

# Differential Diagnosis Between Cervical Pain and Shoulder Pain

By: Jeff S. Pierce, DO

In today's clinical practice there is a high prevalence of neck pain in the general population. Approximately 15% of the population has neck pain, therefore, it is very important to be able to recognize and diagnose neck pain vs. shoulder pain. Early diagnosis of shoulder and/or neck pain and being able to determine a serious vs. non-serious case can be the difference between a good and a bad outcome.

It is noted that most neck pain patients never seek medical attention and by the time they do they are on their second or third episode of pain. This can lead to a more serious injury. Again, that is why early diagnosis/recognition is very important. To review the Differential Diagnosis, we will focus on the more commonly encountered disorders and management options. It has always been noted that shoulder pain can mimic as cervical problems and vice versa.

Differential Diagnosis is used to differentiate between one or more conditions, diseases or injuries. Effective treatment requires specificity and accuracy in diagnosis through the careful comparison and contrasting of their signs and symptoms. The process of a differential diagnosis may involve a combination of clinical diagnosis, physical diagnosis, pathological diagnosis, a provocative diagnosis, laboratory diagnosis and diagnostic imaging.

Cervical pain can be broken down to three major categories: 1. Cervical Radiculopathy, 2. Cervical Myelopathy, and 3. Axial Joint Pain, which would include mechanical neck pain, motion segment pain, discogenic pain, facet syndrome, painful instability. Again, this is a very large topic, so let's focus on the majority of cases.

Cervical Radiculopathy is caused by combined compressions and inflammation of a spinal nerve. This can be caused by

multiple factors, most commonly including: herniated nucleus pulposus (HNP), cervical/foraminal stenosis, facet arthrosis. The two most common distributions are C5-6 disc and C6-7 disc. The C6 involvement includes a decreased brachial radialis reflex, weakness of the bicep muscle and pain and/or paresthesias radiating down the arm to the thumb and index finger. Involvement of the C6-7 root would cause loss of triceps reflex; weakness of the triceps muscle, and pain and/or paresthesias radiating to the middle finger.

Cervical Radiculopathy can also mimic shoulder pain especially in the C5-6 distribution. This can produce pain radiating in the lateral shoulder, as well as weakness of shoulder flexion, abduction, and external rotation. Usually with cervical radiculopathy, there is no palpable pain to the glenohumeral joint and/or no restriction of passive range of motion to the joint. However, with Cervical Radiculopathy there can be pain with neck extension or rotation to the affected side. There is pain in the area of trapezius and deltoid muscles. Pain may radiate down the arm/hand. You will have sensory, motor or reflex abnormalities in the distribution of the



C5-6 area. Also with Cervical Radiculopathy you may have one of these clinical signs:

- 1) Spurling sign: pain with extension, side bend and axial load to the affected side.
- 2) Relief with manual traction to the neck.
- 3) Relief of pain by placing and resting the patient's forearm on the top of their head.

These three clinical signs are highly specific but only about 50% sensitive.

Cervical Myelopathy (C.M.) is much more concerning and cannot be missed because of the potential damage to all 4 extremities. C.M. is caused by an acute or chronic involvement of the cervical spinal cord. The clinical manifestations are dramatic. There is weakness in all 4 extremities with sensory loss or absence of pain, touch, vibration or positional sense. Reflexes are too brisk and may lead to ankle clonus. Pathological reflexes are also present with Hoffmanns and/or Babinski signs. The patient may have increased muscle tone on the bladder wall causing frequency and nocturia. Patient complains of difficulty with fine motor movements, gait feeling unsteady and weak. Sensory loss can be highly variable. Once severe neurological deficits are present they are unlikely to resolve spontaneously, even with appropriate surgical intervention they may not be able to recover lost function. This is why early diagnosis is so important.

Axial Joint Pain can include everything else which is a large group, so we will try to highlight a few for today's purpose. This group all share a common fact that joint dysfunction in the spine can be painful. This group can often mimic shoulder pain also. Axial joint pain is characterized by neck pain together with radiating to one or more of the following: medial scapula, chest wall, shoulder area and head.

In common with the shoulder, pain can radiate to the neck, scapula and chest wall. Also, there may be vague aching sensation to the proximal upper extremity but pain referred below the elbow suggests nerve root involvement. In either axial joint pain or shoulder pain there are no neurological deficits because they both stem from joint involvement.

The Differential Diagnosis is very large but to highlight a few: First, Brachial plexopathy is rare but can involve shoulder and/or neck pain. Pain is sudden and severe with or without trauma. In a short period, pain can be replaced by weakness usually good prognosis with favorable and spontaneous recovery but may happen over months to a year. Adhesive or Frozen Shoulder is characterized by loss of passive range of motion in all degrees, especially external rotation. This can be commonly seen with cervical radiculopathy especially in the elderly. This can be caused from by disuse from a painful radiculopathy. Early diagnosis and aggressive treatment is needed to avoid long term problems with the shoulder. The adhesive capsulitis can even persist following resolution of the radiculopathy.

Other considerations include recurrent anterior subluxation, or "Dead Arm Syndrome," Impingement Syndrome, Calcific Deposits and Rotator Cuff Tear.

In summary, this is not a simple topic as there are many possible etiologies, diagnosis of shoulder and neck discomfort. At Michigan Sports and Spine our focus is on a very comprehensive history and physical along with an aggressive treatment plan with early intervention which have lead to very successful outcomes. Our goal is to get the patient back in their game, either on the field or in life as quickly as possible. We could not cover every aspect of these issues, however, so if you have any further questions, please do not hesitate to contact us at our website at michigansportsandspine.com; phone us at (248) 680-9000.

*Dr. Pierce is the Medical Director of the Michigan Sports & Spine Centers. He specializes in a comprehensive treatment program for spine and musculoskeletal/joint injuries including sports & occupational problems. His extensive training as a PMR physician has enhanced his ability to evaluate and create individualized, injury-specific rehabilitation programs. He has created through research and clinical experience, an aggressive, non-surgical comprehensive spine care program. The goal of the program is for patients to return to their optimal lifestyle.*

*Governor Granholm recently reappointed Dr. Pierce to his third term on the Governor's Council on Physical Fitness, Health and Sports. He also leads the task force designated to create the*

*prescription for fitness for the State of Michigan. Dr. Pierce is currently the team physician for college teams and consults for many professional teams and athletes. He authors a column in Hockey Weekly, "Ask the Doctor", which has educated and advised the hockey community for over 3 years. He is known throughout the entertainment community as "Doc Rock" treating entertainers who perform at local venues.*

