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Evaluation of functional interference of pain, distress and behavioral changes in SLE induced arthritis patient: a case study

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Abstract: Systemic lupus erythematosus (SLE) is a chronic autoimmune condition that can inflict any organ demonstrating fluctuating signs and course that can vary from an inactive to a severe condition. Despite veiled etiological mechanism, the disease can however be linked to multiple genetic, ethnic, immuno-regulatory, hormonal and environmental factors to trace its progression. SLE manifests in the form of various medical conditions including Arthritis that specifically targets the body's nexus: joints. Rheumatoid Arthritis, the most prevailing type of SLE induced arthritis, is characterized by inflammation, fever, malaise, joint pains, muscle pains, and fatigue that may interfere with body's normal functioning. SLE induced arthritis influences physical, biological, social and psychological functioning thus, may account for inducing distress and behavioral changes in patients. Hence, the current study evaluated the pain severity along with the possible functional interference using The Brief Inventory Scale. Moreover the mood together with behavioral changes were also probed into using The Pain and Distress Scale in a 27 years old female suffering from SLE induced arthritis. The findings from the two domains conjoined with an elaborated case history vouchsafed that the impact of pain is slightly higher than normal for the participant and there are moderate changes in mood and behavior. The pain does not restrict participant's mobility by the virtue of the positive attitude which enables the participant to experience a life of better quality.

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INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic multisystem autoimmune rheumatic disease constituting of flares interspersed with episodes of temporary diminution in severity. SLE comprises a constellation of symptomatology that influence multiple organ systems. Onset of the disease may be insidious, with many different symptoms that may make early and accurate diagnosis a challenge. The prevalence of SLE is variable, dependent on ethnic origin and ranges from 40–200 per 100,000 of population[1]. The occurrence of SLE is dominant in those having African and Asian ancestry as compared to Europeans[2]. SLE induced arthritis predominantly affects females at a rate10-folds higher than males[3].The mainstay of treatment for the disease comprises of anti-malarial drugs such as Hydroxychloroquine combined with Corticosteroids and conventional immunosuppressive drugs which are primarily dependent on the severity of disease and the organ system involved[4].

The etiologic mechanism of SLE remains unknown, but multiple associations have been identified via decades of research. Several genetic factors[5], hormonal[6], defective immuno-regulatory systems[7], environmental factors[8], occupational exposures to Mercury, solvents and pesticides[9], ultraviolet radiations[10] or reactions to certain drugs like Procainamide, Hydralazine, Isoniazid, Methyldopa, Quinidine, Chlorpromazine and Propylthiouracil[11] may act as a trigger towards SLE development in the body. SLE predominantly affects small joints of hand and wrist. It often affects the eyes, skin, liver, kidneys, blood vessels, blood**,** oral health and nervous system too. Pain associated to damage of joints is known as Arthritis[12] that may be persistent and joint specific.

Researchers suggest that there is a possibility of an association between rheumatoid arthritis and SLE[13]. Biologically, causes of SLE induced arthritis can either be associated to genetic changes[14] or changes in the metabolism of sex hormones[15].The pain in SLE induced arthritis is mainly concomitant with muscle strains, inflammation and wear and tear of the joints .Lethargy is a highly prevalent and a debilitating manifestation in victims of SLE induced Arthritis that subsequently imposes unhealthy repercussions on an individual's life.

SLE induced arthritis, a chronic condition limits a person's activities in physical, social, and psychological paradigms of life. Physically, sufferer encounters musculoskeletal and mucocutaneous manifestations, inclusive of aching and swollen joints, skin rash and exhaustion[16]. Women with SLE induced arthritis experience a diminished grip force which when coupled with pain inhibits accomplishment of the routine jobs/ventures[17]. Coping with the chronic pain is comparatively easier, but relatively a larger segment experiences distress associated to pain, difficulty in performing activities, or interpersonal difficulties[18]. SLE induced arthritis is associated to decreased functional performance that hampers the quality of

life and subsequently induces distress, fatigue, fibromyalgia, depression, and cognitive dysfunction. Verbatim oriented reports of patients' physical and mental performance are uniformly associated to abnormal illness-related conditions, state of despondency, weariness and pain[19].

In SLE induced arthritis there is an increased risk of distress which possibly is a response to numerous factors, including the fear of worsening symptoms of the disease. The disease has considerable influence on various dimensions of life including working ability, performance in various chores, economic status, interpersonal relationships, psychological wellbeing[20] and recreational ventures[21]. Declined participation in amusement activities and socialization act as potent risk factors of contracting novel depressive symptoms[22]. Social isolation is a major mode of escape for SLE induced arthritis patients and such loss of valued activities serves as a potential risk to distress in women.

SLE induced Arthritis has negative psychological impacts as it induces resentment, annoyance, melancholy, distress, and jealousy. Thereby, emotional, cognitive, behavioral and social variables aid in developing a better understanding about pain in SLE induced arthritis patients. Hence, psychological modes of treating arthritic pain have evolved[23] to equip the patients with pain management and pain coping skills, cognitive behavioral and emotional disclosure interventions and spouse-assisted technniques[24]. Efforts to modulate chronic pain and its negative implications on broader functioning of patients can be moderated by imparting self-management skills in SLE induced Arthritis patients. Practitioners can successfully impart and persuade the usage of these skills by having a clear insight of the causes of motivation and the process of behavioral changes in the patient[25].

This case study aimed to probe into the potential functional interference of pain, distress and behavior in SLE induced arthritic patient.

MATERIALS AND METHODS

The methodological details of the current study comprised of an elaborate case history of the participant coupled with the established tools regarding pain, distress and behavioral changes.

Case report

The present case study focused on an agile and energetic 27 years old university student. While pursuing her studies, her absentia from the class was on account of her SLE induced Arthritic Pain. Her motivation and conviction for pursuing studies led to probe into the lady's management of SLE induced arthritis associated pain, distress and behavior. Participant did not report any familial history of SLE. Medical history of the participant can be traced back to mistaken diagnosis of Tuberculosis on account of lung infection and was subsequently given anti-tuberculosis treatment. Later she experienced the turgid joints, inflexibility, swelling and deformity and at the age of 25 and was given the diagnosis of SLE induced arthritis. The data from laboratory tests indicated increased erythrocyte sedimentation rate (ESR), affirmative Anti nuclear antibody (ANA) and cross linked N-telopeptide tests, RA factor exceeding the normal range and an active SLE was indicated by serum anti double stranded DNA. Hence, she was diagnosed with SLE induced arthritis. Thereby, the patient was prescribed the drugs such as corticosteroids and Disease modifying anti rheumatic drugs (DMARDS) (Imuran and HCQ). The participant was pursuing her studies along with daily activities.

Considering the possible functional influence over participant's biological, social and psychological systems due to SLE induced arthritis and subsequent implication on daily life, consent oriented participation of the lady helped to evaluate the psychological aspect of the patient, to measure the intensity of SLE and its associated pain and distress.

The Brief Pain Inventory Scale (BPI)[26]

The BPI scale is a medical questionnaire often used to evaluate pain intensity and its influence on functioning in patients having cancer and other diseases. The short form was used in the present case study to assess the severity and the interference of pain with function. This inventory scale requires the patients to locate the areas of pain on posterior and anterior parts of the body (Fig. 1) and to give their perceptual analysis of the causes of pain, the modes of pain treatment they are receiving and the level of relief experienced from the respective treatment. In BPI scale patients are required to rank the intensity of pain on an 11-point scale ranging from worst to least. The current level of pain at the

time of completion of BPI was gauged by asking the status of their pain "now". BPI also taps the extent of hindrance in mobility, general activity, daily chores, relationships, taking rest and enjoying life by obtaining rating on an 11-point numerical scale with ranging from "does not interfere" to "completely interferes,". Patients also

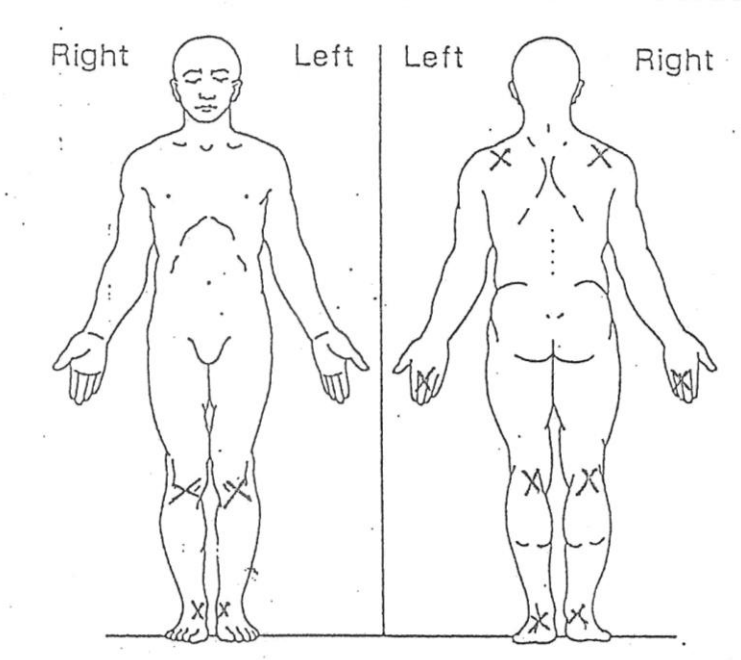

Figure 1 shows the participant's response in BPI marked with (X) indicating the areas of pain.

give the qualitative description of their pain by selecting and appropriate verb from the given list. Scoring doesn't follow any algorithm, but simple arithmetic mean of four items tapping severity of pain intensity. Similarly, the arithmetic mean of the seven items regarding interference illustrated the pain induced obstruction in daily life.

The Pain and Distress Scale (PAD)[27]

A self-rating scale proposed by William W.K Zung in 1983 aims to briefly measure mood and behavioral modulations induced by acute pain. Though this scale doesn't directly measure the pain intensity it still describes the physical and emotional sequel of pain. The scale comprises clinically oriented items that specifically depict psychological issues associated to pain. 1 of the items focuses on pain, 6 items reflect mood changes and 13 items cater to behavioral changes. The scale comprised of four point responses that indicate symptom frequency. Inference is drawn based on the percentage for the score obtained.

RESULTS

Patient had symptoms of serotosis, arthritis, ANA test positive and Immunologic disorder (Positive anti-ds DNA) which clearly fulfilled American college of Rheumatology'sestablished criteria for identificationof SLE in clinical studies. According to participant's response in BPI, the main regions of pain are shoulders, back and front knees and ankles as indicated by (X) in figure 1. The intensity of pain is significant in participant when calculated by means of the relevant psychological scales. The impact of pain on routine life is significantly high that is 7.142 calculated from BPI scale. Along with this the participant also experiences an alteration in mood and behavior as calculated using PAD scale.

DISCUSSION

Systemic lupus erythematosus (SLE) and Rheumatoid arthritis are complex autoimmune diseases characterized by a retaliating defense mechanism where body's immune system erroneously harms the healthy tissues in many parts ofthe body. These diseases influence the patient's wellbeing due to the variety of symptoms, medication-related complications, and psychotic and social dysfunctions. Also, these patients experience various limitations, including physical, psychological, and social disabilities, which can affect different health-related aspects. The ambiguity of causes makes it a debilitating condition at hand. The complex nature of causative factors (genetic, hormonal, and environmental) and a series of associated auto antibodies are parallel to diverse symptomatology[6]. Rheumatoid arthritis has its impact on various sites resulting in pain and joints' deterioration and can lead to severe disability by limiting motor functioning such as walking and normal hand locomotion[28].

In the present study participant's intensity of pain is moderate because of intake of drugs like Imuran, HCQ and steroids. Previous studies showed that

disease modifying anti-rheumatic drugs (DMARDS) and anti-inflammatory drugs tend to reduce the impact of pain in rheumatoid patients[29]. Immunosuppressive drugs inhibit cell activation, cytokine production or proliferation and function by stimulating expression of immunosuppressive molecule or cell[30]. Previous findings showed that Azathioprin (imuran) generated 6-Thio-GTP and prevented "effective immune response via blockade of Vav activity on Rac protein" [31]. Studies also showed that HCQ reduces serum lipid levels, antherogenesis and premature heart diseases[32] and SLE induced arthritis patients should be directed to continue HCQ during pregnancy[33].

Since in the present case the impact of pain rated from 1-10 is 7.4 which is little higher than moderate therefore, the participant is unable to enjoy life to the fullest. Rheumatoid arthritis is regarded as one of the chronic non-cancerous pain that includes neuropathic pain, hyperalgesia, fibromyalgia, rheumatoid arthritis and mixed chronic pain[34]. Studies showed that pain is the significant problem in SLE induced arthritis[35] and its occurrence on regular and recurrent basis triggers daily stress and mood fluctuations[36] and thereby significant influencing their daily functioning[37].

It has been reported that musculoskeletol pain is associated with significant psychological problems including depression, anxiety and social difficulties[35]. Number of studies have shown that SLE patients experience behavioral changes like feeling of fear, loss of interest, headache, confusion, fatigue, memory loss and occasionally strokes as well[38]. Pain also acts an initiating factor of mood fluctuations[36]. In present study participant reported moderate mood and behavioral changes. This could be explained in terms of strong social and moral support rendered by the caretakers and the efficient problem focused coping strategies adopted by the participant[39].

There are reports that imparting self management skills reduces the need to resort to medication[40] thus resulting in improved quality of life and employment of health care facilities[41]. As chronic diseases are potent in decreasing health-related quality of life amongst patients, therefore its essential to address the physical, mental, and social aspects of the disease. Improvement of patient's health literacy as an empowerment strategy is vital to improve sufferer's quality of life. The provision of psychological and social support will aid in overcoming pain, distress and behavioral changes related functional interference in SLE induced arthritis.

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