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REVIEW

Biopsychosocial approach in vasculitis: BETY

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ABSTRACT

Rheumatic diseases cause biopsychosocial effects such as chronic pain, fatigue, social isolation, functional impairments, anxiety-depression, and sleep problems. National and international guidelines emphasize the importance of physical activity and exercise planning, patient education and self-management skills, and psychosocial interventions in the management of rheumatic diseases. Vasculitides are also a group of chronic diseases that can affect many organs and systems, impacting individuals biopsychosocially. Although comprehensive approaches are recommended in the literature for this disease group, as in other rheumatic diseases, studies in this field are quite insufficient. The Cognitive Exercise Therapy Approach (*Bilişsel Egzersiz Terapi Yaklaşımı - BETY*) is an innovative exercise approach developed on the basis of the biopsychosocial model for individuals diagnosed with rheumatological diseases. Developed based on the biopsychosocial model, the BETY exercise model is an example of a non-pharmacological exercise approach in the treatment of vasculitis.

Keywords: Biopsychosocial model, exercise, disease management, vasculitis.

INTRODUCTION

In the management of rheumatological diseases, determining biopsychosocial characteristics and recommending approaches that align with these characteristics is emphasized [1]. Among these characteristics, chronic pain, fatigue, social isolation, functional impairments, anxiety-depression, sleep problems, and cognitive impairments in sexuality have a crucial role. On the other hand, the concept of "*Exercise is medicine*" for all chronic diseases is becoming increasingly established, especially as the anti-inflammatory effects of exercise have been proven, and this information is being widely transferred to clinical practice [2]. Exercise approaches represent the most important parameter among coping skills for dealing with biopsychosocial characteristics. On the other hand, some long-standing myths persist. Among these are misconceptions such as "*Exercise should not be done while the disease is active*," "*Don't move when in pain*," and "*Exercise increases inflammation*." However, today, institutions that guide the field of rheumatology, such as EULAR (European Alliance of Associations for Rheumatology) and ACR (American College of Rheumatology), strongly emphasize both the necessity of a biopsychosocial approach and the value of exercise interventions [3,4].

Chronic inflammation can causes significant symptoms that require regular exercise. These represent periodic pain, chronic fatigue, decreased physical fitness, depression, inactivity, and, naturally, a decrease in quality of life. However, exercise's anti-inflammatory effects reduce cytokine release from adipose tissue, skeletal muscle, endothelial, and blood cells, thereby improving insulin sensitivity, endothelial function, and CRP (c-reactive protein) levels. It is known that IL-6, IL-1Ra, IL-10, and TNF-R are released from muscles, especially with exercise approaches lasting longer than 3 months. This leads to the pro-inflammatory properties of IL-6 being

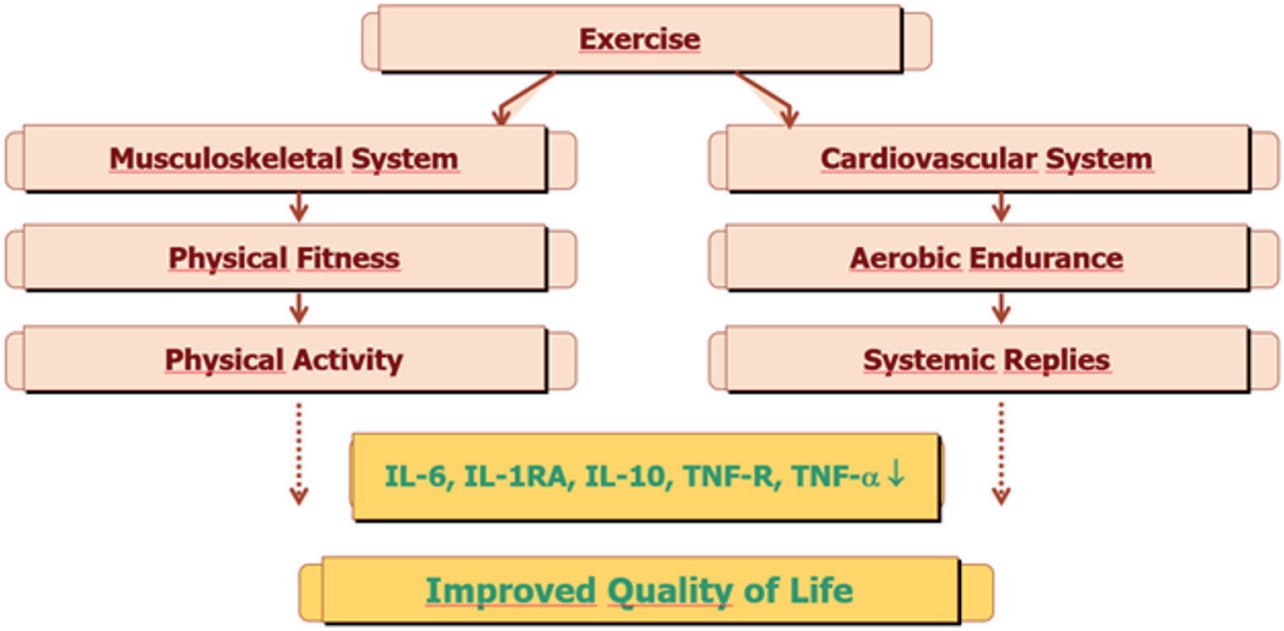

Figure 1. The effects of exercise on quality of life [9]

converted to anti-inflammatory properties due to the effect of exercise on cytokines (Figure 1) [5-8].

In other words, exercise approaches are also effective in counteracting potential side effects of medical treatment, such as low muscle function, low aerobic fitness, and low bone and muscle mass [6].

While exercise has been adopted in the field of rheumatology since the 1970s, with the development of biological agents and radiological techniques in the 21st century, exercise has become an indispensable part of quality of life. EULAR recommends regular exercise and patient education as a non-pharmacological treatment approach based on the biopsychosocial model [1]. At this point, the fact that pain is also a biopsychosocial concept forms the basis (Figure 2).

On the other hand, reiterating the definition of pain established by the International Association for the Study of Pain (IASP) in 1979, a new definition including nociplastic pain was established in 2020 [10]. With this definition, nociplastic pain, in addition to nociceptive and neuropathic pain, has become an area of focus for clinicians in pain management. It has also been emphasized that chronic pain in all three categories must be included in patient education [11].

According to the 2018 guidelines published by EULAR, pain is influenced by many parameters, and its management emphasizes the substantial importance of physical activity and exercise planning, patient education, and improving self-management skills, as well as psychological and social interventions [1]. To define, physical activity encompasses energy consumption above the basal metabolic rate, while exercise is the regular, repetitive form of physical activity performed at a specific rhythm and frequency. The concept referred to in the guidelines is that physical activity should be restricted when the disease is active; however exercises for the affected body part should still be performed. For fatigue, a symptom frequently reported in rheumatological diseases, structured exercises known as aerobic exercise, which involve large muscle groups and increase respiration and heart rate, are recommended. In daily life, a structured walking session in its simplest form should always be recommended to individuals.

Although the significant role of the biopsychosocial approach in alleviating biopsychosocial symptoms observed in rheumatological diseases is emphasized, the lack of standardized assessment and treatment methods is also reported [12].

Vasculitides are a heterogeneous group of diseases that affect various organs and systems and, causing life-threatening deficiencies [13]. Different diseases that occur with the involvement of different types of vessels are included in this group, and each named disease manifests itself with many biopsychosocial symptoms (Figure 3).

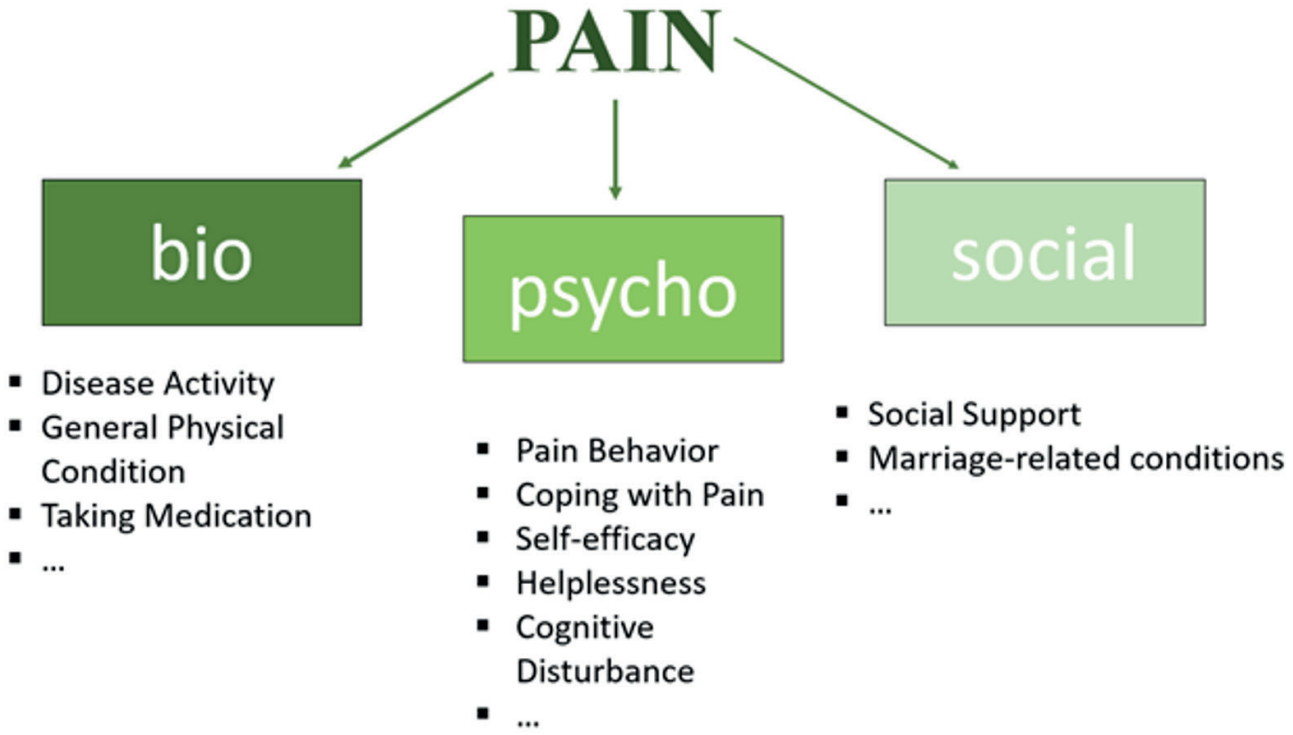

Figure 2. The biopsychosocial dimension of pain [1]

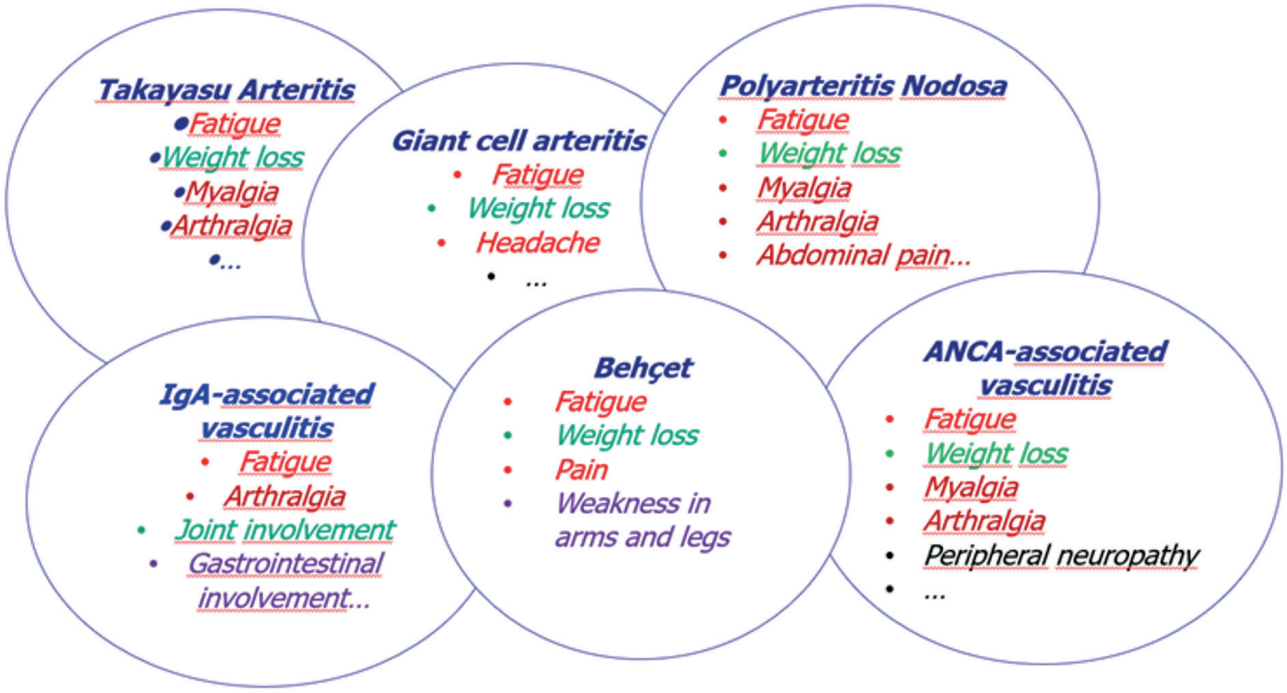

Figure 3. The biopsychosocial impairments seen in some types of vasculitides

The management of biopsychosocial characteristics (pain, fatigue, functional impairment, mood effects, social isolation, sexual problems, sleep problems) emphasizes the importance of exercise approaches. [14,15].

The importance of exercise approaches in cases of nerve and muscle involvement in vasculitis is also noted [16]. Furthermore, the 2022 EULAR update emphasizes the importance of a multidisciplinary approach, highlighting the necessity of patient education with the support of different disciplines to ensure lifestyle changes. It is particularly noted that screening for and treatment of cardiovascular risk factors are important. It has been emphasized that the disease management components recommended in the EULAR guidelines for

other rheumatological diseases should also be considered in vasculitides. However, despite all these requirements, it is stated that the evidence value in the literature is quite low [17-19]. The substantial importance of patient-reported outcome measures is also emphasized. However, when examining exercise recommendations in the field of vasculitis, studies incorporating exercise based on the biopsychosocial model mentioned in the guidelines are not found.

A Biopsychosocial Model-Based Exercise Innovation: BETY

The Cognitive Exercise Therapy Approach (*Bilişsel Egzersiz Terapi Yaklaşımı - BETY*) is an innovative exercise approach developed based on the biopsychosocial model for individuals diagnosed with rheumatic diseases. BETY aims to change the negative cognitions of individuals with rheumatic diseases related to their illness through exercise. The BETY innovation is detailed under four main parameters: function-oriented core stabilization exercises, pain information management, mood information management, and sexuality information management [20]. The BETY innovation also has a unique scale called BETY-BQ (BETY-Biopsychosocial Questionnaire). This scale was developed by collecting feedback from individuals with rheumatism who participated in BETY exercise sessions three days a week over many years, expressing the improvement they experienced through participating in the exercise sessions. During the process, the same items were applied to rheumatic individuals who did not participate in BETY sessions, and the scale was structured by adjusting the items with repeated statistics analysis, resulting in a final version with 30 items. BETY-BQ assesses individuals from a biopsychosocial perspective with items evaluating pain, functionality, fatigue, mood, social participation, sexuality, and sleep [21].

The efficacy of BETY innovation has been proven in terms of the well-being it creates in individuals diagnosed with axial spondyloarthritis (AxSpA), systemic sclerosis (SSc), and rheumatoid arthritis (RA). In AxSpA, it has a synergistic effect with medication in anti-inflammatory [22] and anti-TNF-naive individuals [23]; In SSc, it has a positive effect on functionality, muscle strength, vascularization, anti-inflammatory markers, and biopsychosocial status, as measured by objective and subjective outcome measures [24]; In Sjögren's Syndrome (SjD), research on the effectiveness of group and individual BETY sessions has shown improvements in fatigue, pain, mood, swallowing, and quality of life [25] and positive effects on knee joint muscle strength and proprioception, functional capacity, and biopsychosocial outcomes in RA through telerehabilitation [26]. Furthermore, qualitative and quantitative analysis results, including the perspectives of individuals who have participated in BETY exercise sessions for many years, have been presented in the management of various rheumatological diseases [20].

CASE REPORT

Case 1

A 64-year-old female patient diagnosed with IgG4-related vasculitis (Height: 165 cm, Weight: 75 kg, BMI: 27.55 kg/m^2) reported complaints of back pain, difficulty walking, and fatigue. After listening to the individual's complaints, the recovery goals were determined. The patient stated her recovery goals as "staying alive, walking without a cane, running."

She was taught BETY function-oriented core stabilization exercises for her complaints. She was given walking education. She then received BETY-Nosiplastic Pain Management (BETY-NPM) education for her pain complaints. She was subsequently encouraged to take responsibility for managing her illness.

For fatigue complaints, a walking program was recommended 3-5 days a week, including at least a 15-minute warm-up phase. The individual was included in the BETY exercise group.

After being included in the BETY exercise group, the individual achieved their recovery goals and reported the following recovery characteristics:

- *My fatigue complaint has decreased.*

- *I can use my leg properly.*

- *I can adapt coping strategies from the BETY Nosiplastic Pain Management Strategy to my life.*

- *Thanks to the exercises, I am holding on to life, and my energy is increasing.*

- The exercises are as important as my walking stick, my medication, and the food I eat on my recovery journey.

Case 2

A 50-year-old female patient diagnosed with Behçet's disease (Height: 164 cm, Weight: 61 kg, BMI: 22.67 kg/m^2) reported back pain and severe fatigue. After listening to the individual's complaints, the recovery goal was determined. The patient stated that her recovery goals were to wake up without pain, have a comfortable day, and be able to eat comfortably.

BETY function-oriented core stabilization exercises were selected for her complaints and taught to the patient. Subsequently, BETY-Nosiplastic Pain Management (BETY-NPM) education was provided. The relationship between pain and the limbic system was explained to raise awareness about mood, pain, and exercise. A conceptual change and recovery agreement was made to ensure that the patient took responsibility for their recovery journey.

A walking program was recommended for fatigue complaints, consisting of at least 3 days a week of at least 15 minutes of loading phase – increasing breathing and heart rate – structured with warm-up and cool-down periods.

After being included in the BETY exercise group, the individual achieved their recovery goals and reported the following recovery characteristics:

- I use a combination of medical treatment and exercise to get results in chronic pain management.

- I am healthier and happier after adapting the pain management strategy to my life.

- I have learned to say no.

- I value myself.

The importance of the biopsychosocial model in managing rheumatic diseases has been increasing in recent years. As is the nature of chronic diseases, the biopsychosocial problems experienced by individuals with rheumatic diseases have created this need. Vasculitides are also a group of chronic diseases that can affect many organs and systems, impacting individuals from a biopsychosocial perspective. Although guidelines recommend holistic approaches for this disease group, research in this area is notably insufficient. BETY, as an exercise innovation developed within the biopsychosocial model, should be used as a non-pharmacological exercise approach for vasculitis disease management that will be elevated to the level of evidence through further studies.

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