey impulses to the central nervous system (cord and brain). 2. A great system of association neurons interweaving between the afferent fibers and the efferent system. 3. An efferent group of fibers which convey the impulses to the peripheral structures (visceral and somatic areas).
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These components are involved in the somatic and visceral reflexes of the body, and the complete understanding of their mechanism is essential for comprehension of reflexes which operate between visceral and somatic zones of the body.

The spinal nerve is formed by the union of the posterior or sensory root, and the anterior or motor root. The posterior root carries the afferent system of fibers from the somatic structures to the spinal cord. The cell bodies of these afferent fibers are located in the dorsal root ganglion. The fibers reaching the cord via this route then divide into branches which have synaptic relations with cell bodies of the association neuron system which transfers the impulses to the anterior horn of the cord. The axons of the anterior horn then proceed outward via the anterior (motor) root to be distributed to the somatic structures and produce the response initiated by afferent stimulation. The above is an over-all simplification of the reflex mechanism, for it would only confuse the issue to discuss the ascending fibers of the posterior column, and the descending pyramidal and extra-pyramidal fibers which influence the anterior horn cells. In the simple mechanism described we have merely indicated the pathway of an impulse arising in a peripheral somatic zone and producing effect on a somatic structure. This has been referred to as a somatosomatic reflex.

The reflex mechanisms of the viscera involve a similar three neuron set-up in which, however, the anatomic components differ somewhat in their location. The afferent fibers from the viscera differ from the somatic afferents in that they do not travel in the spinal nerves, but in the autonomic nerves to reach the dorsal root ganglia where they too, have their cell bodies. The connecting link between an autonomic nerve and the dorsal root ganglion is a ramus communicans. The arrangement in the cord of an afferent fiber from the viscera also differs from that of a somatic afferent. The cell bodies of association (preganglionic) neurons are located in a specialized area of the cord known as the intermediolateral column. The peripheral processes of these association neurons leave the cord in company with the somatic efferents, but soon separate from the somatic fibers and enter the autonomic system via white rami. After they enter the autonomic system they synapse with cells of the autonomic effector neurons, located in various ganglia outside the cord.

The two mechanisms described operate in their respective zones under normal conditions, but a transfer of impulses from visceral to somatic, and from somatic to visceral zones occurs under abnormal conditions, and accounts for the viscerosomatic and somatovisceral effects which will be described. There are four possible reflex activities. 1. Somatosomatic, in which impulses arise and end in the somatic zone. 2. Viscerosomatic in which impulses arises in the viscera exert their effect on somatic structure. 3. Viscerotopic, in which impulses arising in somatic structures exert their effect on visceral structures. 4. Viscerosomatic in which impulses arising in the viscera exert their effect on somatic structure.
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In support of the latter two types of reflex, Pottenger has this to say, "Sensory, more properly afferent, fibers are found, along with the motor sympathetic fibers, in all structures; and, when irritated carry impulses centralward where they are transferred to other neurons through which, if the stimuli are sufficiently strong, or if they are repeated sufficiently often, they disturb normal physiologic equilibrium in other structures producing symptoms and signs of disease. These disturbances may be produced in either the skeletal structures, skin, subcutaneous tissue and muscles or in other viscera. Every organ and tissue may generate stimuli which, if sufficiently strong, result in reflex action in the skeletal structures which stand in reflex relationship to them through the spinal nerves which supply them and vice versa." Evidence of the viscerosomatic reflex is unquestionable. Pottenger enunciates it as a basic physiologic law when he says, "Every important internal viscus is so connected in the central nervous system that it is able to produce reflexes through afferent fibers which course with the sympathetics and efferent spinal nerves, in definite skeletal structures; and, if acutely inflamed, should show motor reflexes and altered sensation (pain), and if chronically inflamed, trophic changes. Therefore, spasm of muscles, altered cutaneous sensation and degeneration of muscles, subcutaneous tissue and skin, in areas having definite limited segmental innervation become important diagnostic phenomena." This contention is further supported by Hunter, Carlson, and MacKenzie.

The somatovisceral reflex has been open to question, but we cannot pass lightly over the work of Muller and his co-workers who have shown the effects of somatic stimulation on visceral structures. Muller injected foreign protein in the dermal structures and showed that immediate changes occurred in visceral tissues, increased permeability of tissues, increased lymphatic supply and leukocytosis.

Before leaving this discussion of nervous physiology, we wish to point out one other significant fact. Experimentation has demonstrated that the neuron itself is indefatigable. The synaptic junction between neurons, however, is apparently susceptible to fatigue factors which include oxygen lack, carbon dioxide excess, lactic acid, and generally impaired circulation. This factor is important to bear in mind, since it forms an integral part of the theory to be elaborated later on. With this brief discussion of neurophysiology we will now proceed to the muscular components of reflex activity.

The maintenance of muscle tonus is dependent upon the myotatic or stretch reflex. There are several specialized receptors concerned in this reflex, the proprioceptor muscle spindles within the muscle fibers themselves, Golgi's corpuscles located in tendons which have a low threshold to tension, and the pacinian bodies located on joint surfaces. A self-sustaining mechanism operates. Muscle tonus is a tension stimulus, tension increases muscle tonus and so the cycle operates to maintain the postural tonus of the organism. This myotatic reflex is most predominant in the
The Osteopathic Concept

Examination of the posterior spinal muscles very often reveals the presence of a hard ropy musculature which is interpreted as a greater degree of muscular tonus. The actual muscles involved may be any one or group of intrinsic muscles of the back which include, splenius capitis, splenius cervicis, sacrospinalis, semispinalis, multifidus, rotatores, interspinales and intertransversarii. The muscles with increased tonus are also somewhat tender on palpation, and an alteration in related joint mechanics is usually, but not necessarily present. There are certain known factors which can increase the localized muscular toxicity. These factors are as follows: 1. stimulation via the viscerosomatic reflex, 2. alteration in joint mechanics, such as occurs in subluxations and dislocations, 3. trauma, strain, sprain, and exposure resulting in local myositis. Whatever the primary cause, there are two important results: 1. further increase in muscle tonus, via somatosomatic reflex, 2. effect upon the viscera due to the somatovisceral reflex. It is the latter effect with which we are primarily concerned at the moment.

Pathologic change in the viscera may be primary in exciting this cycle of events, or secondarily occur as a result of this cycle which had its origin in the somatic sphere. In any event interruption of the cycle is essential.

Clinical evidence indicates that a stretching of the muscle by a right angle or parallel force will result in an ultimate reduction of the muscle tonus and hence interrupt the cycle. The mechanism of interruption of the reflex cycle is not entirely understood. Muscle fatigue is not likely. Adaptation of receptors is also a remote possibility since these receptors have little, if any, adaptive facility. Fatigue of the neuron is doubtful due to its extremely low metabolic rate. Synapse fatigue is the most probable explanation due to a temporary exaggeration of the myotatic reflex. In summary then, to interrupt this cycle, the synapses of the reflex should be fatigued by an outside overstimulation (i.e. soft tissue manipulation).

The Above Principles as Related to the Kidney

The sympathetic nerve supply to the kidney has its ganglion cells in the celiac and aorticorenal ganglia. The preganglionic fibers arise from the visceral efferent cells in the spinal cord from the sixth thoracic to the upper lumbar segments. The maximum innervation comes from the tenth, eleventh, and twelfth thoracic segments. Both the afferent fibers from the kidney, and the efferent preganglionic fibers travel over the splanchic nerves. The renal plexus, which springs from the celiac plexus, carries the nerve fibers to the kidney. The renal plexus is located on the renal artery, and enters the kidney with the artery, traveling along its course to the smallest arteriole and capillary. The afferent fibers are in relation with the renal pelvis, capsule and blood vessels. The secretion of urine is directly dependent upon the amount of blood passing through the kidney. The vasomotor control, which is chiefly vasoconstrictor in nature, is mediated over the splanchnics, with cells of origin in the celiac and aorticorenal ganglia. That the secretory activity of the kidney is subject to reflex influence of extrarenal source, is a generally accepted fact. Pottenger has demonstrated the somatic association of kidney innervation on many occasions. In 1912 he described lumbar spasm as a result of kidney infiltration by tuberculosis. He also indicates that this reflex is present in other, non-tuberculous, inflammatory conditions. Pottenger's work has been substantiated by many others, including Goldthwait, Brown, Swaim and Kuhns. All of these authors have emphasized the somatic effect of visceral lesions, but have fallen short in an analysis of the effect of somatic lesions on the viscera. Mennell has approached the topic somewhat hesitantly. "During cystoscopy, urine may be seen to pass from the mouth of the ureter into the bladder in response to 'kneading' of the kidney. . . . Changes in the amount and proportion of the solids excreted in the urine as the result of general massage . . . have been demonstrated by many observers." Goldthwait appreciates the effect of faulty body mechanics on disturbed kidney function. He indicates that chronic passive congestion, hydronephrosis, orthostatic albuminuria, urinary stasis, stones or infection may be possible outcomes, since the function of the kidney is dependent on full blood and nerve supply. He, however, attributes these effects to ptosis rather than to the effects of reflex activity, an omission which seems to give but half the story.

From the foregoing discussion it would seem that manipulative therapy has its applications in the treatment of surgical kidney disease both pre and postoperatively. Preoperatively in an attempt to interrupt the cycle of events which further interferes with normal kidney function, and postoperatively to aid in the restoration of function after surgical trauma. A patient confined to bed, more often than not, will demonstrate muscle spasm in the thoracic and lumbar areas as a result of change in postural relationships. Knowing the effects of this increased muscle tonus on the viscera, an attempt at relaxation of the involved musculature would seem to be an important part in this therapy.
anti-gravity muscles of the body. The posterior spinal muscles are a prime example, and this factor plays an important part in the osteopathic concept. The myotatic reflex is segmental in origin, but also involves inter-segmental and higher convergences from the vestibular nuclei, and the cerebrum. For the purpose of clarity our discussion will include only the segmental relation. Increased muscle tonus, from any cause, will increase local tension, and since tension is a further stimulus, the tonus of the muscle will be still further increased. But the effect of increased tonus does not necessarily end here. If the number of afferent impulses set up by the receptors involved in the myotatic reflex is high enough, nerve cells in the intermedio-lateral cell column will be influenced, and internal organs such as the kidney will be affected by the somatovisceral reflex set up. The pathway for this effect has already been indicated.

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The Above Principles as Related to the Kidney

The sympathetic nerve supply to the kidney has its ganglion cells in the celiac and aorticorenal ganglion. The preganglionic fibers arise from the visceral efferent cells in the spinal cord from the sixth thoracic to the upper lumbar segments. The maximum innervation comes from the tenth, eleventh, and twelfth thoracic segments. Both the afferent fibers from the kidney, and the efferent preganglionic fibers travel over the splanchnic nerves. The renal plexus, which springs from the celiac plexus, carries the nerve fibers to the kidney. The renal plexus is located on the renal artery, and enters the kidney with the artery, traveling along its course to the smallest arteriole and capillary. The afferent fibers are in relation with the renal pelvis, capsule and blood vessels. The secretion of urine is directly dependent upon the amount of blood passing through the kidney. The vasomotor control, which is chiefly vasoconstrictor in nature, is mediated over the splanchnics, with cells of origin in the celiac and aorticorenal ganglia. That the secretory activity of the kidney is subject to reflex influence of extrarenal source, is a generally accepted fact. Pottenger has demonstrated the somatic association of kidney innervation on many occasions. In 1912 he described lumbar spasm as a result of kidney infiltration by tuberculosis. He also indicates that this reflex is present in other, non-tuberculous, inflammatory conditions. Pottenger's work has been substantiated by many others, including Goldthwait, Brown, Swaim and Kuhns. All of these authors have emphasized the somatic effect of visceral lesions, but have fallen short in an analysis of the effect of somatic lesions on the viscera. Mennelli has approached the topic somewhat hesitantly. "During cystoscopy, urine may be seen to pass from the mouth of the ureter into the bladder in response to 'kneading' of the kidney. . . . Changes in the amount and proportion of the solids excreted in the urine as the result of general massage . . . have been demonstrated by many observers." Goldthwait appreciates the effect of faulty body mechanics on disturbed kidney function. He indicates that chronic passive congestion, hydronephrosis, orthostatic albuminuria, urinary stasis, stones or infection may be possible outcomes, since the function of the kidney is dependent on full blood and nerve supply. He, however, attributes these effects to ptosis rather than to the effects of reflex activity, an omission which seems to give but half the story.

From the foregoing discussion it would seem that manipulative therapy has its applications in the treatment of surgical kidney disease both pre and postoperatively. Preoperatively in an attempt to interrupt the cycle of events which further interferes with normal kidney function, and postoperatively to aid in the restoration of function after surgical trauma. A patient confined to bed, more often than not, will demonstrate muscle spasm in the thoracic and lumbar areas as a result of change in postural relationships. Knowing the effects of this increased muscle tonus on the viscera, an attempt at relaxation of the involved musculature would seem to be an important part in this therapy.
In the past, several writers have indicated the rationality of this approach. In 1900, McConnell had shown that bony lesions of mid and lower dorsal regions are very often followed by pathologic lesions of the kidney, and he further indicated the value of manipulative therapy in both the medical and surgical kidney. In 1913, Deason stated, "It has been shown that bony lesions of lower thoracic and upper lumbar regions produced, artificially, in normal animals affect the normal function of the kidney. Clinically, many cases of kidney trouble have been demonstrated to be due to similar lesions." Deason also cites the experiments of Pengra and Alexander which have conclusively shown that secretion of the kidney can be increased by stimulating treatment applied to the eleventh and twelfth thoracic segments. More recently, Pritchard and Brigham have written about the efficacy of manipulative therapy in surgical disease, and Sterrett has indicated the value of manipulative therapy in surgical disease. Reporting in 1942, he said, "Osteopathic aftercare greatly diminishes operative risk and number of hospital days." In general, however, the literature has been conspicuously deficient in accounts relating to the use of manipulative therapy in urological disorders. Undoubtedly its use has been more extensive than the literature would have us believe, but statistical survey requires greater cooperation on the part of those who have the material available.

In conclusion, it is hoped that this brief discourse on the physiologic basis for manipulative therapy in kidney disease will stimulate further investigation along these lines.

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ENDOMETRIOSIS OF THE GROIN

Otterbein Dressler
Professor of Pathology

Few pathological processes are at once as intriguing and controversial as endometriosis. For more than fifty years these lesions have been described widely distributed throughout the body, and with equally divergent explanations for their mechanisms of production. The purpose of reporting this case is dual: first, to have it find its way into the literature, second, to intimate in retrospect how a preoperative diagnosis might be accomplished.

Patient: Miss E. H.
Age: 29
Height: 60 inches
Weight: 130 lbs
Occupation: Typist-clerk

Chief Complaint: A mass in the groin first noticed 1 1/2 years before operation. She was not conscious of the mass except just before and for the first few days of the menses. At the times noted the mass became larger and was quite painful. There was a gradual increase in the size of the mass, and proportional increase in pain.

Physical Examination: Upon examination there were no abnormal findings except this mass which upon palpation was thought to be an enlarged lymph node. Because it was painful, and was increasing in size, its removal was advised.
In the past, several writers have indicated the rationality of this approach. In 1900, McConnell had shown that bony lesions of mid and lower dorsal regions are very often followed by pathologic lesions of both the medical and surgical kidney. In 1913, Deason\(^6\) stated, "It has been shown that bony lesions of lower thoracic and upper lumbar regions produced, artificially, in normal animals affect the normal function of the kidney. Clinically, many cases of kidney trouble have been demonstrated to be due to similar lesions." Deason\(^6\) also cites the experiments of Pengra and Alexander which have conclusively shown that secretion of the kidney can be increased by stimulating treatment applied to the eleventh and twelfth thoracic segments. More recently, Pritchard\(^7\) and Brigham\(^8\) have written about the efficacy of manipulative therapy in surgical disease, and Sterrett\(^25\) has indicated the use of manipulative therapy after prostatectomy. The amount of residual urine, and the duration of postoperative hospitalization have been definitely diminished with this adjunctive form of therapy. Reporting in 1942, he said,\(^26\) "Osteopathic aftercare greatly diminishes operative risk and number of hospital days." In general, however, the literature has been conspicuously deficient in accounts relating to the use of manipulative therapy in urological disorders. Undoubtedly its use has been more extensive than the literature would have us believe, but statistical survey requires greater cooperation on the part of those who have the material available.

In conclusion, it is hoped that this brief discourse on the physiologic basis for manipulative therapy in kidney disease will stimulate further investigation along these lines.

References


ENDOMETRIOSIS OF THE GROIN: REPORT OF A CASE

Otterbein Dressler
Professor of Pathology

Few pathological processes are at once as intriguing and controversial as endometriosis. For more than fifty years these lesions have been described widely distributed throughout the body, and with equally divergent explanations for their mechanisms of production. The purpose of reporting this case is dual: first, to have it find its way into the literature, second, to intimate in retrospect how a preoperative diagnosis might be accomplished.

Patient: Miss E. H.
Age: 29
Height: 60 inches
Weight: 130 lbs.
Occupation: Typist-clerk

Chief Complaint: A mass in the groin first noticed 1½ years before operation. She was not conscious of the mass except just before and for the first few days of the menses. At the times noted the mass became larger and was quite painful. There was a gradual increase in the size of the mass, and proportional increase in pain.

Physical Examination: Upon examination there were no abnormal findings except this mass which upon palpation was thought to be an enlarged lymph node. Because it was painful, and was increasing in size, its removal was advised.
Pathologist's Report: O.H.P.-S.P.45-12,947

Macroscopy: A somewhat irregular fragment of tissue was submitted measuring 2.5 x 1.5 cm. The cut surface was comparatively pale and contained a number of cystic spaces filled with bloody debris.

Microscopy: Sections of the materials submitted show them to be composed essentially of masses of fibrous connective tissue with here and there nerve fibers. Glandular spaces are demonstrated, lined by modified epithelium, in some places pseudostratified, in other places cuboidal. These glandular spaces contain considerable quantities of bloody debris, and in some instances cellular and mucoid debris. In certain areas the supporting framework is quite characteristic of the stroma of the corpus endometrium of the uterus. Distortion is demonstrated over wide areas due to the long continued irritating effect of blood pigments. There are no elements to suggest a lymph node.

Diagnosis: Endometriosis of the inguinal region.

The points in differential diagnosis suggesting themselves in retrospect are a swelling increasing in size at the time before the menstrual flow, and pain at the time of the menstrual flow. In addition to these it is more or less generally observed that endometriosis bears a relation to biological frustration. This case exhibits a female well along in the reproductive period without any evidence of reproduction. Aspiration biopsy would doubtless have produced disintegrated blood. The finding of disintegrated blood would have been quite important.

Summary

A case of endometriosis of the groin is reported.

Significant findings have been reported and a method suggested to facilitate preoperative diagnosis.

*Case reported through the courtesy of Dr. Charles L. Ballinger, Green Cross Hospital, Akron, Ohio.

Correction: In Vol. III, page 76 (Sept.) 1945, substitute January for September in all entries under "Laboratory Findings."
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