Response of Ankylosing Spondilitis to Physiotherapy: A Case Report

Gulunjkar Pooja[1], Shah Riddhi[2]

Abstract

Purpose: A 36 year old male individual diagnosed with Ankylosing Spondilitis (AS) was referred for physical therapy. On evaluation - presence of pain over entire spine, reduced spinal mobility and muscular tightness was found along with severe BASMI, BASDAI and BASFI scores. Exercise intervention was given for 60 min a day for 6 days a week. Supervised intervention inclusive of stretching exercises, mobility exercises along with Mckenzie technique, Modified Pilates exercises and Proprioceptive neuromuscular facilitation technique and ergonomic advice was given for a total duration of 6 weeks. Reassessment of outcome measures was done after 6 weeks. Improvement in all the outcome measures was documented with increase patient satisfaction and confidence.

Key words: Ankylosing Spondilitis (AS), Physical therapy, Supervised intervention.

Introduction

Ankylosing spondylitis is one of the common rheumatic inflammatory spondyloarthropathy. It is a debilitating progressive disease affecting the axial skeleton [1]. In majority of Ankylosing Spondilitis patients, sacroiliac joints are affected first followed by lumbar spine and thoracic spine. In atypical cases however, cervical spine may be affected first followed by lumbar spine. Peripheral joint including hip, knee, shoulder may also get affected gradually in the course of disease along with systemic involvement. The primary pathology includes calcification of spinal ligaments, enthesitis and fusion of vertebral bodies. Ankylosing spondilitis affects men in early adulthood causing a high impact on the individual for a lifetime if not addressed early [2]. Traditionally, anti-inflammatory medications and physiotherapy have been the primary mode of treatment for Ankylosing spondilitis with later showing more effectiveness as per the literature [2]. Plenty of literature is available on patients with typical presentation of this condition but in present case study we have documented a neglected case of this condition with slightly varied presentation of symptoms who responded very effectively to physiotherapy in a short span of treatment.

Case Description

A 36 year old male individual (weight- 83kg, height- 156), diagnosed as a case of Ankylosing Spondilitis, was referred to physiotherapy department for spinal exercises. He complained of having stiffness in the entire body; difficulty in performing neck and back movements; intermittent peripheral joint pain; easy fatiguability and heel pain bilaterally. He required two pillows for sleeping and could not go to prone position at all with difficulty in many ADL. He had to leave his job 10 months ago due to this condition as long standing postures were painful for him.

Evaluation

On history taking it was found that he was diagnosed with the condition 4 years back with HLAB27 positive. He had a typical presentation in the initial course of the disease with SI joint pain followed by back pain and stiffness and then neck pain and stiffness. However 2 years later, neck stiffness aggravated more than lower back stiffness. This history correlated with the recent radiography findings and clinical examination of the patient. Radiography findings revealed: Cervical spine- complete straightening of cervical spine with unappreciable disc space and fusion of facet joints; thoracic spine- increased kyphosis; lumbar spine- disc space reduction with loss of lumbar lordosis, presense of syndesmophytes, squaring of vertebral bodies; SI joint- grade 4 definite complete ankylosis; bamboo spine appearance in overall spine with dagger spine appearance at some places.

The pre-evaluation was done on the second day after patient started supervised physiotherapy. On assessment for muscle length, bilateral TA, hamstring, abductor, hip flexor (with Rectus femoris), pyriformis and pectoralis minor tightness was documented. On evaluation paraspinal muscle spasm was present; neck pain > back pain with NRS 7/10 with pain aggravating on change in mattress, static postures; grade 2 tenderness over left calcaneum with weight bearing activities aggravating the heel pain; hip rotation ROM restricted – internal rotation (20deg) more affected than external rotation (45deg) with

[1]1Department of Musculoskeletal Physiotherapy, Sancheti Institute College of Physiotherapy, Pune
[2]Department of Community Physiotherapy, Sancheti Institute College of Physiotherapy, Pune

Address of Correspondence
Dr. Pooja Gulunjkar
Sancheti Institute College of Physiotherapy, Pune
Email: poojagulunjkar@gmail.com


Dr . Pooja Gulunjkar (PT)


Dr . Riddhi Shah(PT)


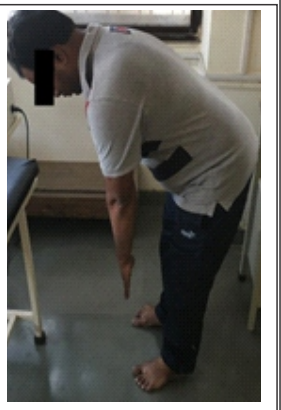

Image 1: Pre training **Image 2: Post training**

Fig 1: Finger to Floor- Lumbar flexion


Image 3: Pre training **Image 4: Post training**

Fig 2: Lumbar Extension


Image 5: Pre training **Image 6: Post training**

Fig 3: Forward head posture

symmetrical bilateral picture giving tissue stretch end feel. Patient had a forward head posture with increased thoracic kyphosis and straightening of lumbar spine on lateral view. Gait pattern showed absence of dissociation of trunk and pelvis with increased arm swing. Chest expansion measure showed a difference of 2 cm at all three levels.

Outcomes Specific To Ankylosing Spondilitis

BASMI [3] was used for cervical and lumbar ROM assessment with a score of 7.5. Cervical side flexion showed a change of 1 cm pre and post movement whereas modified schobers test [3] for lumbar spine revealed no change in measurement; BASDAI score of 8.5/10 was found for disease activity and BASFI score of 7.2/10 for functional level indicating very sever status, as higher score indicates more severity.

Treatment

In the first week, patient was educated about the progression of the disease, importance of adherence to exercises and compliance to medications, and regular mobility [5]. The patient was made to warm up [3] (in the form of walking) for 10mins every day before beginning exercise session to prepare the stiff body for exercises. This was followed by stretching of TA, Hamstrings, Pyriformis, Hip flexors with rectus femoris, Pectoralis minor and DLF to maintain and improve the muscle length so as to prevent early progression of restriction in ROM. Dosage for stretching was 15 sec holds with 4 repetition for each muscle. Strengthening and mobility exercises were given especially for lower limb including ankle movements, static quadriceps, static hamstrings, static gluteals, bridging, supine and side lying leg raising and dynamic quadriceps. Cervical and Lumbar ROM exercises [6] were taken for all the movements within available range of motion to maintain and improve spinal mobility. These exercises were given to maintain and improve the efficiency of muscle performance. Thoracic expansion [6] with upper limb movements was taught in sitting position for respiratory reeducation.

From the second week onwards, additional exercises were started including scapular sets in varied positions, chin tucks in supine and sitting position, T and Y stretching on wall for pectorals and to facilitate scapular retraction, upper thoracic stretching by therapist with patients hand behind head, static back in supine to recruit back extensors, lateral shift in standing and supine Mckenzie extension with hands behind the head and pressing elbow on the plinth and lifting the chest up [7]. All exercises were performed for 20 repetitions. Core activation was started in crook lying position to enhance pelvic stability [8].

After 2 weeks, patient was comfortable with only 1 pillow and was able to maintain prone position for 1 minute. Also he reported of having improvement with respect to his ADL performance and reduced back muscle spasm. Further progression of exercises was done from third week. To reduce muscle spasm and to enhance muscle recruitment, Proprioceptive neuromuscular facilitation [3] technique was given- Rhythmic stabilization and hold relax technique for lower trunk in bridging position, upper trunk and back in sitting and for cervical muscles ialso in sitting position. A hold of 5 sec was given with 10 repetitions. Patient was asked to maintain prone position till discomfort with hands by the side and pillow below forehead. Progression to prone knee bending was done later. Also patient was asked to co-ordinate breathing with mobility exercises taught in first week.

In the fourth week, exercises in quadruped position were started including forward and backward rocking, hip extension, alternate arm and leg lifting, and hip abduction. Lions stretching was also added. Modified Pilates exercises [8] were started including leg circles, side kick and hundreds with core activation and breathing control. All these exercises were continued for 2 more weeks. Supervised physiotherapy was given for a total of 6 weeks (6 days/week for 60 min/day) [9, 10] and Home exercise program was given to the patient from second week onwards. Post assessment was done 6 weeks later. (Images 1 – 6)

Result

After 6 weeks of physiotherapy, there was improvement with respect to patients symptoms along with improvement of overall mental status. Patient reported a feeling of well-being and satisfaction, reduction in body stiffness, ease in performing various ADL's and increase in confidence.

Objectively there was reduction in pain (NRS), improvement in physical function (BASFI), spinal mobility (BASMI), spinal stiffness (VAS), fatigue level (BASDAI) and improvement in muscle length.

Discussion

The objective of this case report was to provide an insight for successful treatment of a young male individual diagnosed of having

Ankylosing Spondilitis with various physiotherapy interventions. This case was a unique case in many aspects. Patient started experiencing symptoms at the age of 32, and there was rapid progression of the condition over a period of 4 years with worsening of neck stiffness more than back stiffness. The clinical presentation matched with the radiographic presentation. Despite of presence of significant radiographic changes and limited accomplishment with prior medical treatment, this patient showed a significant improvement in spinal mobility, flexibility and AS specific outcome measures over a period of 6 weeks of intervention. According to a recommendation given in 2011 by Kamanli et al using evidence based data, physiotherapy and pharmacological management must be started as soon as possible for betterment of patient's condition [1, 7]. However in this case report, rapid disease progression could be attributed to the fact that exercise intervention was not advised to the patient for 4 years after being diagnosed of having AS and patient continued only medical management for the same and physiotherapy was started after 4 years. Also the exercise intervention was planned depending on patient's clinical presentation and hence it was a subject specific protocol which was progressed weekly. This is supported by another recommendation which emphasizes on treatment planning depending on clinical status and patient's expectations [1,6]. In a prospective longitudinal study by Zuzana et al, there was graded improvement seen in pain and function in patients who had AS for less than 15 years with exercise performance for atleast 5 days and 200 minutes a week[10]. The chronicity of the patient's condition was 4 years in the present case report and the exercises were given for 6 days and 360 minutes a week which could be considered as optimal frequency and duration of intervention according to results documented by Zuzana et al. Treatment focused basically on patient education, stretching, mobility exercises, strengthening of muscles along with some Mckenzie technique, Modified basic Pilates exercises and Proprioceptive neuromuscular facilitation technique. Use of modality was not considered as a mode of treatment for this patient despite of having high pain intensity and muscle spasm. This is also supported by a recommendation stating modality to play a limited short term role in AS and lifelong regular exercises being the mainstay of treatment [1, 6, 5]. Researches have documented positive results after Mckenzie and Pilates intervention in these patients. Current study also included these two techniques in the protocol for the patients which could have resulted in beneficial effects in the patient [7, 8]

In current study, Home exercise program (HEP) was given to the patient from second week of exercise intervention along with supervised intervention given by the therapist. HEP could have resulted in additional benefits with respect to the outcome measures. This finding is supported by a study done by Yigit et al in 2013, where Home-based exercise program was found to be effective in increasing functional capacity and joint mobility, decreasing disease activity, improving emotional state, fatigue and quality of life for AS patient receiving TNFα inhibitors [11].

With this case report, we conclude that the exercise intervention given in this long-standing AS patient can be given to other patients having AS with severe spinal stiffness, reduced functional status and increased fatiguability to bring about a satisfactory improvement in the patient with respect to pain, stiffness, disability, ADL performance, overall well-being etc over a short duration of time.

References

1. Ozgocmen S, Akgul O, Altay Z, Altindag O, Baysal O, Calis M, Capkin E, Cevik R, Durmus B, Gur A, Kamanli A, Karkucak M, Madenci E, Melikoglu MA, Nas K, Senel K, Ugur M; Anatolian Group for the Assessment in Rheumatic Diseases.. Expert opinion and key recommendations for the physical therapy and rehabilitation of patients with ankylosing spondylitis. Int J Rheum Dis. 2012 Jun;15(3):229-38
2. Sieper J, Braun J, Rudwaleit M, Boonen A, Zink A. Ankylosing spondylitis: an overview. Annals of the Rheumatic Diseases. 2002;61(Suppl 3):iii8-iii18. doi:10.1136/ard.61.suppl_3.iii8.
3. Walker J, Helena A, Physical Rehabilitation in Arthritis, 2nd Edition, Saunders, 2004, 213:228
4. Norkins C, White D, Measurement of joint motion- A guide to Gonniometry, 3rd Edition, Jaypee Brothers, 2004, 295:363
5. Dougados M, Dijkmans B, Khan M, Maksymowych W, van der Linden S, Brandt J. Conventional treatments for ankylosing spondylitis. Annals of the Rheumatic Diseases. 2002;61(Suppl 3):iii40-iii50.
6. Millner JR, Barron JS, Beinke KM, Butterworth RH, Chasle BE, Dutton LJ, Lewington MA, Lim EG, Morley TB, O'Reilly JE, Pickering KA, Winzenberg T, Zochling J. Exercise for ankylosing spondylitis: An evidence-based consensus statement. Semin Arthritis Rheum. 2016 Feb;45(4):411-27.
7. Rosu OM, Ancuta C. McKenzie training in patients with early stages of ankylosing spondylitis: results of a 24-week controlled study. Eur J Phys Rehabil Med. 2015 Jun;51(3):261-8.
8. Altan L, Korkmaz N, Dizdar M, Yurtkuran M. Effect of Pilates training on people with ankylosing spondylitis. Rheumatol Int. 2012 Jul;32(7):2093-9.
9. Dagfinrud H, Halvorsen S, Vøllestad NK, Niedermann K, Kvien TK, Hagen KB. Exercise programs in trials for patients with ankylosing spondylitis: do they really have the potential for effectiveness? Arthritis Care Res (Hoboken). 2011 Apr;63(4):597-603.
10. Uhrin Z, Kuzis S, Ward MM. Exercise and changes in health status in patients with ankylosing spondylitis. Arch Intern Med. 2000 Oct 23;160(19):2969-75.
11. Yigit S, Sahin Z, Demir SE, Aytac DH. Home-based exercise therapy in ankylosing spondylitis: short-term prospective study in patients receiving tumor necrosis factor alpha inhibitors. Rheumatol Int. 2013 Jan;33(1):71-7

Conflict of Interest: NIL
Source of Support: NIL

How to Cite this Article

Gulunjkar P, Shah R. Response of Ankylosing Spondilitis to physiotherapy: a case report. J Evidence-Based Physio Research March -June 2017; 1(1): 34-36.