



C6-C7 AND C7-T1 FACET JOINT OSTEOARTHRITIS CAUSE BY PROLONGED USE OF SMART PHONE

A CASE REPORT

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Abstract

Text neck is a repeated stress injury and pain in the neck resulting from excessive watching or texting on hand held devices over a sustained period of time.(1) It is also known as Turtle Neck posture or anterior head syndrome. This condition is a growing lifestyle and health condition with the constant growth in mobile user population all over the world. Flexing the head forward to use a smartphone directly affects the spine. Tilting the head forward to 15 degrees places about 27 pounds of force on the neck (1). This increases to 40 pounds at 30 degrees, 49 pounds at 45 degrees and 60 pounds at 60 degrees (1).



A case of a 42-year-old man , used to use the smart phone texting for more than 6 hours a day while adopting flexion of the cervical spine presented to the orthopedic outpatient clinic complaining of neck pain, radiating to both shoulders, and on and off occipital headache, no concomitant symptoms related the nervous system, locomotor system, nor other systems.

Clinical examination showed normal range of cervical spine movement with neck pain triggered at the extremity of the all range of neck movements.no neurological deficit was elicited in both upper and lower limbs.

Cervical Spine X-ray was done, and revealed evidence of facet joints osteoarthritis at the level of both C6-C7 and C7-T1.

Conservative treatment composed of None Steroids Anti Inflammatory drugs, Muscle relaxants, neck collar, physiotherapy, modification of life style, brought good relief of the pain and symptoms.

Frequent follow up showed some episodes of relapse when he returns to use the smart phone texting for extended period.

Diagnosis of facet joint osteoarthritis of the cervical spine caused by prolonged use of smart phone requires proper history taking with special concern to the daily activities of the patient, and thoroughly clinical examination, moreover good interpretation of X-Ray findings is crucial to reach the diagnosis. Conservative treatment for this disorder has a good outcome for the long term, but relapse may follow in the long term.

Keywords: Text neck, Turtle neck, neck pain, Smart phone, Facet joints, osteoarthritis.



1. Introduction

Degenerative disease of the spine also called spondylosis of the cervical spine, or osteoarthritis of the spine, can involve the facet joints, otherwise known as the zygapophyseal joints. These paired diarthrodial joints in the posterior column of the spinal column are the only true synovial joints between adjacent spinal levels (spinal units). Degenerative disc diseases like, dehydration of the intervertebral disc which affects the anterior part of the spinal column, intimately linked to the distinct but functionally related condition of Facet joint osteoarthritis. Facet joint osteoarthritis and degenerative disc disease are both the common causes of back and neck pain, which have a negative effect on the health-care systems and economies of both, developed and developing countries.(2-5)

The spinal unit (SU) is the functional segment represents the characteristics of the vertebral column. It composes of two adjacent vertebral bodies, and an intervertebral disc anteriorly, articulating right and left facet joints posteriorly, and anterior and posterior ligaments.

The facet joints are synovial joints, which are distinct from the fibro cartilaginous articulation of the intervertebral disc in its functional and anatomical characteristics. The facet joint is an articulation between the superior articular process of the lower vertebra which faces medially with the inferior articular process originating from the superior vertebra which are smaller, and facing laterally. The articular cartilage maintains smooth surfaces that allow gliding within the articulation and fill voids that develop between incongruent facet joints.

1.1 Pathophysiology

Facet joint osteoarthritis is a clinical and pathophysiological construct that includes the failure in the function of the facet joints.



Although often viewed as a disease of articular cartilage loss and bony hypertrophy, the process of failure actually involves the whole joint, including the Subchondral bone, cartilage, ligaments, capsule, synovium, and Periarticular paraspinal muscles and soft tissues. The facet joint itself is a component of a spinal ‘motion segment (Spinal unit)’ (Figure 1) that also includes the intervertebral disc, which tends to degenerate in concert with the facet joint. As such, Facet joint osteoarthritis is frequently associated with degenerative disc disease. (2-6,8-12)

1.2. Clinical features

Common clinical presentation of facet joints osteoarthritis related to painful facet joints are , localized neck back pain, with some degree of radiation into the upper limbs.(7)

1.3. Imaging

The classic radiographic hallmarks of Facet joint osteoarthritis involve both degenerative and proliferative features, including narrowing of the facet joint space, subarticular bone erosions, Subchondral cysts, osteophyte formation, and hypertrophy of the articular process. (12)

Radiographic criteria for assessing these features were initially developed using plain radiographs, and have subsequently been adapted to CT and MRI. (14-16)

Commonly used radiographic grading systems exist only for cervical and lumbar Facet joint osteoarthritis. (13,15–17), these systems grade Facet joint osteoarthritis using ordinal scales based on combinations of radiographic features (Table 1), with higher grades representing greater osteoarthritis severity. No grading scales for evaluation of cervical or thoracic FJ OA using CT or MRI are in common usage.

**Table 1**

Commonly used imaging grading systems for facet joint osteoarthritis*

Grading system by anatomical location	Imaging modality	Imaging features included							
		Joint-space narrowing	Osteophytosis of articular processes	Hypertrophy of articular processes	Facet or joint irregularity	Sclerosis	Subchondral erosions	Subchondral cysts	Joint-space vacuum phenomenon
<i>Cervical</i>									
Kellgren-Lawrence ¹⁶	Radiography	x	√	x	√	√	x	x	x

2. Case Report

A 42 years old man presented to orthopedic outpatient clinic complaining of deep, aching pain localized to the lower part of the cervical spine, with the pain extended to the both shoulders, and interscapular region, moreover he suffered frequent attacks of occipital headache. No relevant symptoms related to the nervous system, locomotor system, or other system. In anamnesis the patient reported chronic (lasting for 2 years) recurrent episodes of similar condition, and periodical exacerbations diagnosed with the general practitioner as myalgia of the cervical muscles, temporally resolving after received Non Steroids Anti Inflammatory Drugs (NSAIDs). Besides, no significant diseases were reported in the past medical history.

He gave history of using mobile phone texting for more than 6 hours a day while holding the mobile in his hand in the level below his shoulder, moreover he always sleep with his head supported with double pillow on the arm of a Sofa while he is watching TV.

Clinical examination revealed normal range of cervical spine movement with neck pain triggered at the extremity of the range of neck movements i.e., 50 degrees flexion, 80 degrees extension, 45 degrees right and left lateral flexion, 85 degrees right and left rotation. Normal sensation, muscle power, tone, and tendon reflexes in both upper and lower limbs.



Plain cervical spine X-ray was done, and showed erosion of the articular surfaces, and Subchondral sclerosis of facet joints between C6-C7 and C7-T1, which indicated osteoarthritis of the facet joints at these levels, more over there were no osteophytes seen in neither the margin of the facet joint nor the vertebral body. No significant loss of the intervertebral disc space height all through the cervical spine. (Figure.1)



Figure (1):Lateral view cervical plan X-ray,Red arrows point the affected facet joints C6-C7 and C7-T1.

Conservative treatment composed of None Steroids Anti Inflammmtory drugs (NSAIDs),Muscle relaxants,neck collar,physiotherapy,modification of life style, brought good relief of the pain, also the patient regain pain free range of motion for the cervical spine.

Frequent follow up for 1 year showed some episodes of relapse when he return to use the smart phone texting for extended period of time.

3.Discusion

Text neck is a modern age term coined by US chiropractorDr.DL Fishman,who described cervical spine streses injury, and neck pain result from foreword and down word pending of the head and neck while watching and texting with the smart phone,



although this term (Text neck) is not widely used in clinical practice, but numbers of patient suffering of it is obviously growing, on the recent years, because of recent advanced development of the smart phones and social communication applications, which attracts individuals to use them for many hours a day. And within recent future we expect this disorder will be one of the most important causes of neck pain, and cervical facet joint osteoarthritis.

In this reported patient, beside prolonged use of the smart phone in a position hurting his cervical spine, also he uses to sleep with head supported with double pillow on the high arm of the sofa, what result in more stress on the cervical facet joints, and muscles.

4. Conclusion

4.1. There are growing numbers of patient suffering from neck pain related to prolonged use of smart phone texting. which emphasizes the negative impact of the misuse of the recent communication development.

4.2. Sleeping with the head and neck pending forward (flexed), apply high stress on the cervical facet joints, and muscles and predisposes for myalgia of the cervical muscles and facet joint osteoarthritis.

4.3. Diagnosis of text neck disorder requires, proper history taking with special concern to the daily activities of the patient, and thoroughly clinical examination.

4.4. Good interpretation of X-Ray findings is crucial to reach the diagnosis.

4.5. Conservative treatment for this disorder has a good outcome for the short term, but episodes of relapse may follow in the long term.



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