Physical Examination

4

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The shoulder joint is the most complex joint in the body. The range of movement and the complexity of the structures forming the joint are the most important factors in the complex structure of this joint. The high level of activity of individuals engaged in sports, their high expectations, and the complex injuries to which they are exposed have resulted in shoulder joint pathologies becoming a significant and challenging problem. A good physical examination plays an important role in the diagnosis of shoulder joint pathologies.

The great number of shoulder examination techniques, the majority of which are named after the physician who identified them, can be confusing. In addition, even if these maneuvers for a specific pathology are learned pathognomically, the diagnostic accuracy of these maneuvers is usually unclear. Furthermore, it is difficult to interpret studies made to evaluate the examination characteristics of these techniques [1].

Physical examination of the shoulder joint must be made systematically [2]. Following a careful inspection of the shoulder, palpation is made and the range of movement of the joint is evaluated. Stretching tests are then applied. When there are indications, functional and neurological evaluations are made. Then, specific tests are applied according to the pathologies.

There is more than one joint forming the shoulder structure. The majority of different tests focussed on different joints together may cause positivity in different pathologies of the same test in the complex structure of the joint. The largest joint in the shoulder is the glenohumeral joint. However, the tests described below include the acromioclavicular or sternoclavicular joint at the same time. The junction of the scapula and the rib cage is accepted as a joint and can be evaluated with some specific examination techniques.

The aim of this section of the book is to review the physical examination of the shoulder joint by including particular examination techniques which have been developed to determine specific pathologies.

4.1 Neer's Impingement

In the Neer's impingement test, the amount of subacromial arch impingement by the rotator cuff, primarily the supraspinatus, is evaluated during forward flexion of the arm. During the test, while one hand brings the arm of the patient into forward flexion, the other stabilizes the

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Fig. 4.1 Neer's impingement

scapula (Fig. 4.1). Pain in the anterior of the shoulder during forward flexion indicates test positivity.

4.2 Hawkins-Kennedy Impingement Test

This test is used to evaluate impingement of the subacromial bursa and rotator cuff. The test can be applied with the patient seated or standing. While the arm is in 90° forward flexion and the elbow bent at 90°, the scapula of the patient is stabilized with one hand, and with the other hand holding the forearm, it is forced into internal rotation (Fig. 4.2). The arm must not be taken into abduction during the test. Pain in the anterior shoulder during internal rotation indicates test positivity.

Fig. 4.2 Hawkins-Kennedy impingement test

Fig. 4.3 Yocum sign

4.3 Yocum Sign

Another test useful in the evaluation of rotator cuff impingement is the Yocum sign. In the test, the patient is told to put one hand on the opposite shoulder and raise the elbow (Fig. 4.3). Pain in the anterior shoulder and an increase in the symptoms of the patient indicate test positivity.

4.4 Coracoid Impingement Sign

The arm being examined is taken into abduction and anterior flexion toward the other side. Then the arm of the patient is forced into internal rotation (Fig. 4.4). Pain over the coracoid and limitation in internal rotation are accepted as positive for coracoid impingement syndrome.

Fig. 4.4 Coracoid impingement sign

Fig. 4.5 Lift-off sign

4.5 Lift-Off Sign

This shows damage to the inferior section of the subscapularis muscle in particular. When the patient's arm is positioned on the back, it is difficult to remove the hand from the back when in maximum internal rotation (Fig. 4.5).

4.6 External Rotation Lag Sign

This test is used to show pathologies of the supraspinatus and infraspinatus muscles. The shoulder of the patient is held from the elbow with one hand. While the patient's elbow is in 90° flexion, the shoulder is taken into external rotation with the other hand, and the patient is requested to hold this position (Fig. 4.6). If the patient cannot maintain external rotation, test positivity is shown.

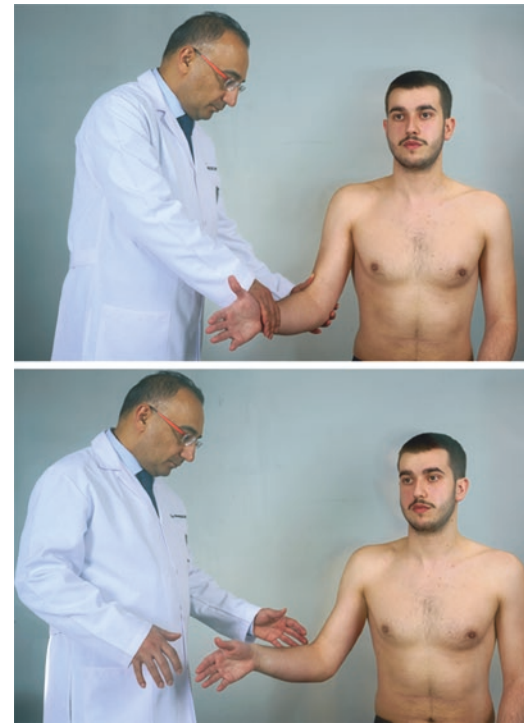

Fig. 4.6 External rotation lag sign

4.7 Drop Sign

With the elbow in 90° flexion and the shoulder in 90° abduction, the shoulder is taken into external rotation and the patient is told to hold this position (Fig. 4.7). Pain and weakness which may cause the arm to fall indicate test positivity. The sensitivity and specificity of this test are very high for highly degenerated infraspinatus tears in particular.

4.8 Speed Test

This test is used to evaluate pathologies of the proximal tendon of the long head of the biceps. With the elbow in extension and the forearm in

Fig. 4.7 Drop sign

Fig. 4.8 Speed test

supination, the shoulder of the patient is taken to 60° anterior flexion. Force is applied to the patient's forearm to take it into extension (Fig. 4.8). Pain felt in the bicipital groove indicates biceps pathology.

Fig. 4.9 Whipple test

4.9 Whipple Test

This test, which can be applied with the patient seated or standing, has high specificity for partial tears of the anterior supraspinatus tendon in particular [3].

With the shoulder in 90° flexion, it is taken into hyperadduction toward the other shoulder. Downward pressure is applied to the arm of the patient (Fig. 4.9). Pain in the shoulder and falling of the arm indicate test positivity.

4.10 Drop Arm Sign

Another test showing rotator cuff pathologies is the drop arm sign. The arm of the patient is taken to 90° abduction and the elbow to 90° flexion, and the patient is told to hold the position (Fig. 4.10). Dropping of the arm or pain indicates test positivity.

4.11 Jobe Sign

This test shows weakness or impingement of the supraspinatus tendon. The arm is taken to 90° abduction and 30° anterior flexion, and the elbows are brought to flexion in internal rotation. Downward pressure is applied to the arms and the patient is told to resist this pressure (Fig. 4.11). Pain or weakness indicates test positivity.

Fig. 4.10 Drop arm sign

Fig. 4.11 Jobe sign

4.12 Jobe Sign "Full Can" and "Empty Can"

This test can be applied with the patient seated or standing. The arm of the patient is taken into abduction and flexion. If the test is made while the arm is in internal rotation, it is named "empty can" (Fig. 4.12) and, if made while in external rotation, "full can" (Fig. 4.13). Downward pressure is applied to the forearm of the patient. If there is only pain without weakness, there could be different shoulder pathologies, so specificity is low. The presence of actual weakness demonstrates supraspinatus tendon pathology.

Fig. 4.12 Jobe sign "empty can"

Fig. 4.13 Jobe sign "full can"

4.13 Infraspinatus Strength Testing

With the elbows in 90° flexion, both hands are positioned facing each other and brought into internal rotation. Holding the outer part of the patient's hand, the arm is forced into internal rotation, and the patient is told to resist against this force (Fig. 4.14).

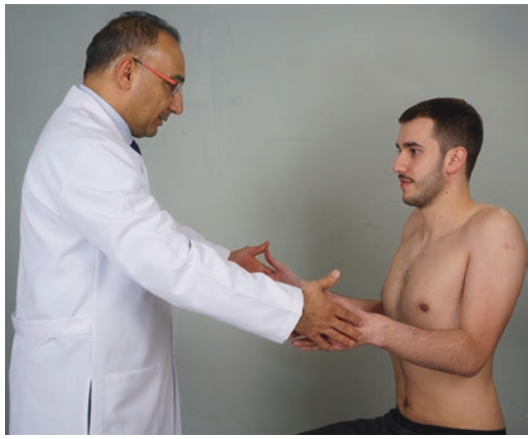

Fig. 4.14 Infraspinatus strength testing

Fig. 4.15 Yergason sign

4.14 Yergason Sign

With the shoulder in adduction, the elbows are taken to 90° flexion. Holding the patient's hand or forearm, the forearm is forced into pronation while the patient tries to make supination (Fig. 4.15). When there is pain along the bicipital groove, the test is positive for suspected biceps tendon pathologies.

4.15 Load and Shift Test

With one hand stabilizing the scapula, translation forces are applied with the other hand in an anterior and posterior direction over the humeral head which forms the joint with the glenoid (Fig. 4.16).

Fig. 4.16 Load and shift test

Fig. 4.17 The sulcus sign

When the humeral head is more mobile than the contralateral shoulder, the test is accepted as positive, and shoulder instability is suggested.

4.16 The Sulcus Sign

In this test the gap formed between the humeral head and the acromion inferior surface is evaluated according to the extent of the space. With the arm in a neutral position, while the patient's scapula is stabilized with one hand, longitudinal traction is applied with the other hand to the patient's arm (Fig. 4.17). The gap formed is expected to be <1 cm. If the gap is >1 cm, it is evaluated as a positive sulcus sign.

Fig. 4.18 Apprehension test

4.17 Apprehension Test

This test, which can be applied with the patient standing or in a supine position, is a significant indicator of shoulder anterior instability. The shoulder is taken to 90° abduction and the elbow to 90° flexion. The arm of the patient is then carefully brought to external rotation (Fig. 4.18). A feeling of instability occurring during external rotation indicates test positivity.

4.18 Adson Test

In this test, the patient takes a deep breath and the head is turned toward the affected side (Fig. 4.19). Loss of radial pulse in the arm when the neck is brought into hyperextension or when the arm is raised indicates test positivity. This test is used as an indicator of thoracic outlet syndrome (TOS).

Fig. 4.19 Adson test

References

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