

## Role of Remedial Exercises and Mobilisation to Reduce Pain and Improve Functional Abilities in Idiopathic Polyarthrititis - A Case Report

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### ABSTRACT

**Background:** Idiopathic polyarthrititis is a rare entity and remains to be a challenging case to diagnose and manage which has the major impact on the physical, social and psychological aspect of the affected individual. **Objective:** The aim of the report is to determine the role of remedial exercises and mobilisation to reduce pain and restoration of function in patient with idiopathic polyarthrititis. **Case report:** We report the case of 47 year female presenting with history of severe pain and stiffness in her knee joint followed by shoulder, elbow, wrist and ankle joint with swelling in both hands and feet's . The pain and stiffness was managed by remedial exercises and mobilisation. **Conclusion:** A remedial exercises along with mobilization is an effective intervention for reducing pain and restoration of functional ability and to increase functional independency.

**Key words:** Idiopathic polyarthrititis; exercise; functional independence, mobilization

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### INTRODUCTION

Polyarthrititis which involves arthritis of 5 or more joints simultaneously experienced at any age, irrespective of gender<sup>1</sup>. Arthritis is considered to be one of the old age friends. Poly arthrititis represents broad base of differential diagnosis; it can be infectious, inflammatory, autoimmune, systemic or idiopathic<sup>1</sup>. Idiopathic poly

arthrititis is self limiting disability, the exact incidence and prevalence is not known. 60% of the patients reach adulthood with no active synovitis or functional limitation however patient experience joint pain, joint deformity and destruction, osteoporosis, impaired psychological health and difficulty with activities of daily living<sup>2</sup>. One third of the patients have

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marked functional disability and 10-45% has active ongoing disease<sup>3</sup>. Psychological distress is very common and about 20-30% have high level of depression and anxiety<sup>4</sup>. Strengthening and stretching exercise along with electro modality have shown improvement in functional abilities of patients with arthritis<sup>5-6</sup>. However no study has reported the effect of mobilisation and rigid tapping on idiopathic polyarthritis to reduce pain and improve functional abilities.

**CASE REPORT:** A 47 years old female had presented with high grade fever in the evenings, heaviness in both her legs and severe pain in her knee bilaterally, patient ignore the symptoms and later pain progressed to all joints with stiffness. There was swelling present at both the extremity feet and hand and had stiffed robotic typed gait. Patient did not have any history of previous medical illness or any long term medication. Patient was mixed by diet and denied consumption of alcohol, tobacco and long term medication. Patient underwent various investigations, her blood report suggest that haemoglobin level was low 8.84 gms%, erythrocytes, leucocytes and platelets counts were

within normal range and also serum uric acid level and blood glucose level were within normal values. Patient lipid profile showed highly low triglycerides level 48 mgs/dl and low high density lipoprotein (HDL) and low density lipoprotein (LDL) cholesterol level. RA factor test were performed using lattelagglutination and RA factor titre method and showed negative sensitivity results ruling out Rheumatoid arthritis and Sjogren syndrome. Analysis for detection of Human Leucocytes antigen(HLA) B27 was done and results were negative for HLA B27 ruling out ankylosing spondilitis, Reiter's syndrome, psoriatic arthritis and other arthropathies associated with Inflammatory bowel disease(IBD). Anti Nuclear Antibody and DNA (double stranded) antibody serum by immunoflourescence was done and findings were negative for Systemic Lupus Erythematosus (SLE). The clinical representation and investigation of the patient revealed no significant findings. Patient underwent Homeopathy treatment did not give her any relief and patient continued her medical treatment for the symptomatic relieve but till now patient

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remains undiagnosed and with no positive findings. On subjective examination patients pain on numeric pain intensity scale<sup>7</sup> was 7 on 10 on activity which gets precipitated by activities like prolonged standing, squatting, walking and stair climbing where else analgesic and rest relieved the pain. There was no temporal variation. Range of motion of shoulder elbow wrist and ankle were reduced due to pain and stiffness. End feel of shoulder, elbow and hip was 'hard capsular' whereas wrist and ankle was 'soft capsular' could

be due to soft tissue oedema. Upper limb function was assessed by using Disability of Arm Shoulder and Hand questionnaire<sup>8</sup> (DASH) for patient and scored 52/120. Lower extremity functional scale<sup>9</sup>(LEFS) was used to assess the functional ability, patient scored 38/80. The knee range of motion was almost near normal. The muscle strength of shoulder elbow and hip was around 3+\5, overall functional independence level was assessed using Functional Independence Measure Scale (FIMS)<sup>10</sup> and scored 72/126.

Table1: Pre-post intervention score of Functional Independence Measure Scale (FIMS), Verbal Analogue Scale (VAS), Disability of Arm, Shoulder and Hand (DASH) and Lower Extremity Functional Scales (LEFS).

Functional independence measure scale (FIMS)components	Pre intervention score	1 month post intervention score
Self care	14/42	31/42
Sphincter control	14/14	14/14
Transfer	9/21	17/21
Locomotion	6/14	12/14
Communication	12/14	12/14
Social cognition	17/21	20/21
FIMS Total Score	72/126	106/126
Numeric pain intensity scale	7/10	3/10
Disability of arm, shoulder and hand (DASH)	52/120	96/120
Lower Extremity Functional Scale (LEFS)	38/80	64/80

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Patient's physiotherapy management since day 1 includes high intensity Transcutaneous Electrical Nerve Stimulation (TENS) for shoulder and knee joint, parameters were pulses 0.2ms and frequency of 2Hz<sup>11</sup> was given to reduce pain, Hot Moist Pack was given over both her knee joint, ankle joint, shoulder joint and elbow joint to reduce pain and relaxes the surrounding soft tissues<sup>12</sup> and patient was also advised to take hot water immersion at home. Passive stretching was given to shoulder, elbow, wrist, hip knee and ankle joint to improve joint mobility. Patient also received mobilization at all the joints, grade 1-3 to reduce pain and stiffness.<sup>13-14</sup> Movement with mobilization was given in mid range and end range using mulligan belt<sup>13</sup> where mobilization was given at joint which was sustained and patient was asked to same activity which was painful for her earlier. Movement with mobilization helps to correct the positional fault<sup>15-16</sup> which attained after any musculoskeletal condition or injury. Range of motion exercise of upper limb was given using wooden stick, pulley, towel, shoulder wheel etc whereas for lower limb mobility quadriceps table, ankle press,

ergo meter, hand to toe exercise, gait training were given. Peg board exercise and ball squeeze exercise was given to improve hand dexterity and hand function, foot exercise using paper/towel pick up exercise and toe curls exercise were given for foot mobility and gripping of the joint. Along with this patient was advised to keep her feet elevated using pillows and perform ankle pumps and was also taught how to put crepe bandage to the feet to reduce swelling. There was a significant improvement seen in the FIMS scores, DASH scores, LEFS scores and numeric pain rating scales after a one month intervention.

**DISCUSSION:** Individual with chronic disease are physically inactive and psychologically stressed, which increases their life time dependency for functional activities and the risk of secondary complication and disabilities, in turn has impact on decrease Quality of Life.<sup>17</sup> Exercise helps to improve muscle strength, flexibility, joint mobility, to regain the functional goals of Activities of Daily Living, and improves the level of dependency.<sup>18</sup> Remedial exercise with mobilization to the joints was given to the

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patient and there was a improvement in level of functional dependency as seen by change in Functional Independence Measure score from 72 to 106. Mobilization grade 1-3 was given, where grade 1 and 2 reduces pain via pain gate mechanism whereas grade 3 helps to reduce stiffness thereby promotes mobility.<sup>13</sup> Mobilization helps to regain the functional Range of Motion which showed improvement in the joint mobility which can be seen component wise improvement in the FIMS. There was a vast improvement seen in self care, transfer, locomotion and social cognition suggesting improved mobility component and decreased dependency level. There was a reduction in joint pain with the application of Hot Moist Pack and TENS to joints. The Numeric Pain Rating Scale post intervention had come down from 7 to 3. Application of hot moist pack provides an analgesic effect and relaxes the surrounding soft tissue. Increase in tissue temperature activate thalamus and cerebral cortex which helps to mitigate the pain sensation thereby causing pain relief.<sup>11,12,19</sup> TENS also helps in reducing pain through peripheral and central mechanisms,

centrally in the spinal cord and brainstem it activates opioid, serotonin, and muscarinic receptors and peripherally, at the site of TENS application, opioid and  $\alpha$ -2 noradrenergic receptors are involved in TENS-induced analgesia by activating large diameter nerve that is A  $\beta$ - sensory fibre via pain gate mechanism.<sup>11,12,20</sup> There was an improvement in DASH scores from 52 to 96 and in LEFS scores from 38 to 64 in the patient after one month post intervention. The exercises which mainly involved joint mobility exercise for all the joints, muscle flexibility exercises and to improve fine motor function and manipulation of hand, dexterity exercise was given which help the patient to perform functional task of Activities of Daily Living independently like opening a tight jar, locking unlocking door knob etc and also helped patient to participate actively in social activities.

**CONCLUSION:** The remedial exercises with mobilization can improve functional independency, social activity participation and also improve Quality of life of the patient with such chronic condition.

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