

Work Related Low Back Pain: A Case scenario

Farshad Okhovatian ^{a*}

^a Department of Physiotherapy, School of Rehabilitation, Shahid Beheshti University of Medical Sciences, Tehran, Iran

***Corresponding Author:** Farshad Okhovatian, Physiotherapy Research Center, School of Rehabilitation, Shahid Beheshti Medical University, Damavand St., Imam Hossein Sq., Tehran, Iran. **E-mail:** farshadokhovatian1965@gmail.com; **Tel:** +98-021-77561407

Submitted: 2019-07-18; **Accepted:** 2019-08-11; **DOI:** 10.22037/jcpr.v4i2.28700

Please cite this paper as: Okhovatian F. Work Related Low Back Pain, A Case scenario. J Clin Physio Res. 2019; 4(3): e21. DOI: 10.22037/jcpr.v4i2.28700

Referral

A 54-year-old man was referred by his primary care physician to physical therapy clinic for his chronic lower back pain (CLBP). His job as a dental surgeon required the prolonged seated position. His back pain began about 15 years ago when lifting a heavy load. Recently, he has reduced his working time due to severity of pain.

History

Patient's Demographics:

Age: 54
Gender: male
Race/ethnicity: Asian
Education: Doctor of Dental Surgery (D.D.S.)
Occupation: Professor of University
Weight: 70 kg, height: 171 cm, Body Mass Index (BMI)=24 kg/m²
Hand dominance: Right

Social History

Culture / Religion: Muslim
Family: he lives with her wife and a 17-years-old daughter
Support systems: Patient lived an active lifestyle

Living Environment

Devices: He needed no devices
Living environment: On the second floor is a five-story complex with sauna, swimming pool and sports facilities as well as an elevator
Community needs: He did not need

General Health

Perception: He had an introverted character and appeared relaxed during interview

Health Habits

Substance use: Not using any tobacco, alcohol and recreational drugs
Nutrition: eating healthy
Exercise: He usually walks from home to his workplace which is about 6,000 steps, and occasionally swims in the pool several times per month.

Family History

His father died of Alzheimer's disease at age 86, and her mother (age 84) also has hypertension and hypothyroidism.

Medical/Surgical History

History of Present problem: The patient is a 54-year-old man who suffered from musculoskeletal disorders in his spine especially in lumbar area. His lower back pain began when he was helping to carry an old lady's luggage in the airport, which was about 15 years ago. He was out of action about a week. The following morning, his pain got so severe that it took him more than fifteen minutes to get out of bed. His back was so vulnerable even daily life could trigger severe back pain. A physical therapist helped him to reduce his acute symptoms, but no one was able to distinguish the cause of his predicament. His back pain continued to recur and his physical therapist did not give him this information in details and wanted him to keep continuously going back. Because of this annoying pain, he has reduced his work and only works part-time now as a dentist. The reason that his back was so vulnerable was due to his job as a dentist including prolonged sitting and his poor posture.

History of another Problem (which did not mention by physician): In Jan 2013, his blood test showed an elevation in prostate-specific antigen (PSA) level (7.5 ng/ml) without any symptoms. His pelvic sonography was normal and the PSA level returned to the normal range after two months of antibiotic therapies. In May 2018, his blood test presented an elevation in PSA level (5 ng/ml) with urinary frequency symptom. His pelvic sonography was normal. The 1st pelvis MRI with contrast suspicious prostate cancer and his physician recommended guided biopsy. This result made him very anxious. The patient sent these images to an expert radiologist (specialist in prostate MRI) in USA, but he did not find any evidence regarding the prostate cancer.

The result of his biopsy showed the chronic prostatitis with focal atypical small acinar proliferation in left apex, and not in favor of adenocarcinoma. By taking antibiotic for a 2-month period, the PSA level returned to almost normal range. In Jan 2019, he got prostate MRI taken with contrast and the prostate gland which showed the diffuse heterogeneous signal intensity with no evidence of mass and his urologist diagnosed chronic prostatitis. In July and November 2019, the PSA level was 3.5 ng/ml and 3.3 ng/ml, respectively.

Past Medical History: About five years ago, he had an anal fistula which was a successful surgery.

Functional status/activity level

Patient was independent in all of his ADLs. However, he had become an unable to dentistry on patients for a long period. So, he has recently reduced his time-table from full-time to part-time.

Medications

He uses Supplements including Vitamin E and herbal supplement. He also uses the Ibuprofen when his pain comes. He is taking no medication for prostate problems now.

Clinical Tests

1-10-1) Lab data: Blood Tests for Diagnosing Back Pain: Both Negative complete blood count (CBC) and negative Sedimentation (SED) Rate, or erythrocyte sedimentation rate may rule out infections or inflammation. Negative CRP or C-reactive protein indicates absence of inflammation. Negative HLA-B27 is a genetic marker in people with ankylosing spondylitis and reactive arthritis. Regarding the results of this blood test, his family physician mentioned that the increased CRP was due to a recent viral infection given Azithomycin 250 for a week and his symptoms have been resolved now. With regard to Bilirubin value, it may be a congenital problem. So his family physician did not recommend any interventions.

Imaging data: MRI findings show the disc degeneration which is more prevalent with age progression (2). Auerbach *et*

al. (3) assessed the prevalence of musculoskeletal disorders among spine surgeons and reported that the most common self-reported diagnoses included neck pain (38%), lumbar disc herniation (31%), cervical disc herniation (28%), rotator cuff disease (24%), varicose veins or peripheral edema (20%) and lateral epicondylitis (18%).

The results of prostate and pelvis MRI are have explained in the medical history section.

Diagnostic data

1-11-1) Medical screening questionnaire for LBP:

The following medical screening questionnaire⁴ for the low back region have been completed and the results are as follows:

1. Have you recently had a major trauma, such as a vehicle accident or a fall from a height? No
2. Have you ever had a medical practitioner to tell you to have osteoporosis? No
3. Do you have a history of cancer? No
4. Does your pain relieve when you rest in a comfortable position? Yes
5. Have you recently had a fever? No
6. Have you recently lost weight even though you have not been attempting to eat less or exercise more? No
7. Have you recently taken antibiotics or other medicines for an infection? No
8. Have you been diagnosed as having an immunosuppressive disorder? No
9. Have you noticed a recent onset of difficulty with retaining your urine? No
10. Have you noticed a recent need to urinate more frequently? No
11. Have you noticed a recent onset of numbness in the area of your bottom where you have sit on a bicycle seat? No
12. Have you recently noticed that your legs is becoming weak while walking or climbing stairs? No

To check the Red flags for low back pain (4):

1. Rule out the back-related tumor due to no cancer history, no unexpected weight loss, pain affected by position and not constant or worse at night
2. Rule out the back-related infection due to no intravenous drug user/ abuser, no concurrent immunosupportive disorder, no fever, malaise and swelling, no reported spine rigidity
3. Rule out the causa equine syndrome due to no report of incontinence or urine retention, no saddle anesthesia, no progressive weakness in the lower limbs, no report of sensory deficits in the feet, no muscular weakness in lower extremities (4). Rule out the spine fracture due to history of trauma, long-term steroid use, his age is not above 70, not tender point with palpation, no edema in local area (5). Rule out abdominal

aneurysm due to no peripheral vascular disease or coronary artery, no smoker, hypertension and diabetes.

Medical screening questionnaire for genitourinary system:

On the other hand, he is suffering from urinary frequency and an elevation in PSA level.

Urinary frequency are important indicators of genitourinary system disorders (4). However, the patient mentioned that he usually wakes up once or twice per night, which is within the normal limit. Therefore, the following checklist was carried out for evaluating the physiologic functions of urination and reproduction:

- ✓ Have these changes occurred quickly or over a long period? a long period
- ✓ Have you recently been drinking more liquids (with an excessive thirst) than usual? no
- ✓ What medications are you taking (diuretics)?
- ✓ Have you noticed that, despite the urge to urinate, you cannot start urination? no
- ✓ Do you still experience the sensation of needing to urinate, after urine flow is stopped? yes
- ✓ Do you have any associated symptoms, such as headaches or visual problems (possibly diabetes-related), or general items? no

Other important genitourinary aspect is reproductive function. He did not mention about penile discharge which represents the possibility of infection. In addition, the mechanical pain is usually associated with specific intercourse positions, whereas pelvic pain due to the pelvic organ disease likely will occur regardless of position. However, the following questions were carried out for assessing this system:

- ✓ How often you urinate per day? 13 times per day
- ✓ Is it a continuous flow, spotting, or sporadic episodes? Continuous flow but less than usual and its volume has declined
- ✓ What is the color of your discharge? As usual
- ✓ Is the discharge accompanied with an unpleasant odor? no
- ✓ Are there associated symptoms, such as pruritus (itching), local pain or inflammation, fever, nausea, or dyspareunia? no

Review of Systems

He shows no signs of inflammation caused by infection or rheumatic disease e.g., fever, chills, sweating (constitutional symptoms). The symptoms of low back pain usually begin after the first routine surgery and if the activity continues, the severity of the LBP also increases.

Musculoskeletal/Neurologic

He complains from LBP and trigger points in his shoulder girdle's

muscles such as trapezius. In addition, his work ergonomic condition as well as his posture need to be improved. In addition, the postural dysfunctions i.e., kyphosis, lordosis, rounded shoulders forward head posture were considered.

The genitourinary system

The patient complains of frequent urination and wakes up once or twice per night

Psychologie

He did not mention about sleep disorder; however, he is sometimes suffering from stress at work.

Cardiovascular & Pulmonary

Patient denied the chest pain. No swelling of hands and feet, or peripheral edema.

Patient denied shortness of breath or coughing.

Gastrointestinal

He sometimes had gastrointestinal problems

Current Condition/Medical Diagnosis

The patient came to the physical therapy center three days per week as an outpatient for 10 sessions

Physical Examination

System Review

Musculoskeletal system & Neuromuscular

Range of motion (ROM): Grossly bilateral upper extremities (UEs) and lower extremities (LEs) within normal limit (WNL) and grossly mild restriction in all directions of spine movements

MMT: Grossly bilateral UEs and LEs and spine WFL

Sitting Posture: Forward head, increased thoracic kyphosis, flattened lumbar spine, and a posterior pelvic tilt.

Coordination: Patient denied any problems

Motor Control: Patient denied any problems

The genitourinary system:

The urologist has used a digital rectal examination to see whether the subject might have a prostate problem or prostate cancer. The result of this test was negative (June 2019)

Cardiovascular & pulmonary system:

No chest x-ray was needed because the patient had no complaints or symptoms

Communication, affect, cognition and learning style:

The patient denied any problems

Integumentary system:

The patient denied any problems

Selected tests and measures

Body function/structure

- ✓ Arousal, attention, and cognition: The subject denied any problems
- ✓ Pain: Verbal Numeric Scale = 6/10 for lumbar area and 5/10 for cervical area.
- ✓ Muscle strength: Bilateral LEs and UEs: WFL.
- ✓ Coordination: No impaired coordination of heel-to-shin with overshooting bilateral LEs.
- ✓ ROM: Bilateral LEs and UEs: WFL. Mild restriction in all directions of spine movements
- ✓ Sensory integrity: Intact bilateral UEs and LEs.

Examination-activity and participation

Functional Status:

- ✓ Bed Mobility: Sometimes, there is a little pain in the morning to turn around and get out of bed
- ✓ Transfers: back pain begins when walking for more than 45 minutes. Moreover, standing or sitting for longer than 20 minutes is frustrating
- ✓ Functional Independence Measure=7 (i.e., complete independent)

Balance: No problem in both static and dynamic standing balance
 Locomotion/Gait: Timed Up and Go (TUG)=5.5 seconds (in normal range; the patient's objective functional impairment reflects accurately by TUG test 5)

Ambulation: 1 kilometer without any assistive devices and minimal assistance

Patient ambulates with a narrow base of support, scissoring, increased lateral sway, and safety awareness

Stairs: safe to perform at this time.

Patient mentioned that the result of the digital rectal examination test carried out by his urologist in June 2019 was negative.

It should also be pointed out that the patients with upper lumbar pain may suffer from kidney disorders e.g., pyelonephritis and renal stones.⁴ This patient did not report any chills, fever, nausea, vomiting and renal colic. In addition, his MRI and sonography results did not appear any abnormality in kidney.

Evaluation

Diagnosis

Impairments: The patient demonstrates back pain with walking for more than 45 minutes and standing or sitting for longer than 20 minutes; especially on days which he has a heavier dental surgery. A work-related lumbar disc herniation degeneration could be explain these symptoms. On the other hand, there is growing evidence from studies that pelvic floor muscle group plays a significant role in postural control of the lumbopelvic region (6-8). In addition, both low back pain and urinary

disorders are prevalent and related (9).

Categories of Interventions: Interventions will be included functional mobility training. Pain management techniques have also been indicated. With regard to urinary disorder, I have employed the following techniques *i.e.*, manual therapy techniques, motor control, movement training and patient education (10).

On the other word, the urologist made the possible diagnosis of overactive bladder syndrome due to chronic prostatitis (11). It is characterized by increased voiding frequency (12) Then, the following treatment plan were carried out:

- ✓ Diaphragmatic breathing and relaxation techniques
- ✓ Education and biofeedback with real-time ultrasound (9)
- ✓ Manual therapy techniques including myofascial techniques (10)
- ✓ Stretches
- ✓ Strengthening gluteal muscles to offload the pelvic floor muscles
- ✓ Pelvic floor strengthening exercises consist of assisted heel drops, dead bug, bridge, bird dog.

4-2) Precautions

Precautions for LBP:

- ✓ Change Posture - postural change for reducing posture and static muscular fatigues
- ✓ Use Support-Don't use an unsupported posture for prolonged periods. If you are sitting, use a chair with good back support and a suitable footrest.
- ✓ Safe reaching-Work close to the patient and Keep the equipment within a near distance. In addition, use an assistant for help.
- ✓ Normal arm posture - Keep elbows and upper arms close to the body.
- ✓ Use Comfortable Equipment-Use ergonomically designed equipment for minimizing stresses on the upper extremities and the back.
- ✓ Manage Time-Avoid long appointments or intersperse these with short breaks in order to change posture.

Precautions for prostatitis:

- ✓ Have good hygiene
- ✓ Avoid to sit for long periods and long bike rides.
- ✓ Get moving, physical activity reduces anxiety
- ✓ Hydration to keep your urine dilute
- ✓ More fruits and veggies in your diet, spicy foods and chili make prostatitis symptoms worse, limit caffeine and alcohol
- ✓ Sit in the tub of lukewarm water
- ✓ Increasing safe sexual activity
- ✓ Heavy weight is not good for prostate
- ✓ Stress management

Prognosis

It is important to analyze and apply different sitting position suitable for a dentist and he should be aware of proper operator designs and relaxation techniques (13).

Keep/Refer Decision Rationale

A consultation would be appropriate for a neurosurgeon. He may also benefit from a consultation with a psychologist to relieve possible anxiety. He is already undergoing treatment with a urologist.

Summary

Williams *et al.* (14) stated that "It is important to pay attention to musculoskeletal disorders in those groups of health care providers who use long-term static positions, extensive use of the upper limbs, and inconvenient and bad torso positions". Health care providers are at high risk for work-related musculoskeletal disorders and its prevalence is high (15). Both groups of surgeons and dentists are usually in a prolonged and repetitive manner. However, no studies have yet answered the question of whether surgeons are exposed to more musculoskeletal problems than any other medical professional (3). Tang (16) stated that 80% of dentists suffer from spinal problems.

Dentists are staying in static and bad postures for a long period due to their highly concentrated work. When a dentist bending forward treats his/her patients in a sitting position for a long time; the back pain is exacerbated. It should be note that it will take a long time for the dysfunctional muscles to be normalized and correct these postures.

From a pathomechanical point of view, it can be stated that sometimes, the dentist procedures take longer due to increased patients' expectations and they have to sit for a long period. This causes the hip flexors tightness which in turn switches off the gluteal muscles. Then, the other synergist muscles of the lower back compensate for the glutes. It causes trigger points in these synergist muscles and subsequently lower back pain. Therefore, it is necessary to perform not only resistance and cardio exercises but also flexibility training. In addition, a balanced diet is very important. In fact, these three issues should be considered i.e., rest, exercise and diet (nutrition).

Moreover, the neurosurgeon and psychologist consultations would be appropriate. As a physical therapist, we do the right exercise regimen along with correcting inconvenient habits and ergonomics.

Acknowledgments

None

Conflict of interest:

None

Funding support:

None

References

1. Asher N. Blood Tests for Diagnosing Back Pain. Updated September 06, 2019.
2. Wong AY, Karppinen J, Samartzis D. Low back pain in older adults: risk factors, management options and future directions. *Scoliosis Spinal Disord.* 2017;12:14.
3. Auerbach JD, Weidner ZD, Milby AH, Diab M, Lonner BS. Musculoskeletal Disorders Among Spine Surgeons. *Spine.* 2011;36(26):E1715-E1721.
4. Boissonnault W. *Primary Care for the Physical Therapist*: Saunders, an imprint of Elsevier Inc.; 2011.
5. Gautschi OP, Corniola MV, Joswig H, Smoll NR, Chau I, Jucker D, Stienen MN. The timed up and go test for lumbar degenerative disc disease. *Journal of Clinical Neuroscience.* 2015;22(12):1943-1948.
6. Eliasson K, Elfving B, Nordgren B, Mattsson E. Urinary incontinence in women with low back pain. *Manual Therapy.* 2008;13(3):206-212.
7. Smith MD, Coppieters MW, Hodges PW. Postural activity of the pelvic floor muscles is delayed during rapid arm movements in women with stress urinary incontinence. *Int Urogynecol J Pelvic Floor Dysfunct.* 2007;18(8):901-911.
8. Smith MD, Russell A, Hodges PW. Disorders of breathing and continence have a stronger association with back pain than obesity and physical activity. *Australian Journal of Physiotherapy.* 2006;52(1):11-16.
9. Whittaker JL, Thompson JA, Teyhen DS, Hodges P. Rehabilitative ultrasound imaging of pelvic floor muscle function. *J Orthop Sports Phys Ther.* 2007;37(8):487-498.
10. Stein A, Sauder SK, Reale J. The Role of Physical Therapy in Sexual Health in Men and Women: Evaluation and Treatment. *Sex Med Rev.* 2019;7(1):46-56.
11. Kul'chavenia E, Brizhatiuk E, Breusov A. Overactive bladder as a mask of chronic prostatitis. *Urologiia.* 2012;6(43-44):46.
12. Fitz F, Sartori M, Girão MJ, Castro R. Pelvic floor muscle training for overactive bladder symptoms – A prospective study. *Revista da Associação Médica Brasileira.* 2017;63(12):1032-1038.
13. Shah N, Sachdeva H, Khare S, Sankar R, Gupta A. A systematic management for back pain among dental practitioners. *Int J Res Med.* 2013;2(4):115-119.
14. Williams K, Gupta A, Schultz H. Ergonomics in hair restoration surgeons. *Journal of Cosmetic Dermatology.* 2015;15:66-71.
15. Epstein S, Sparer EH, Tran BN, Ruan QZ, Dennerlein JT, Singhal D, Lee BT. Prevalence of Work-Related Musculoskeletal Disorders Among Surgeons and Interventionalists. *JAMA Surgery.* 2018;153(2).
16. Tang J. A dentist's life: Helping dentists prevent poor posture and back pain. *Br Dent J.* 2017;222(8):568