

Physiotherapy Management Of A Patient With Neck Pain Presented With Block Vertebrae: A Case Report

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Abstract

Background: Neck pain leads to functional limitations and disability. It is the 6th leading contributor to the global health burden. Majority of individuals will experience an episode of neck pain at least once in their lifetime. Neck pain is associated with a multitude of factors, and the best way to categorize these factors is to use the biopsychosocial model. Neck pain is conservatively managed by various physiotherapy techniques.

Case Presentation: The case is of a 21-year-old male engineering student who presented with complaints of neck pain (non-radiating) for a week. The intensity of the pain had been intermittently increasing/decreasing for about a year and about 2-3 episodes in a month for a period of approximately one year. He presented with an X-ray which showed C-3/C-4 block vertebrae. The patient was managed using pain education and exercises along with ergonomic advice.

Conclusion: Patient-reported pain was decreased significantly from the initial visit. The patient was able to sit for longer duration and had a considerable improvement in function.

Keywords: Block Vertebrae, Neck pain, Exercises, Muscle Performance, Low load motor control exercises, Biopsychosocial model

Background

Neck pain is considered a global health issue with varied prevalence in literature [1]. Majority of individuals will experience an episode of neck pain at least once in their lifetime[2]. The occurrence of neck pain among the world population ranges from 16.7% to 75.1%[3]. The point prevalence for neck pain varies from 6% to 22 % and the one-year prevalence varies between 1.5% and 75% [1]. A systematic review reported that an average prevalence of 15% to 50 % [1]. It accounts for almost 25% of visits to outpatient musculoskeletal physiotherapy setups [4]. Global burden of disease study ranks neck pain as 6th among 25 leading causes of disability and injury[5]. It is a major contributor to the increased burden of disease on health care expenditure and a cause of disability. The varied prevalence is attributed to the heterogeneity in the way we define neck pain, different epidemiological studies have considered neck pain differently.

Neck pain has been always been defined differently by different authors, which has led to numerous classifications of neck pain. Till date, neck pain has been classified on the basis of duration, severity, aetiology/structure, and type to name a few[2]. Most of the studies have defined neck pain according to one of these classifying factors. Neck pain is usually categorized as nonspecific neck pain (no pathoanatomical cause) and specific neck pain (specific anatomical cause) or mechanical or non-mechanical (origin other than the cervical spine), with either of them defined separately in the literature. Mechanical neck pain is defined as pain located in the cervical spine, including the cervicothoracic junction, which is exacerbated with cervical motion, sustained postures, and/or palpation of the cervical musculature[6]. Among all these classification factors duration is the best predictor of effect based on evidence. For a variety of different treatments, shorter duration has been found to be associated with a better prognosis than long-standing pain[2], [7]. With the emergence of the biopsychosocial model, these categorization is less important clinically than previously thought [8].

Neck pain is associated with a multitude of factors, and the best way to categorize these factors is to use the biopsychosocial model [9]. The factors can then be classified as non-modifiable risk factors related to pathoanatomical features and adjustable risk factors, which are more related to psychosocial features (e.g. smoking, physical activity and sedentary lifestyle, beliefs, coping style, expectations, and work satisfaction)[4]. These factors are important to

assess as these contribute to the chronicity of pain. In the present case, we focused on both, the pathoanatomical factors as well as psychosocial factors. Lin [10] mentioned in their systematic review nearly eleven recommendations for the management of common musculoskeletal care, the treatment designed for the present case is in line with the systematic review and recently published guidelines.

Case Presentation

21 years old (male), engineering student presented with complaints of neck pain (non-radiating) for a week. He described his pain to be gradually increasing in intensity every time he sat on a chair and studied. The intensity of the pain had been intermittently increasing/decreasing for about a year and about 2-3 episodes in a month for a period of approximately one year. He presented to us with an X-ray which shows C-3/C-4 block vertebrae. He had consulted a few consultants who had advised him NSAIDs and rest before referred to physiotherapy. The patient was quite definite about the factors which increased his pain, studying on a chair for prolonged duration and lying with a pillow. His NPRS level ranged between 5 and 8. He emphasized on the inability to sit and study as his examinations were near and were anxious about the same. The most painful position was sitting for a prolonged duration followed by supine lying with a pillow, though a no pillow position helped. There were no red flags identified.

For assessment of the patient, we looked for psychosocial factors as well as physical factors causing pain. On physical examination, his cervical spine range of motion was restricted and painful. Left Rotation was limited to 45 degrees and flexion/extension was equally painful and restricted. He had tenderness over spinous processes of C3, C4 and C5 vertebrae and gross tenderness over cervical facet joints, upper trapezius and cervical flexors. Muscle weakness of deep neck flexors was assumed because of the theoretical concept and chronicity of the pain. On assessing the psychosocial factors, he was anxious and worried about the upcoming examinations as he was not able to focus on the studies. He was also concerned about his performance in the examination. He had a sedentary lifestyle and mainly focused on studies. The ICF health domains are described in figure 1 for the patient.

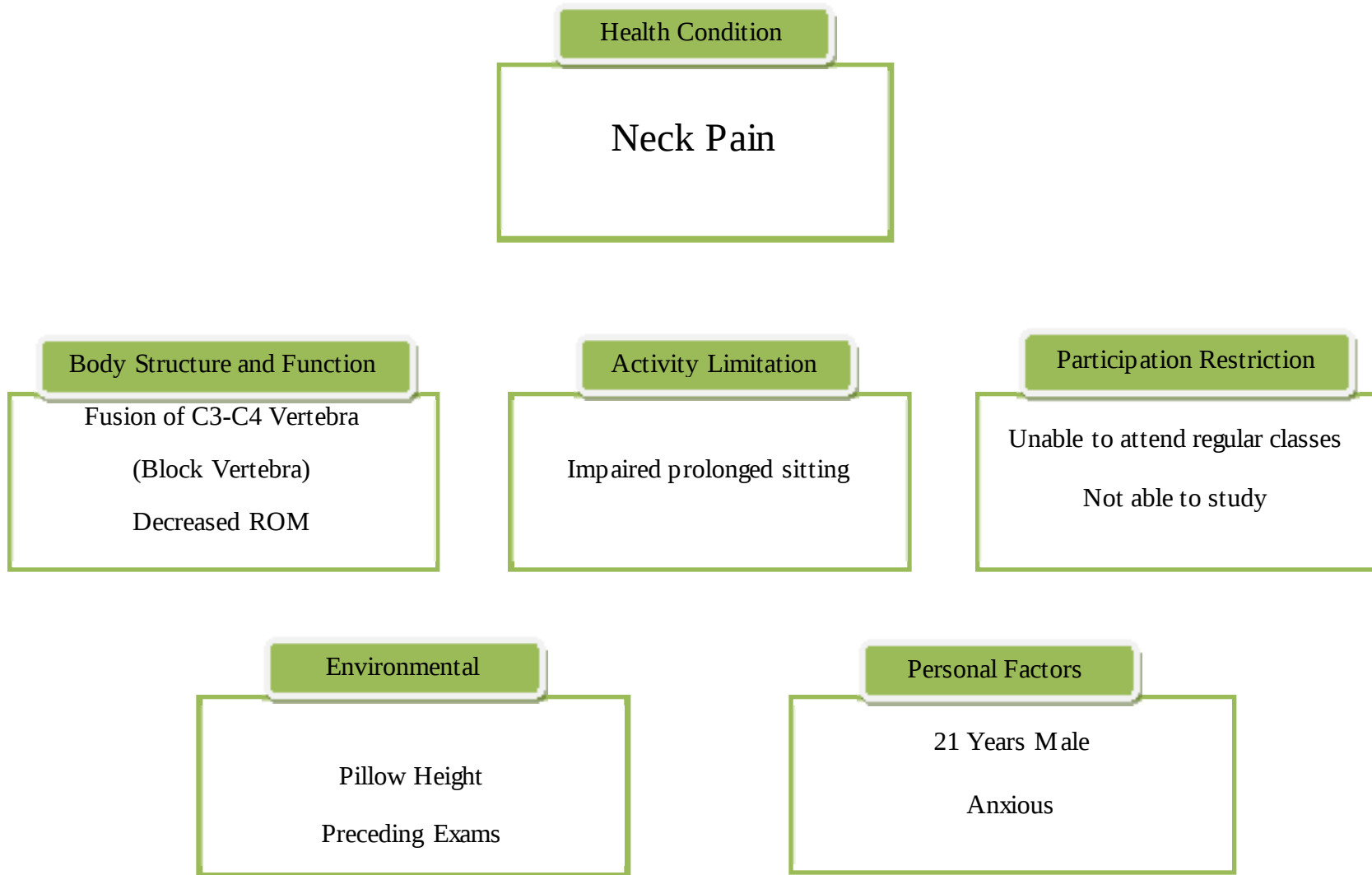


Figure 1 Description of ICF health domains according to the patient

Investigations

X rays were advised in previous consultations. The X-ray showed block vertebra at C3-C4, the findings are shown in figure 2 and 3.



(a)



(b)

Figure 2: (a) & (b) Anteroposterior, Lateral views of radiographs showing C3-C4 block vertebrae

Diagnosis:

For diagnosis, we tried to classify the diagnosis into either into the pathoanatomic or impairment-based origin of pain. The following are the diagnosis of the patient

Medical Diagnosis: Neck Pain

Pathoanatomical diagnosis: Block Vertebrae

Physiotherapy diagnosis: The aims of the physiotherapists' diagnostic process is the finding of divergences that exist between the level of function that is desired by the individual and the capacity of the individual to achieve that level. The following are the patient's PT diagnosis:

- Impaired function
- Impaired muscle performance

Treatment and follow up

The patient was treated according to impairments and functions which were most affected. Our goal were to achieve pain-free and endurance of cervical muscles to treat the inability to sit and study. The patient was seen in physiotherapy for 10 visits for a period of 2 weeks. Each time reassessment of significant impairments and post-treatment subjective evaluation was done. Ergonomic education was an important part of each therapy session, and the patient was educated not to sit for prolonged duration and was advised to move out of painful postures when a posture becomes painful due to prolonged sustenance. Strengthening exercises, low load motor control exercises for the upper quarter were initiated with manual traction. Pre and post-exercise program hot fomentation was administered. Home exercise program focused on a structured set of exercises focused on mobility and strength. The pain and disability level were significantly better after a week of therapy sessions. Regular therapy for 8 weeks was advised to overcome the mechanical stressors of pain and lack of strength to maintain a sustained posture for a long period of time. The patient education to relieve the anxiety and reassurance was given. He was advised to maintain healthy ergonomic positions in order to be able to continue with the load of his student life and future references.

Exercise Therapy Protocol: 3 Sets (H: hold, R: repetition)

Supine Lying- Chin tucks 5H5R, Middle Trapezius (Pain-Free) 5H5R, Rotation End Range (Pain-Free) HR 10H5R (Bilaterally), Extension HR 5H5R

Later, progressed to prone extension, Core strengthening and sitting position isometrics with scapular strengthening exercises.

Discussion

The patient reported a significant decrease in the intensity of pain after 2 weeks of supervised physiotherapy management. The case highlights the importance of incorporating the biopsychosocial model in clinical practice [8]. It stresses the importance of assessing the psychosocial components while assessing a patient with persistent pain. The anxiety and depression modulate pain and can enhance the pain perception intensity and severity in an individual [11]. Therefore, patient education should be an integral component of physiotherapy management. The physiotherapy management used patient education and it showed the results as significant pain reduction. Individuals with neck pain have found to have lower muscle strength compared to their healthy controls[12]. This emphasizes more on strengthening exercises to be used for neck pain, and we used progressive loading to improve muscle strength over the period. Similar results were described for the effectiveness of strengthening exercises for reducing pain and disability in neck pain patients [13]. The X-ray showed block vertebra, which can be a cause of the patient's symptoms. The ergonomic advice for not sustaining a posture prevented loading and helped in the reduction of pain. The finding of C3-C4 block vertebra is a rare finding on an X-ray. Though, the findings should be cautiously used in deciding the course of management. Supervised exercise program combined with patient education should be the ideal PT management for the case of Neck pain associated with findings of block vertebra.

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