PELVIC GIRDLE INSTABILITY: INDENTIFICATION OF SYMPTOMOLOGY

VICKI SIMS, P.T

MICHAEL AMARAL, MD, FACS

DAVID MESNICK, P.T

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INTRODUCTION

Lower back pain (LBP) is a 50 billion-dollar a year growth industry in our society (Graves et. al. 1990). The frequency of back pain is such that in the United States alone there are seven million people off work because of it at any one time. In fact, the most common cause of occupational disability is indeed lower back pain (Mckenzie 1981).

While there has been considerable research directed towards identifying the etiology of LBP, only syndromes that are associated with neurologic compression of the nerve roots are well understood by clinicians. It has been estimated that a precise diagnosis is unknown in 80 to 90% of patients with LBP (Richardson and Iglarsh, 1994)

An area of LBP that has attracted increased interest is the sacroiliac joint (SIJ) and it's associated structures. The symptomology and "syndrome" associated with SIJ has very seldom been addressed by standard orthopedic literature. The SIJ can often be overlooked as a source of chronic lower back pain, with symptoms confused with those arising from a disc derangement (Stanhope and Onesti 1999).

In the author's experience, a significant number of patients diagnosed with SIJ follow a specific symptomology, which differs from other described low back pain syndromes.

The objective of this study was to identify several common symptoms that are specifically intensified when the dynamic kinetic chain of the lumbo-pelvic system is no longer a stable platform for force transmission

STUDY DESIGN

One hundred patients who were undergoing physical therapy for sacroiliac instability were sampled prior to a 6-week course of treatment. Patients who had undergone prior back surgery were excluded. Patients with a known diagnosis of sacroiliac joint dysfunction were included in the study. Each patient was sampled once following a comprehensive evaluation and prior to physical therapy intervention. Results were taken as a percentage of there reported frequency.

METHODS:

The authors (Figure 1) devised an evaluation form questioning symptoms prior to physical therapy treatment. The patient choose their three most provocative symptoms out of 8 common lower back pain symptoms. The patient was asked to write any position of comfort or relief of pain and asked to indicate on a pain drawing their primary source of pain. The therapist then noted areas of tenderness around the lumbo-pelvic area.

The diagnosis of SIJ was determined by use of manual testing. The manual dynamic test were: sitting flexion test, March/stork test, standing flexion test, and supine long sitting test. The static bilateral symmetrical test procedures were: anterior superior iliac spine (ASIS), iliac crest, posterior superior iliac spines (PSIS), symphysis pubis, and sacral obliquity. If one or more test in each category was positive and a generalized region of pain in the SIJ area was present, then the patient's diagnosis was considered as SIJD.

Manual Dynamic Test:

The supine long sitting test was performed with patient supine and the examiner placing thumbs under the inferior border of each medial malleolus. The two medial malleoli were brought together for comparison. Then the patient sat with knees extended and the relative length of the malleoli were reassessed. A positive test resulted when observable changes occurred in relative leg length between the two positions.

The standing flexion test was performed with patient standing, knees straight, feet pointed straight ahead. Examiner's thumbs placed on the inferior aspect of the left and right PSIS's. Patient bent forward slowly as far as they could. A positive test has occurred when one PSIS has moved cranially more than the other.

The sitting flexion test, the patient is sitting on a table. The examiner's thumbs are placed on PSIS's in accordance with the standing flexion test. The patient is then asked to forward bend. If one PSIS becomes superior in relation to the other PSIS a positive test has occurred. The superior PSIS is considered the dysfunctional side. The standing flexion test is the same design as the sitting flexion test except the subject is standing.

The March/stork test, the patient is standing in a neutral spine position. One thumb of the examiner is on the right PSIS and the other thumb is on the dorsal cranial surface o the sacrum in line with the PSIS. The patient flexes at the hip on the examination side. The PSIS will go downward in comparison to the sacrum. If there is no downward motion of the PSIS, then a positive test has occurred.

Static Symmetry Test:

PSIS bilateral test. The two PSIS's were found by placing a thumb under each PSIS. The two heights were compared at a horizontal level. A positive test resulted when the height of one of the PSIS's was uneven.

ASIS bilateral test. The two ASIS's were found by placing a thumb under each ASIS. The two heights were compared for horizontal height. A positive test results when the height of one of the ASIS's is uneven.

The iliac crest test is located on the prone patient by use of the lateral aspect of the index finger slightly palpating the tip of the iliac crest. If levels of the index fingers are not even then a positive test has occurred.

The pubis symphysis is located on the supine subject. Both thumbs are placed on the anterior surface of the pubis. If the pubis surfaces are not at equal heights, then a positive test has occurred.

Sacral obliquity test. Different levels of the dorsal sacral surface are observed by palpation. The examiner's thumbs are placed slightly apart; palpating the dorsal surfaced of each fused segment of the sacrum. If one thumb is more posterior than the other thumb, a positive test has occurred.

Rehabilitation:

The rehabilitation process consisted of manual mobilization, basic flexibility stretches, specific lower back resistance training, and progressive resistance exercises (PRE) for general conditioning. On the first visit to the rehabilitation area the subjects that were identified as SIJD were manually mobilized into symmetric sacral and ilial positions and then given a home-stretching program consisting of basic pelvic stabilization and flexibility stretches. If SIJD was present at the time of evaluation, the following manual mobilization techniques for the various dysfunctions seen were used.

Iliac upslip with an anterior rotation of the ilium. The subject will be in a supine position with the leg on the affected side externally rotated and fully extended. The leg is held in a SLR position at a 30 to 45 degree angle from the table. The subject is instructed to relax and a gentle but forceful sustained traction is applied to the leg in a series of three pulling motions. The traction should not cause any pain to the subject. If the traction does not produce symmetrical ilial positioning, the mobilization must be repeated.

Iliac upslip with a posterior rotation of the ilium. The subject will be in a prone position with the affected side externally rotated and fully extended. The leg is held at a 30 to 45 degree angle from the table. The subject is instructed to relax, and a gentle but forceful sustained

traction is applied to the leg in a series of three pulling motions. The traction should not cause pain to the subject. If the traction does not cause symmetrical ilial positioning the mobilization must be repeated.

If the right ilium is rotated in a posterior position, then the following correction was used. Activate the hip flexors on the right and the hip extensors on the left. With the subject lying on his back with knees bent, the examiner has the patient pull his right knee towards his chest while resisting him above the knee. At the same time the patient tries to push the left knee downward with the examiner resisting below the knee. For a left ilial posterior rotation, the hand position of the therapist are reverse and the hip extensors are activated on the right, while the hip flexors are activated on the left.

If the left ilium is rotated in a posterior position, then the following correction was used. Activate the hip flexors on the left and the hip extensors on the right. With the subject lying on his back with knees bent, the examiner has the patient pull his left knee towards his chest while resisting him above the knee. At the same time the patient tries to push the right knee downward with the examiner resisting below the knee. For a right ilium that is rotated in a posterior position, the hand position of the therapist is reversed and the hip flexors are activated on the right, while the hip extensors are activated on the left.

If the sacrum is rotated in a posterior position on the right side, the following techniques are used for the correction. The subject is lying on his/her right side with the hips flexed at 90 degrees. The examiner places one hand under the subject's right knee and the other hand on the medial side of his right ankle. The patient holds the left leg up (approximately 30-50 degrees) while the examiner pushes the leg down. Resistance should be placed under the knee and on the medial surface of the ankle.

If the sacrum is rotated in a posterior position on the left side the same technique is used as described above for the right rotated sacrum. The only difference is that the subject will lay on his left side and the movements are done on the left.
If the right symphysis pubis is superior to the opposite pubis, the following mobilization will produce symmetry. The subject will activate the left rectus abdominis and the right hip adductors. The subject is supine and instructed to pull his left shoulder off the table while the examiner provides resistance to this movement at the shoulder when 2-4 inches of movement occurred. The right leg simultaneously adducts, with the examiner providing resistance to the movement above the knee.

The same mobilization is performed if the left symphysis pubis is more superior than the right. Except that the movement patterns are

performed on the opposite sides of the body.

All movements are held for 3-5 seconds at a 60-80% contraction level, and repeated in a series of three. After all of the necessary manual mobilizations are completed, and symmetric alignment is achieved the pubes are then mobilized. In this technique the subject is supine with His hips flexed at 45 degrees. The subject's feet are positioned almost side by side. The examiner's elbow is placed at one side of the inner knee and the other hand will lock down on the opposite inner knee. The subject is instructed to drive his knees together at 80-100% of maximal force for 3-5 seconds.

RESULTS

Symptomology was obtained from 100 patients diagnosed with SIJ using the previously mentioned criterion. The patient self evaluation of symptoms revealed the following:

96/100 (96%) patients reported increased discomfort with sustained positions (i.e., standing, sitting, lying)

66/100 (66%) patients reported radiating buttock pain

39/100 (39%) patients reported discomfort with stair climbing and/or hill climbing

26/100 (26%) patients reported groin pain

20/100 (20%) patients reported pain with forward flexion

23/100 (23%) patients reported radiating leg pain

10/100 (10%) patients reported urinary frequency

15/100 (15%) patients reported loss of strength in the legs

The most commonly reported position of comfort reported by patients under Part II of the patient evaluation section was sidelying left or right with a pillow between the knees.

The most common palpation finding in the therapist evaluation was tenderness directly over the short and/or long SI ligaments and directly over the piriformis muscle. This supports Lippitt's account of piriformis syndrome in association with chronic SIJ instability. The posterior SI ligaments will become chronically inflamed because of stretching and tearing with resulting abnormal joint mechanics in the presence of a SIJ

dysfunction.

Pain drawings reveal that the most common areas of pain are directly over the PSIS (posterior superior iliac spine) either unilateral or bilateral (Figure 2). Other common areas included on the pain drawing are the buttock and/or groin areas. Fortin describe a positive test for SIJ dysfunction is the patient pointing directly to the area of the PSIS.

DISCUSSION

Because the diagnosis of SIJ is made primarily from the patients subjective complains and the physical evaluation, its diagnosis is somewhat problematic for the clinician. Diagnostic SI block injections can often confirm a diagnosis of SIJ. This diagnostic test is rarely utilized because of lack of knowledge of the symtomology of SIJ. A clear understanding of the difference in signs and symptoms of SIJ dysfunction and other pathologies is key in making the proper diagnosis. The most frequent symptoms associated with SIJ dysfunction are identified in this paper. These symptoms differ from other low back symptoms and can facilitate the proper management of this pathology.

Because the diagnosis of SIJ dysfunction is made from physical examination, it is commonly misdiagnosed. SIJ dysfunction is commonly overlooked in favor of disc pathology. With SIJ dysfunction the patient will most frequently complain of increased discomfort with sustained positions of standing, sitting and lying; unable to attain a position of comfort, while a disc patient can often find a position of comfort, especially in recumbancy. SIJ symptoms will intensify with activity, while disc symptoms will decrease with activity and will usually be worse upon rising in the A.M. The second most common symptom of SIJ dysfunction is radiating buttock pain. This is reported as a generalized non-dermatomal distribution of “achiness” which can radiate into the thigh. Disc pathologies will often cause a dermatomal pattern of numbness, tingling, burning, or pain, which can radiate to the thigh and/or foot. Lippitt states that the PIRIFORMIS is most adversely effected muscle in chronic sacroiliac instability. The piriformis can entrap neurovascular structures that accompany it thru the Greater Sciatic Foramen (Superior and Inferior Gluteal nerve, Pudendal nerve, and Sciatic nerve). This accounts for the non-dermatomal pattern of pain. The third most common symptom is increased discomfort with stair or hill climbing. This can be accounted for by the increased demands on the skeletal and soft tissue system of the pelvic girdle during these activities. This symptom may also be present in disc pathologies but is usually reported as increased discomfort with forward trunk flexion. Figure 3 compares common symptoms associated with common lower back and pelvic pain syndromes in comparison to SIJ dysfunction.

Pain from a SIJ with a resulting hypertonic piriformis can often be diagnosed as trochanteric bursitis. This is because the insertion of the piriformis is at the greater trochanter. Pain from piriformis syndrome arises most often at the origin and insertion of the muscle. Point tenderness at the insertion of the piriformis from SIJ pathology can easily be overlooked in favor of trochanteric bursitis because of their common anatomical location.

Groin pain from an anteriorly subluxed sacroiliac joint or dysfunction of the pubic symphysis can often be diagnosed as a gynecological problem. Lippitt describes asymmetrical relationships between the two innominates places asymmetrical tensions on the pelvic and urogential diaphragms and places a constant stretch on the iliopsoas muscle. Additionally, pelvic wall myalgia (Levator Ani Syndrome, Tension Myalgia of the Pelvic Floor) is often characterized by bladder symptoms, perianal pain, dyspareunia, constipation and painful defecation. These women often undergo laparoscopic evaluation with normal findings.

It is the hope of the authors that this study will help clinicians consider the SI joint as a primary pain generator. Identification of common symptoms associated with SIJ dysfunction can be helpful in proper diagnostic testing such as fluoroscopic SI joint blocks. The proper diagnosis will lead the clinician towards the proper treatment and management. Often SIJ dysfunction can be treated successfully with physical therapy. In cases of gross instability, surgical intervention may be necessary.

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