Orthopedic and Neurological Testing as a Practice Building Tool

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A great initial examination makes a good first impression with new patients. Patients are impressed with doctors that are thorough and detail oriented. They feel like the doctor cares and will get to the bottom of their problem. An accurate exam means accurate diagnosis. Accurate diagnosis means accurate treatment. Accurate treatment increases the odds of a good prognosis.

While the overall examination process is dependent upon the patient's need, there are a few orthopedic and neurological tests that if worked into the exam process, will enhance the doctor's reputation, guarantee patient follow through and stimulate referrals.

The first of these tests is Spurling's Test for cervical radiculopathy. The test is performed with the patient seated. The examiner applies axial compression to the head with the cervical spine laterally flexed first to the asymptomatic side, then to the symptomatic side. The purpose, in theory, is to reproduce radicular arm pain by reducing the size of the intervetebral foramen on the side of lateral bending. If pain is reproduced on the symptomatic side the test is positive. If not, the examiner must move to the second portion of the maneuver before making the final determination of whether the test is positive or negative.

The patient's head and neck are returned to the neutral position and the examiner strikes the patient on top of the head with the bottom of his closed fist. If pain is reproduced in the symptomatic arm then the test is positive for cervical radiculopathy. If pain is still not produced then the test is negative. This test provides a real "Wow!" moment for the patient and leaves a lasting impression.

One word of caution here: the examiner must be careful, as false negatives have been reported in patients that can take a punch.

The next test is the Kidney Punch. The test can be performed with the patient standing or seated. Since the patient was seated for Spurling's, it is a good idea to move immediately to the kidney punch for convenience and to avoid losing the momentum you are building toward that good first impression.

The kidney punch is a general check for kidney pathology. It identifies soreness in a kidney but not the actual pathology causing the soreness. The test is performed by punching the patient in the flank directly over each kidney with the bottom of your closed fist. Soreness/pain with punching is a positive result. No pain with punching is a negative result. As with Spurling's, the examiner must be aware of false negatives in tougher patients.

Lewin's Snuff test is next. This test is intended to detect space-occupying lesions. Another seated test, it is performed by having the patient snort a generous quantity of pepper up his nose to induce a significant sneeze. Sneezing increases intrathecal and intradiscal pressure. In the presence of a space-occupying lesion in the head or spine (which could be a tumor or disc) the patient may experience head, spinal or extremity pain. Any or all of these would indicate a positive result. A negative result is the absence of pain. The test works best with fresh ground pepper.

Another test for space occupying lesions is Valsalva's Maneuver. This test can be performed in any position however; you will want to stick with the seated position in order to keep the number of position changes to a minimum. This reduces the wear and tear experienced by the patient during testing. Remember, it is all about patient comfort.

Valsalva's is performed by having the patient hold his breath and bear down as he would during a bowel movement. This is basically holding pressure against a closed glottis. The positive result is essentially the same as that of Lewin's Snuff test, head, spinal and/or extremity pain. No pain is a negative result.

This test can have a couple of small side effects the examiner should be aware of. Mimicking the strain of moving the bowels can cause accidents in elderly incontinent patients. Straining and holding pressure against a closed glottis can also invoke a vasovagal response causing the patient to pass out.

While these side effects are inconvenient for the examiner, they can provide additional information about the patient. It is difficult to tell if the patient is putting his best effort into the testing process unless one or both of these side effects occur. The patient's commitment to the testing process can be a good indicator of overall patient compliance.

After the clean up and/or smelling salts, the exam moves quickly to a final test for space occupying lesions, Naffziger's test. Here the examiner stands behind the seated patient and applies pressure to the jugular veins for forty seconds. This prevents blood from exiting the head while the heart continues to pump blood into the head. The result is increased vascular and intracranial pressure. At thirty five seconds (if the examiner loses tract of time, thirty five seconds is usually when the patients head is as red as a beat and his eyes are bugging out) the examiner instructs the patient to cough giving a final boost to the pressure in the head. As with Lewin's Snuff Test and Valsalva's Maneuver head, spinal and/or extremity pain is a positive result. No pain in these areas is a negative result.

This test shares one small side effect with Valsalva's Test. The patient may pass out. This effect results either from the pressure that builds in the head or the examiner may have accidentally occluded the carotid arteries with or instead of the jugular veins, cutting off the blood supply to the patient's brain.

Side effects aside, Naffziger's is a show stopper! By this point in the exam the patient cannot wait for the exam to be over and get out of the office. Dizzy with excitement, the patient is eager to tell others about his experience. But, referrals will have to wait. The exam isn't finished yet. There are two more high lights.

Once the patient has his sea legs, we are ready to stand him up for the Foot Drop Test. This test is similar to a childhood prank we are all familiar with, pulling a chair out from under someone just as he sits down. I'm sure you have been on the giving or receiving end of this prank a time or two.

When a patient with drop foot is suspected of malingering, the doctor sneaks up on the patient from behind and suddenly, without warning jerks the patient backwards by the shoulders. If the patient has true drop foot from L4 nerve root, tibial nerve or tibialis anterior pathology the affected foot will stay on the floor when the rest of the patient's body suddenly moves backward. The forefoot and toes of the unaffected foot should leave the floor. This is a negative test. A positive test occurs when the forefoot and toe of both feet leave the ground. This indicates malingering.

A small complication can occur here. When the examiner is much smaller than the patient and is unable to catch the larger patient after pulling him backwards, the examiner may be injured. This is definitely a hazard for the examiner. An alternate testing position for the examiner is suggested for these situations. The patient should be positioned with his back two to three feet from a wall. The examiner, now in front of the patient, can suddenly shove the patient backwards into the wall. The examiner must remember to keep his eyes on the patient's feet in order to interpret the test results.

The final test in our examination is Hoppenfeld's Test for motor function of the S1 and S2 nerve roots and the strength of the gastrocnemius and soleus muscles. The test involves hopping up and down on each foot individually. If the patient can propel himself into the air and land on his toes a few times on each foot, motor function/ strength are normal and the test is negative. If the patient cannot jump or lands flatfooted then the test is positive.

One word of caution here; false positives are a concern with this test. For some reason this test is difficult for patients with acute gout, sprained ankles, bad knees, hip or knee replacements, poor balance, poor coordination, disorders of the cerebellum, pars fractures, bad sacroiliac joints, diarrhea, prosthetic legs, advanced age, advanced pregnancy, lack of proprioception, advanced diabetes and thirty or forty other conditions. The examiner must be conscious of this when interpreting and recording results.

Now that we have punched, choked, revived, startled, shoved and exercised the patient (Oh, I forgot the pepper up the nose) I think we have made a good and lasting impression. The patient will tell everyone he has never had examination like this one. News of a progress exam in four weeks usually leaves the patient speechless. Patient compliance is set and referrals are on the way.

Disclaimer: Surely you realize I am kidding. While these are legitimate examinations they are not our best choices. There are plenty of tests for cervical radicular problems making the use of Spurling's test only necessary as a last resort. MR and nerve conduction studies are also available and preferable to Spurling's.

The kidney punch is easily replaced with the Heel Drop Test. Here the patient rises onto his toes and suddenly drops down on the heels, jarring the body. This shakes the kidneys and pain in the flank (kidney) is a positive test. This also tests the motor function of the S1 and S2 nerve roots and strength of the gastrocnemius and soleus muscles. If the examiner instructs the patient to perform several toe raises bilaterally and finish by dropping onto the heels after the last rep, this will replace the Hoppenfeld and Kidney Punch Tests. Thus, there is no need to hop on one foot.

Lewin's Snuff, Valsalva's and Naffziger's tests for space occupying lesions can be replaced with history questions, coughing and modern imaging. Simply asking the patient if it hurts to laugh, cough, sneeze or have a bowel movement can provide information about the possibility of a space occupying lesion. Coughing is part of Dejerine's Triad of coughing, sneezing and bearing down as though having a bowel movement (Valsalva's). Coughing is easy to do on command and the pressure/pain generated is momentary. This is easier than sneezing and less likely to cause side effects as in Valsalva's.

In today's world of clinical practice, CT and MR scans are the best diagnostic tools for suspected space occupying lesions.

Patients with foot drop can be assessed by heel walking and/or manual muscle testing of the tibialis anterior muscle. Their shoes can also be inspected for scraps on the toe region. These are much better options than the Foot Drop Test.

As stated earlier, regardless of which tests are used, use should be based on patient need and the doctor's clinical judgment. Orthopedic tests aren't really practice building tools.

Why do we still teach these tests? Maybe it is for historical reasons. Maybe it is because authors still write about them. Maybe it is because board examinations still have questions about them. Maybe it is in case a doctor ends up practicing where modern diagnostic modalities aren't available. Places like the Australian Outback or parts of the US and Canada that are still Indian Territories. I don't know.

I do know that you probably know more about these tests after reading this than you did before.

General References

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