DEGENERATIVE DISEASE AND INJURY OF THE BACK

Examination of the Lumbrosacral Spine

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THE HISTORY

In evaluating a patient's lumbrosacral spine, the presence of symptoms, usually pain in the low back with or without associated symptoms in the lower extremities, is a key consideration. The manner in which such symptoms develop is also important. For medicolegal reasons it is wise to record the dates of any traumatic episodes and their time relationships with the development of symptoms from the alleged injury. The presence of preexisting symptoms is likewise important.

It is helpful to know how the symptoms are affected by rest or activity and whether coughing or sneezing aggravates them. A history of numbness, tingling, or weakness, the presence of a list and whether or not there has been any bladder or bowel involvement, are important to determine. Whether or not symptoms are helped by different modalities of treatment such as back supports, medications, or manipulative therapy may be useful.

THE EXAMINATION

In examining the lumbrosacral spine, the patient first should stand adequately exposed in front of the examiner, and then walk back and forth in the normal gait. In medicolegal cases it can be helpful to observe the gait without the patient's knowledge; perhaps walking in the waiting room or in the parking lot when the gait may be quite different than in the examining room.

With the patient standing, the examiner should observe whether the spine is straight and the pelvis is level. A large mirror in the examination room is very helpful. The examiner should look for a list or a scoliosis and have the patient walk on his toes and on his heels. Difficulty with, or inability to perform these movements can indicate paresis or, on the affected

side, paralysis in the calf group or in the anterior muscle group of the leg. In sciatica, pain when performing either of these maneuvers helps to localize the level of neurological root involvement. Pain on toe walking may indicate first sacral root involvement, and pain on heel walking, L-5 root involvement.

The patient is then asked to assume a full squatting position, placing the head between the knees. If the patient can, this quickly indicates full flexion of both hips and both knees. The patient is then asked to arise from this position, and any difficulty is noted. With the patient standing, a jugular compression test is done to see if this causes either low back pain or sciatic pain, which may indicate a space occupying lesion in the spinal canal. The patient is then asked to bend the trunk in all directions. Each motion is observed. The lumbar lordotic curve should iron out into kyphosis on flexion. Pain, muscle spasm or arthritic fixation of the spine may limit this motion. Now is the time to observe the presence of any list, which is usually increased on forward bending. Restriction of bending motions is estimated as slight, moderate or severe, rather than in degrees. It may be helpful to measure forward bending as the distance the patient can approximate his hands to the floor.

The patient is asked to report any subjective symptoms with the back motions and to locate, or point to the site of, pain. Lateral bending to each side is carried out in the same manner. A patient with a list and muscle spasm usually has full motions to the side of the list and no motion or restricted motion away from the list. It is important to watch for the rare case of camptocormia, which is a functional or hysterical inability to stand erect, although in bed or on the examining table the patient can extend his hips fully. Backward bending is checked in the same manner. Any restriction or symptoms with it are being noted.

The patient is now asked to sit on the side of the examining table or bed. Knee jerks are checked very carefully, comparing one with the other. Reinforcement of the knee jerk may be obtained with light contracture of the quadriceps against the examiner's finger. Locking the fingers of each hand and pulling may help the reinforcement. Ankle jerks also are checked in the sitting position. They also may be reinforced by having the patient very gently plantar flex the foot against the examiner's finger and by pulling the fingers against each other.

The patient is now instructed to lie supine on the bed or table. Leg length is measured from the anterior superior spine to the medial malleolus. It has been my experience that this measurement is accurate only about two times out of three. Measurement with a standing AP x-ray of the pelvis is considerably more accurate, if properly performed. Circumferences of the thighs and the calves are carefully measured for asymmetry, which is evidence of possible muscle atrophy. Strength of the toe extensors is carefully tested--for weakness of the extensor hallucis longus is pathognomonic of involvement of the fifth lumbar nerve root.

Sensation is carefully tested in both lower limbs by light touch and by the use of a pinwheel. The most common sensory finding is a functional or stocking type of hypesthesia in the lower limb. The pinwheel is quite useful in checking this: the wheel is always moved from the anesthetic or hypesthetic portion to the sensitive portion, beginning with the toes. Usually the patient jumps, effectively indicating the point of sensory change. Should the sensory loss be dermatomal, this is outlined.

The range of motion of the hips and knees is checked, especially rotation of the hips, lack of which would be evidence of hip pathology. While this is being done, the examiner holds the knee in one hand and the leg in the other, feeling for presence of crepitus on flexion and extension and checking the stability of the medial and lateral ligaments.

Straight leg raising is now tested, with the knee extended and the leg raised upward from the hip. This is a subjective test, and the patient's response to it must be evaluated. The production of pain, either in the low back or gluteal region, is a positive test. The approximate angle at which pain is produced is noted. A stretching sensation behind the knee is normal at ninety degrees. The test may be supplemented by flexing the hip and then extending the knee, and a positive test may be confirmed by also dorsiflexing the foot. Pain in the back produced by flexion of the hip with the knee flexed is called a positive bent leg raising test, and pain produced by it is usually on a functional or psychogenic basis. The straight leg raising test may be positive from 5^{o} to 90^{o}.

The patient is then turned in the prone position, with a pillow under the abdomen to flatten the lumbar spine. The calves, popliteal

region, posterior thighs, buttocks, sacrum, coccyx, and lumbar spine all are palpated, and tender areas are noted. The examiner should be able to locate the lumbrosacral space on palpation and palpate firmly with the thumb the separate interspaces, locating any sensitive ones. The presence of muscle spasm in the lumbar musculature can be detected with a light tap by the percussion hammer while holding a finger on the muscle. Except for the presence of a list with palpable muscle spasm, this is the best objective test I know to detect muscle spasm.

After complete physical examination of the lumbosacral spine, the next step in evaluation of the lumbosacral spine is radiographic.

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Division of Technical Services
Cincinnati, Ohio 45226

June 1978

For sale by the Superintendent of Documents, U.S. Government
Printing Office, Washington, D.C. 20402

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Contract #210-77-0088

DHEW (NIOSH) Publication No. 78-169